MINISTRY OF
FOOD & AGRICULTURE
REPUBLIC OF GHANA

RESILIENT RICE REGIONAL VALUE CHAINS IN WEST AFRICA PROJECT(REWARD)

PEST MANAGEMENT PLAN (PMP)

FINAL REPORT

July 2025

List of Acronyms

AEA	Agricultural Extension Agents
AESA	Agro-Ecosystem Analysis
AEZ	Agro-Ecological Zone
AfDB	African Development Bank
AgSSIP	Agriculture Services Sub-Sector Investment Programme
APD	Animal Production Directorate
APFOG	Apex Farmers Organisation of Ghana
ASL	Above Sea Level
CAADP	Comprehensive Africa Agriculture Development Programme
CCMC	Chemicals Control and Management Centre
CD	Customs Division
CAADP	Consultative Group on International Agricultural Research
CPPs	Crop Protection Products
CSIR	Council for Scientific and Industrial Research
DAES	Directorate of Agricultural Extension Services
DCS	Directorate of Crop Services
DDT	Dichloro-Diphenyl-Trichloroethane
DDVP	Dichlorvos (2,2-dichlorovinyl dimethyl phosphate)
DNA	Deoxyribonucleic Acid
ECOWAS	Economic Community of West African States
EIA	Environmental Impact Assessment
EPA	Environmental Protection Authority
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESS	Environmental and Social Standards
EU	European Union
FAO	Food and Agriculture Organisation
FASDEP	Food and Agriculture Sector Development Policy
FAW	Fall Army Worm
FBO	Farmer-Based Organisations
FDA	Food and Drugs Authority
FEWSNET	Famine Early Warning Systems Network
FFS	Farmer Field Schools
FPR	Farmer Participatory Research
FRI	Food Research Institute
GAEC	Ghana Atomic Energy Commission
GAIDA	Ghana Agri Input Dealers Association
GAPs	Good Agricultural Practices
GCA	Ghana Census of Agriculture
GCAP	Ghana Commercial Agriculture Project
GEF	Global Environment Facility
GFAP	Ghana Federation of Agriculture Producers
GHG	Greenhouse Gases
GHS	Ghana Health Service
GIDA	Ghana Irrigation Development Authority
GIEWS	Global Information and Early Warning System on Food and Agriculture
GIZ	German Development Cooperation
GNAFF	Ghana National Association of Famers and Fishermen
GNAFP	Ghana National Association of Poultry Farmers
GoG	Government of Ghana
GPP	Ghana Poultry Project
GRA	Ghana Revenue Authority
GSA	Ghana Standards Authority
GSGDA	Ghana Shared Growth and Development Agenda
IBD	Infectious Bursal Disease
ICAT	Institut de Conseil d'Appui Technique
ICPM	Integrated Crop and Pest Management
ICT	Information, Communication and Technology
IEC	Information-Education-Communication

IFPRI	International Food Policy Research Institute
IPMP	Integrated Pest Management Plan
IPPC	International Plant Protection Convention
ISO	International Organization for Standardization
ISPM	International Standards for Phytosanitary Measures
ISS	Integrated Safeguard System
ITB	Inter-Tropical Boundary
ITRA	Institut Togolaise de Recherche Agronomique
LI	Legislative Instrument
LGB	Large Grain Borer
M&E	Monitoring and Evaluation
MEST	Ministry of Environment, Science and Technology
METASIP	Medium Term Agriculture Sector Investment Plan
MoFA	Ministry of Food and Agriculture
MoH	Ministry of Health
MoTI	Ministry of Trade and Industry
MT	Metric Tons
MRL	Maximum Residue Limits
NEDCo	Northern Electricity Distribution Company
NGO	Non-Governmental Organisation
NNRI	National Nuclear Research Institute
NPAS	Northern Presbyterian Agricultural Services
NRCD	National Redemption Council Decree
NSTL	National Seed Testing Laboratory
OFSP	Orange-Fleshed Sweet Potato
OS	Operational Safeguards
PCN	Project Concept Notes
PCU	Project Coordinating Unit
PFJ	Planting for Food and Jobs
PHC	Population and Housing Census
PIA	Pesticides Importers Association
PIU	Project Implementation Unit
PNDCL	Provisional National Defence Council Law
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
PPRSD	Plant Protection and Regulatory Services Directorate
PSC	Project Steering Committee
PLMs	Participatory Learning Modules
PMP	Pest Management Plan
PTC	Pesticide Technical Committee
R&D	Research and Development
RELC	Research Extension Linkage Committee
REWARD	Resilient Rice Regional Value Chains in West Africa Project
RFJ	Rearing for Food and Jobs
SADEP	Savannah Agricultural Value Chain Development Program
SAPIP	Savannah Zone Agriculture Productivity Improvement Project
SDGs	Sustainable Development Goals
SIM	Stakeholder Identification Matrix
SIP	Savannah Investment Program
SARI	Savannah Agricultural Research Institute
SEEDPAG	Seed Producers Association of Ghana
SME	Small and Medium Enterprises
SPS	Sanitary and Phytosanitary
SRID	Statistics Research, and Information Directorate
ToT	Training of Trainers
UDS	University for Development Studies
UER	Upper East Region
UNEP	United Nations Environment Programme
UNIDO	United Nation Industrial Development Organisation
USAID	United States Agency for International Development
USD	United States Dollar
VEPEAG	Vegetable Producers Exporters Association of Ghana

VOCs	Volatile Organic compounds
VRA	Volta River Authority
WAATP	West African Agricultural Transformation Program
WB	World Bank
WHO	World Health Organisation
WIAD	Women in Agricultural Development
WRC	Water Resources Commission
WVB	White Volta Basin

EXECUTIVE SUMMARY

Introduction

The Resilient Rice Regional Value Chains in West Africa Project (REWARD) aims to transform Ghana's rice sector by enhancing productivity, strengthening market systems, and improving farmers' livelihoods. The process begins with supporting research to produce breeder seeds, ensuring a sustainable foundation for high- quality rice production. This research- driven approach enables the private sector to produce foundation and certified seeds, ensuring widespread access to seed of improved rice varieties.

To enhance productivity, the project will facilitate the supply of key inputs such as fertilizers and improved rice seeds, ensuring that farmers have the necessary resources to increase yields. Additionally, the project will support the development of lowland areas suitable for rice cultivation, expanding production capacity and improving water management for sustainable farming. To complement this, the project will also provide assorted agricultural machinery to ensure mechanized land preparation, planting, harvesting, and post-harvest processing, reducing labour intensity and increasing efficiency for beneficiary farmers.

Infrastructure investments, including procurement and installation of pro-cocoons, will reduce post-harvest losses and enhance storage capacity whiles contributing to stable and continuous supply of quality paddy for milling. These interventions will directly lead to increased rice yields per hectare and higher overall production levels.

As a result of improved production, the quantity of milled rice will increase, enhancing domestic supply and competitiveness. This will drive higher domestic consumption and exports, contributing to national food security and strengthening Ghana's position in regional rice markets. Consequently, farmers will experience higher average incomes, improved livelihoods, and greater economic opportunities, leading to job creation across the rice value chain, from production to processing and distribution.

Project Components

The Project has five (5) main components namely (i) Development of sustainable and climate-resilient rice production systems; (ii) Development of rice processing clusters, agro-industry and commercial linkages for trade facilitation; (iii) Policy / regulatory reforms at national and regional levels, and innovation-oriented regional technical support, for competitive rice value chains in the face of imports; (iv) Strengthening Resilience to Climate Change in Rice Value Chains in West Africa; and (v) Program coordination and management.

Project Cost

The total cost of the Project is estimated at US$17.5m

Project target area and beneficiaries

The proposed Project will be implemented in seven (7) Districts within four (4) administrative regions thus Northern, Upper West, Savannah and North-East Regions. The seven (7) districts are: (1) Tamale Metro, (2) Mion (3) Savelugu, (4) Mamprugu Moagduri, (5) West Gonja, (6) Wa Municipal, and (7) Nandom. The valleys will be upgraded with necessary infrastructure, such as water conservation bunds and drains, drying patios and farm access tracks. The Project will target 20,000 beneficiaries with 30% being women and youth.

Project Institutional arrangements

The Executing Agency for the Project will be the Ministry of Food and Agriculture. With the Project being anchored on the Savannah Agriculture Value Chain Development Project (SADEP) financed by the African Development Bank, the same Project Coordination and Management Unit would be engaged for its implementation. The PCMU will be augmented with a required expertise upon assessment, through secondment from the Ministry of Food and Agriculture or a competitive recruitment process. The head of the PCMU, the Project Coordinator reports to the Chief Director of the Ministry of Food and Agriculture.

Rationale of the PMP

The essence of the PMP is to address concerns of relevant stakeholders with regards to pests and pesticides. It stresses the need to monitor and mitigate negative environmental and social impacts of the Program including the use of pesticides and promote ecosystem management with the human health risk being the underlying principle from seed usage, through planting and growth stage as well as post-harvest issues including safe crops for consumption. It emphasizes the need for an integrated approach to the management of pests in line with the nation's policy on IPMP as well as funding agency's requirements on pest management and makes provision for adequate measures to enable the REWARD project sustain the adoption of IPMP techniques.

Policy, Regulatory and Legal Framework for Pest Management

The following sectoral policies, both national and international, could impact on the performance and success of the REWARD as they relate to agriculture, land, water, environmental protection, irrigation and pests and other ancillary activities:

- Ghana's Food and Agriculture Sector Development Policy (FASDEP)
- Ghana 's Medium Term Agriculture Sector Investment Plan (METASIP)
- National Irrigation Policy, Strategies and Regulatory Measures, June 2010
- Guidelines for the National Plant Protection Policy, June 2004
- National Land Policy
- National Water Policy, June 2007
- National Environment Policy
- Environmental Protection Authority Act, 2025 (Act 1124)
- Environmental Assessment Regulations, 1999 (LI 1652) and its Amendment of 2002, (LI1703)
- Plants and Fertilizer Act, 2010 (Act 803)
- Water Resources Commission Act, 1996 (Act 522)
- Food and Drugs Act, 1996 (Act 523)
- AfDB Integrated Safeguard System (OS 3 – Resource Efficiency and Pollution Prevention and Management).
- ECOWAS Regulation on the Harmonization of the Rules Governing Pesticides Registration
- International Conventions
- Food and Agriculture Organization (FAO) International Code of Conduct on the Distribution and Use of Pesticides

The Government of Ghana (GoG) has over the years developed some legislations and institutional framework to govern environmental pollution, plant protection, irrigation, and pest and pesticide management. The applicable laws that pertain to the REWARD include the following:

- Environmental Protection Authority Act, 2025 (Act 1124)
- Environmental Assessment Regulations, 1999 (LI 1652) and its Amendment of 2002, (LI1703)
- Plants and Fertilizer Act, 2010 (Act 803)
- Water Resources Commission Act, 1996 (Act 522)

- Food and Drugs Act, 1996 (Act 523)

Ghana is a signatory to many conventions on the protection of the environment, which have relevance to the PMP. Some of these conventions ratified by Ghana pertaining to the REWARD include:

- International Code of Conduct for the distribution and use of FAO pesticides. AfDB also recommend the use of this Code.
- The Basel International Convention on the Transboundary Movement of Hazardous Waste of March 22, 1989;
- Convention concerning protection against the risks of poisoning due to benzene, adopted in Geneva in 1971;
- The Rotterdam Convention on Prior Information and Contentment Principle (PIC)
- Bamako Convention on the Prohibition of the Import into Africa of Hazardous Wastes and on the Control of Transboundary Movements and the Management of Hazardous Wastes Produced in Africa, adopted in Bamako on 31 January 1991;
- The Basel Convention on Persistent Organic Pollutants (POP's), adopted in Stockholm 22 May 2001;
- International Standards for Phytosanitary Measures (ISPM) FAO;
- The Montreal Protocol on Substances that Deplete the Ozone Layer, adopted on 16 September 1987;
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, adopted on 10 September 1998;
- Vienna Convention for the Protection of the Ozone Layer, adopted on 22 March 1985;
- International Plant Protection Convention adopted on 6 December 1951 and entered into force on 4 April 1991.
- Ramsar Convention on Wetlands for Wetlands of International Importance, adopted on February 2, 1971 and entered into force in 1972.

The enactment of laws and policies particularly the EPA Act of 2025 (Act 1124) by Government of Ghana shows government commitment towards the sound management of pesticides. Consequently, the EPA established a pesticide management scheme, which involves the management of pesticides from cradle to grave. However, challenges still exist with regards to effective implementation of the established laws and policies. This has been attributed to the absence of a full complement of relevant regulations to give effect to some of the provisions of the law. There is therefore the need to address the gap in the legal framework and other legislative inadequacies by reviewing and enacting the relevant regulations to enhance compliance. The implementation and enforcement of the established policies and laws have been hindered as a result of low human and institutional capacity. Institutions involved with pesticides regulation or management do have experts with the necessary qualifications. However, issues of institutional concerns include:

- Inadequate experts to handle the enormity of the task involved;
- Poor remuneration and motivation in most state institutions for experts; and
- Inadequate logistics and funds to carry out post registration and licensing monitoring activities on pesticides.

Existing and Anticipated Pest and Disease / Management Practices

Major Pests and Diseases of Cereals (rice)

The use of highly persistent and toxic chemicals must be avoided in pest management during the implementation of the IPM of the proposed project. Natural pest control methods should be employed to

effectively reduce or eliminate pest or disease infestation without harming humans, crops and other organisms like chemicals sometimes do. The PMP describes the major pests and diseases associated with rice which is the crop targeted for this project, which involves the application of agro-chemicals and inputs such as fertilisers, herbicides, insecticides, nematicides and fungicides.

Pest Problems and Control Practices

Some of the common pests envisaged in the REWARD targeted areas include: rodents and migratory and outbreak of pests such as locusts, borers, caterpillar, nematode, aphid, mealy bug. IPM strategies are recommended and used by some farmers as long as it is possible because there is no one control practice that can provide acceptable control of the target pest. Rodents, particularly the field rats (Rattus rattus), the small house mice (*Rattus norwegicus*) and the multimammate or shamba rat, (*Mastomys natalensis*) are key pests of food crops. Zoonotic diseases are caused by harmful germs like viruses, bacteria, parasites, and fungi. These germs can cause many different types of illnesses in people and animals, ranging from mild to serious illness and even death. Some zoonotic diseases associated with rodents and of public health importance include leptospirosis, Lassa Fever, Rat Bite Fever, Salmonellosis and many more which are of bacteria and of viral origin. They are either transmitted through the bite or scratch wound from an infected rodent, by eating or drinking food or water that is contaminated by rat feces or by breathing in dust that is contaminated with rodent urine or droppings. Diseases spread by fleas and ticks are transmitted when these insects (pests) feed on the blood of a host (human, cat, dog or ruminants). Fleas and ticks are externally parasitic to dogs, cats, humans and many small mammals. Different species of fleas and ticks are vectors of specific viruses, bacteria or protozoal parasites. Some of the diseases of zoonotic importance are Parasitic Dermatitis, Parasitic Dermatitis, Bartonella, Erlichiosis, Meningoencephalitis, Rickettsiae and Tapeworms.

The damage caused by rodents starts at early booting and continues through the mature stage as well as the storage stage. The key migratory and outbreak pests of economic significance in Ghana are armyworm (*Spodoptera exempta*), birds, and the red locusts. Locusts live and breed in numerous grassland plains / savanna zones. The African armyworm (*Spodoptera exempta*) is a major threat to cereal production in a number of African countries. It is a major pest of cereal crops (maize, rice, sorghum and millets) as well as pasture (grass family) and therefore a threat to food security and livestock. The problem with armyworms is that they are highly migratory so that larval outbreaks can appear suddenly at alarming densities, catching farmers unawares and unprepared. Invasive alien species such as Witch weeds, Siam weed, Water hyacinth and the Invasive Fruit fly have become a problem in diverse ecosystems in Ghana. They affect both savannahs and tropical forests and they are found on land, in freshwater systems and along the coast in the country and have had a huge adverse effect on the production of cereals such as maize and rice. Climate change, trade liberalization, and agricultural intensification (increased fertilizer use, introduction of new crops and varieties, changes in land use and landscape etc) could cause the occurrence of new pest problems.

IPM Strategy for Pest Control

The EPA generates and publishes a list of approved and registered chemical pesticides for use by farmers. Additionally, there is a list of banned pesticides. This list is updated periodically with the last update in 2021. These pesticides are tested to improve the quality of the pesticides used i.e., the reduction of the toxicity and the increase of the efficacy. The integrated pest management is the adopted strategy for the fight against pests in Ghana. However, the use of the integrated combat is not widespread despite the efforts undertaken. The use of pesticides is increasing despite the high cost of the products relative to the financial capacity of majority of farmers. Research Institutions in Ghana have had some good results regarding the efficient use of botanical or organic products. Through the support of international development partners

including the German Development Cooperation (GIZ) and United States Agency for International Development (USAID), the PPRSD of MoFA has developed separate booklets and manuals to serve as extension guides on integrated pest management practices for food production.

The national IPM approaches developed for cereals and pulses are largely based upon 15 principles, practices and what happens in each case. Preventive Fight Methods are usually applied for pests such as locusts whereby Regulatory bodies collaborate with international partners during the indicated periods of the year in order to follow the evolution of the situation of the populations. Surveillance of other agricultural pests is the responsibility of farmers. However, plant protection services also identify pests to determine areas at risk of infestation that compromise food security. The use of drones for pest management is also a method the PPRSD is looking forward to using to make pest control/management easier and faster. The curative fight methods require that locust invasions are managed at the national or even sub-regional level. Farmers encountering pest problems usually rely on competent MoFA extension services to receive control advice that they will apply in the field. Additionally, the decentralization of the PPRSD offices across the country plays a very important advisory role at this level. Neem grains and other pesticide mixtures help control the diseases and pests identified in the target crops. Additionally, sub-regional initiatives led by Institut Togolaise de Recherche Agronomique (ITRA) and Institut de Conseil d'Appui Technique (ICAT) in Togo have led to convincing results. The use of chemical pesticides is being replaced by biocidal plant extracts such as "neem" (*Azadirachta indica*), *Lannea microcarpa*, red pepper, cow dung, etc., which are used as a natural pesticide.

Alternatives to Pesticides

Over the years, efforts have been made particularly by the research institutions to develop alternative products to the use of agro-chemical products especially containing Persistent Organic Pollutants (POPs) () with the aim of reducing the use of pesticides in agriculture and the areas of use of these pesticides. These alternatives include cultural control, physical control, genetic control, integrated pest management, biological control, the use of bio-pesticides, the use of pesticides of the organophosphorus family, carbamates, pyrethroids, etc. During the consultation, farmers indicated knowledge and understanding of alternative products to pesticides. They indicated practices such as the use of neem grains, or bark of cailcédrat as bio-pesticides; the use of oxen or goats' excrement to protect crops against ruminants; sands, ashes, chilli powder for the preservation of corn, and others (powders of mahogany bark, neem leaves) as alternatives to pesticides application. Farmers are also aware of cultural techniques such as cultural association, crop rotation, transplanting, organic manure, etc. Nonetheless, they indicated their preference for chemical pesticides due to their efficacy, and accessibility to treat large areas as compared to the alternative approaches.

Key Pests and Recommended Management Practices

One important aspect of the IPM approach is the role of natural enemies, or beneficials. Natural enemies are the predators and parasites, parasitoids and beneficial micro-organisms that attack crop pests and disease organisms. The PMP report provides information on the major natural enemies and the pests they feed upon, and provides recommended IPM practices for the cereals, pulses / grain and legumes targeted under the REWARD. Appropriate IPM strategies have also been identified by the PMP to minimise losses due to:

- Damage caused by the larger grain borer, weevils, rats/rodents, aflatoxins, and grain moths. Biological control of the Large Grain Borer (LGB) using Teretriosoma nigrescens (Tn) to minimise infestation from wild sources will be beneficial once appropriate strains of the Tn are identified and validated; and

- Damage caused by post-harvest pests of pulses including the storage weevil for cowpea and soybean and the storage beetle and grub for groundnuts.

The PMP also identifies a number of considerations for the application of pesticides for cereals. These include the following:

- A decision to use chemical pesticides should be taken only as the very last resort and should also be based on conclusions reached from an agro-ecosystem analyses (AESA).
- All pesticides should be EPA approved and PPRSD recommended.
- If it is necessary to spray crops with pesticides, use selective rather than broad-spectrum pesticides.
- All herbicides should be applied using knapsack sprayers.
- All the insecticides for storage pests of cereals/pulses are in dust form and therefore used as supplied without mixing with anything else.
- The list of pesticides can change as new products are recommended and/or some of the chemicals are withdrawn. Therefore, always consult the retailer/stock list, the nearest PPRSD extension worker if in doubt and/read the label.

Controlling Pesticides used in Crop Protection

In order to ensure the efficient use of the pesticides for the fight against crop pests/diseases, the maximum residue limits (MRL) have been defined by European markets/EU standards. Where undefined, the Codex Alimentarius / Food Code" (a collection of international standards, guidelines and codes of practice to protect the health of consumers and ensure fair practices in the food trade) is considered. Ghana is required to comply with sanitary and phytosanitary measures (SPS) and especially the pesticides residue values available in farm products that should not exceed the acceptable maximum residue limit, otherwise produce from Ghana will be banned. Every pesticide produced in Ghana and imported is expected to be subjected to approval.

In West Africa, there are no industrial units ensuring the synthesis of active materials through branded laboratories. Thus, the production of pesticides in the proper way is not effective in the whole of these countries. Finished products are rather imported notably through mother companies represented at the national level or active matters for formulation purposes. The distribution channel is entirely private. Suppliers who import the products feed the market through distributors, and retailers who supply traders and they display for sale. Certain distribution spots – sales point- are well kept and abide by commercial rules; in general, the products are well displayed on shelves. However, at the level of many retailers and traders who display for sale there are great risks. On account of the low financial capacity of local farmers/peasants and other buyers, some of the products are sold in retail. This practice is carried out without caution notably with decanting. The management of pesticide containers is under the responsibility of resellers and farmers because of the retail sales system. However, facilities for the treatment of large empty containers are not known to be installed or in use in the country at the moment.

Stakeholder Engagement Planning and Outcomes

Stakeholders in the field of pest and vector management were engaged to obtain the full support of key actors within the sector to promote the effective implementation of the PMP. Stakeholder involvement in the development of the PMP was a participatory process involving interactions between technical resource persons and various stakeholders including:

- Government institutions directly or indirectly involved in pest or vector management;
- Anchor farmers and their out-growers;
- Agricultural importers and exporters organizations;

- Non-Governmental Organizations;
- Agrochemicals industry;
- Private crop protection advisory firms;
- Producers of biological control agents; and
- Bilateral and multilateral development partners.

A Stakeholder Identification Matrix (SIM) was used to help identify and elicit inputs from the various stakeholders with respect to their relevance for involvement in the engagement/consultation processes. The review of the relevant legislation of incorporation and institutional mandates also defined the relevance of the identified stakeholders to the assignment and their areas of interest in order to identify the key issues of engagement.

The key stakeholders identified have been listed under the respective categories as follows:

Government Ministries (Sector Oversight) Actors:

- Ministry of Food and Agriculture (MOFA):
  - Directorate of Agricultural Extension Services (DAES)
  - Directorate of Crop Services (DCS)
  - Plant Protection & Regulatory Services Directorate (PPRSD)
    - Crop Pest and Disease Management Division
    - Pesticides and Fertilizer Regulatory Division
    - Ghana Seed Inspection Division
    - Plant Quarantine Division
- Anchor Farmers-Out Growers (AnFoG)

Regulatory Institutions:

- Environmental Protection Authority (EPA)
- Ghana Standards Authority (GSA)
- Food and Drugs Authority (FDA)

Enforcement Agencies:

- Customs Division (CD) of the Ghana Revenue Authority (GRA)
- Ghana Police Services (GPS)

NGOs/ Civil Society:

- CropLife Ghana (CLG)
- Ghana Agri-Input Dealers Association (GAIDA)
- Pesticides Importers Association (PIA)

During the stakeholder engagement, a number of issues were identified and prioritized by stakeholders to improve pest and pesticide management. At the institutional, legislative and regulatory level, issues such as porosity of national borders which allow for the influx of banned chemicals into the country; non-compliance with the regulations; insufficient regulation; lack of database on diseases in animal production; lack of quarantine infrastructure (station); need for capacity building; lack of awareness / absence of confirmation of farm animal diseases by the VSD; inadequate human resources, equipment logistics and financial resources for the field monitoring of IPM approaches were identified as the main concerns.

Monitoring is also a major concern for stakeholders with issues such as lack of personnel and equipment in assessing the impacts of pesticides and insufficient control over the use of pesticides identified. Inaccessibility of approved pesticides near farmers, lack of efficient treatment and waste disposal systems at the farms and insufficient extension of alternative methods to pesticides and integrated pest management were also identified as concern by farmers. Farmers also raised concerns on issues regarding lack of regular training for farmers on pesticide use and management of empty containers, inadequate information on the dangers related to the use of pesticides and illiteracy of the populations.

Potential Impacts and Challenges Associated with REWARD Interventions

The use of various agro-chemicals especially pesticides is a common feature of crop and animal production activities across the country and is expected to intensify during the implementation of the REWARD interventions. The PMP assesses the potential risks / impacts associated with the procurement, transport, storage, use / handling and disposal of pesticides. The PMP also discusses into detail the major risks and impacts likely to be associated with the use of pesticides under interventions envisaged as part of the REWARD. These include the following:

- Impact of pesticides on waterbodies;
- Impact of pesticides on poultry birds;
- Impact of pesticides on aquatic life;
- Public health concerns from water-borne or water-related diseases;
- Mycotoxin poisoning from poor maize drying;
- Improper pesticide-use and disposal of pesticide containers;
- Abuses in pesticide supply and sales; and
- Production losses and food security concerns from Armyworm and other crop pests and disease outbreaks.

Integrated Pest and Pesticide Management Action Plan

The main purpose of the plan is to protect the biophysical and human environment through the promotion of the use of integrated pest management methods, capacity building of farmers, destruction of obsolete stocks, environmental impact assessment of agricultural development projects such as the REWARD likely to use a considerable quantity of pesticides, the management of empty containers and the supply of protection and spraying equipment to farmers. The Integrated Pest and Pesticide Management Action Plan addresses the various impacts and challenges which are likely to be associated with the implementation of the Program regarding pest and pesticide management issues. Appropriate mitigation measures and implementation tools as well as monitoring indicators required to be instituted to contain any adverse impact or risk assessed and discussed are identified as well in the PMP. The key actors to be involved in the implementation of the IPMP have been identified as well.

Programme to meet PMP Requirements

REWARD will adopt the following specific strategies to achieve an effective pest and pesticide management process. This is consistent with existing processes including:

- Formation of a safeguards team
- Registration and training of all interested pesticide distributors/resellers
- PMP communication and orientation workshop
- Education and Awareness Creation
- Participatory Pests Inventory and Monitoring Measures
- Stakeholder Consultation and Involvement
- Prevention of new Pest Infestations
- Management of established Pests

- IPM Capacity Building
- Institutional Arrangements and Training Responsibilities
- Participatory Monitoring and Evaluation
- Sustainability Issues
- Monitoring
- Management Reviews
- Institutional arrangements for the implementation and monitoring of the PMP

PMP Implementation Budget

A breakdown of the costing for activities identified in the PMP implementation over a tentative 5-year period is provided in Table 45 as a guide. It is estimated that an amount of about USD613,500.00 will be required to implement the PMP over the 5-yr period, with an average yearly investment requirement of about USD122,700.00.

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1.0 INTRODUCTION

The REWARD Project seeks to transform Ghana's rice sector by enhancing productivity, strengthening market systems, and improving farmer livelihoods. The process begins with supporting research to produce breeder seeds, ensuring a sustainable foundation for high- quality rice production. This research- driven approach enables the private sector to produce foundation and certified seeds, ensuring widespread access to seed of improved rice varieties.

To enhance productivity, the project will facilitate the supply of key inputs such as fertilizers and improved rice seeds, ensuring that farmers have the necessary resources to increase yields. Additionally, the project will support the development of lowland areas suitable for rice cultivation, expanding production capacity and improving water management for sustainable farming. To complement this, the project will also provide assorted agricultural machinery to ensure mechanized land preparation, planting, harvesting, and post-harvest processing, reducing labour intensity and increasing efficiency for beneficiary farmers.

Infrastructure investments, including procurement and installation of pro-cocoons, will reduce post-harvest losses and enhance storage capacity whiles contributing to stable and continuous supply of quality paddy for milling. These interventions will directly lead to increased rice yields per hectare and higher overall production levels.

As a result of improved production, the quantity of milled rice will increase, enhancing domestic supply and competitiveness. This will drive higher domestic consumption and exports, contributing to national food security and strengthening Ghana's position in regional rice markets. Consequently, farmers will experience higher average incomes, improved livelihoods, and greater economic opportunities, leading to job creation across the rice value chain, from production to processing and distribution.

1.1 Project Description

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Component 1: Development of sustainable and climate-resilient rice production systems

This component aims to increase the production and productivity of rice through development of 3,200ha, provision of climate-resilient inputs and capacity building in sustainable land and water management systems and conservation agriculture. It has two sub-components namely i) Development of sustainable and climate-resilient infrastructure and management services in rice production systems and ii) improved availability and access to quality inputs, mechanization services and climate-resilient knowledge.

Sub-component 1.1: *Development of sustainable and climate-resilient irrigation infrastructure and management services in rice production systems*. This sub-component comprises the following key activities:

- Develop 2,250ha climate-resilient water regulatory structures for farmers
- Construct bunds and drying patios for 50ha seed production by Savannah Agriculture Research Institute (SARI)
- Train irrigation management committees/ water user associations (WUAs) in financial management, accounting and technical management
- Collaborate with Ghana Irrigation Development Authority (GIDA) for designing construction supervision and maintenance of water management structures
- Promote sustainable land and water management (SLWM) and climate change adaptation practices such as reforestation along the crest of borrow pits and biochar
- Construct 20km climate resilient infield farm access tracks
- Source and disseminate meteorological information to farmers (early warning systems)
- Develop and implement locally based Grievance Redress Mechanisms (GRM)

The proposed Project will be implemented in seven (7) Districts within four (4) administrative regions thus Northern, Upper West, Savannah and North-East Regions, as indicated in the **Table 1.1**. The valleys will be upgraded with necessary infrastructure, such as water conservation bunds and drains, drying patios and farm access tracks.

Table 1-1: Proposed Rice Valleys for Development

No	Region	District	Community	Valleys	Area (ha)	Remarks
1	Northern	Mion	Tindatua	Sakoya, Bogni	350	New land development with machinery support, drying patios, farm roads etc
2		Tamale Metro	Nyankpala	SARI	50	Construct bunds and drains of existing area for SARI for seed production
3		Savelugu	Napanzo	Nanpanzo	300	Rehabilitation of existing valley, reshaped bunds and spot improvement of farm tracks
4	North East	Mamprugu Moagduri	Kubori/ Zanwara	Kubori	250	Land development packaged (bunds, drying patios and site office)
5	Upper West	Nandom	Nandom- Kpee	-	200	Machinery support with drying patios and land development
			Ko	Gbafin	150	Machinery support with drying patios and land development
6		Wa Municipal	Charia	Kolivege Bor	350	Land development with drying patios inclusive
			Sing	-	200	Reshaping of bunds, drying patios and drainage construction to convey excess water out of the fields
7	Savannah	West Gonja	Busunu	-	200	Land development and bunds
	TOTAL				**2,050**	-

Source: Department of Agriculture, 2024

Sub-component 1.2: *Improved availability and access to quality inputs, mechanization services and climate-resilient knowledge.*

The sub-component seeks to improve the availability and accessibility of farmers and other value chain actors to productivity enhancing technologies such as climate smart seeds, fertilizers, knowledge for climate-smart agriculture and mechanization services along the rice value chain, generation and dissemination of appropriate technologies. This will be achieved through interventions including:

- Promote awareness on climate smart rice varieties (AGRA, Legon1, CSIR-Banse & CSIR-Malimali)
- Support the development of breeder and foundation seeds
- Support farmers with improved and climate-resilient certified seeds, agrochemicals and fertilizer using government input modality to cultivate 3,000ha
- Procure and install seed cleaning machines to improve seeds quality
- Train AEAs, anchor farmers and input dealers on appropriate use of pesticides and undesirable effects of pesticides on humans and the environment
- Support farmers access to mechanization services along the rice value chain
- Conduct ToT on rice parboiling, milling, and other themes related to rice processing marketing
- Establish demonstration plots and field days for training needs of farmers to transfer knowledge

Component 2: Development of rice processing clusters, agro-industry and commercial linkages for trade facilitation

The component seeks to support processing infrastructure and strengthen capacities of actors to improve processing efficiency and enhance quality standards to meet market specifications.

Sub-component 2.1: Development/modernization of processing infrastructure and capacity building of small farmers and commercial actors throughout the value chain. This sub-component will focus on development, upgrading and installation of processing and storage infrastructure to minimise post-harvest losses and enhance value addition.

This sub-component comprises the following key activities:

- Conduct needs assessment of existing rice mills to identify gaps
- Procure and install pro-cocoons storage systems to improve the quality of seeds, paddy and milled rice
- Procure mini-GEM parboiling vessels from Africa Rice for training of artisans, local fabrication and promotion

Sub-component 2.2: Development of information systems, innovative technologies (including digital) and a consumer-oriented brand image to improve market access. The sub-component will develop information systems using innovative technologies including digital tools. Efforts will be made to promote consumer-oriented branding to improve access to the market.

The sub-component consists of the following activities:

- Promote partnership with key stakeholders to improve branding and packaging of processed rice for enhanced patronage and consumption
- Organise exhibition and fairs to showcase Ghana rice products and use the occasion to address key issues within the value chain
- Collaborate with Women and Agric. Development (WIAD) and other stakeholders to educate consumers on nutritional value and benefits of Ghana rice
- Facilitate linkages among keys actors to create marketing and financial opportunities

Sub-component 2.3: Promoting private sector investments by supporting businesses, particularly led by women/youth, and improving the availability of financing throughout the value chain. The sub-component will promote private sector investment by supporting business, with special focus on women and youth, and improve availability of financial services across the value chain to facilitate lending to processors, farmers, and other actors. Processors will be trained in modern processing techniques to improve the quality of milled rice, particularly in rice parboiling. Efforts will be made to facilitate access to improved processing technologies and equipment. Educational programmes, promotional activities and demonstrations will be undertaken to encourage the consumption of Ghana Rice:

Key activities under the sub-component include:

- Identify and build capacity of existing AMSECs on business modules and compliment their machinery stock using government mechanization policy
- Develop long-term contract farming programs (out grower programs) between millers and farmers, to secure farmers' sales and millers' supplies, while sharing value generation
- Provide support for the entrepreneurial development of cooperatives/SMEs led by youth and women in the rice value chain in terms of product development and innovations, in order to promote entrepreneurship and job creation
- Improve the financial inclusion of women in the rice value chain (AFAWA)
- Promote B2B and B2C linkages (including national/regional events) to foster business opportunities, mutual trust and vertical/horizontal integration along the value chain

Component 3: Support for Policy and regulatory reforms at national and regional levels, and innovation-oriented regional technical support, for competitive rice value chains in the face of imports. A well-structured policy and regulatory environment is essential for building a competitive and resilient rice value chain, particularly in the face of increasing rice imports. Strengthening regulatory reforms at both national and regional levels ensures that policy frameworks support sustainable production, market efficiency, and private sector investment. This component focuses on policy and regulatory reforms that enhance competitiveness, facilitate harmonization across ECOWAS, and improve the management and monitoring of the rice sector through digital technologies.

Sub-component 3.1: Support to NATIONAL policy and regulatory reforms for rice value chains competitive to imports

At the national level, this sub-component will support policy reforms aimed at enhancing the competitiveness of domestic rice production. It will comprise activities such as:

- Support stakeholder sensitization on National Rice Development Strategy (NRDS) II
- Organize policy dialogues and workshops to discuss issues relevant to the rice sub-sector
- Coordinate activities to ensure synergies among rice stakeholders and projects to boost production, processing, marketing and consumption of Ghana rice

Component 4: Project Coordination and Management

This component provides strategic support for overall project coordination, knowledge management, and operational efficiency to ensure effective planning, implementation, and monitoring of key outputs and outcomes. The project coordination framework is designed to streamline stakeholder engagement, enhance communication, and strengthen alignment with national development priorities.

Key activities under this component include facilitating planning and technical review meetings, supporting the Project Steering Committee (PSC), and ensuring seamless collaboration among stakeholders. The project will also provide essential equipment and materials to support operations, strengthen personnel capacity, and enhance regional technical support for reporting and communication.
Project management will focus on the development of annual work plans and budgets, the establishment of a results-based monitoring and evaluation (M&E) system, and the implementation of periodic studies and consultations to guide decision-making. Additionally, the project will conduct critical assessments, including annual financial and procurement audits, mid-term reviews, beneficiary impact assessments, and project completion reports.

To ensure sustainability and effectiveness, the project will invest in capacity building, strengthen communication strategies, and oversee project launch, monitoring, and evaluation activities. These measures will enhance accountability, improve knowledge dissemination, and support evidence-based decision-making for project success.

Key activities of component 4 will include:

- Strengthen Project management and coordination unit (PCMU) with relevant expertise
- Identify beneficiaries including farmers and other actors
- Develop work plans and budget
- Sensitize key stakeholders and implementing partners about the project and their roles and responsibilities
- Procure office equipment and materials
- Establish M&E systems for results tracking at Regional and National levels, and in line with ECOWAS Rice Observatory (ERO)

- Conduct regular monitoring and evaluation of project activities
- Develop promotional materials (such as video documentaries) for visibility and knowledge management

Project Cost and Financing Arrangement
The total cost of the Project is estimated at US$17.5m

Project target area and beneficiaries
The proposed Project will be implemented in seven (7) Districts within four (4) administrative regions thus Northern, Upper West, Savannah and North-East Regions. The seven (7) districts are: (1) Tamale Metro, (2) Mion (3) Savelugu, (4) Mamprugu Moagduri, (5) West Gonja, (6) Wa Municipal, and (7) Nandom. The valleys will be upgraded with necessary infrastructure, such as water conservation bunds and drains, drying patios and farm access tracks. The Project will target 20,000 beneficiaries with 30% being women and youth.

Project Institutional arrangements
The Executing Agency for the Project will be the Ministry of Food and Agriculture. With the Project being anchored on the Savannah Agriculture Value Chain Development Project (SADEP) financed by the African Development Bank, the same Project Coordination and Management Unit would be engaged for its implementation. The PCMU will be augmented with a required expertise upon assessment, through secondment from the Ministry of Food and Agriculture or a competitive recruitment process. The head of the PCMU, the Project Coordinator reports to the Chief Director of the Ministry of Food and Agriculture.

The Ministry had used a similar arrangement to successfully implement the3 Bank-financed projects such as the Northern Rural Growth Program (NRGP), Export Marketing and Quality Awareness Project (EMQAP), Livestock Development Project and Afram Plains District Agricultural Development Project (APDADP). The Ministry is thus familiar with the Bank's financial management rules, procurement requirements and disbursements procedures.

A National Project Steering Committee (NPSC) is already established under SADEP to provide strategic policy direction and oversight guidance for the project implementation. The core activities shall continue to include implementation of Project strategy, oversee planning, review of progress and impact of implementation, review/approval of annual work plans and budget, annual procurement plans, as well as ensuring effective linkages with related Projects in the agriculture sector. The NPSC membership includes Minister's representative; Director, Policy Planning Monitoring and Evaluation Directorate (PPMED); Director, Animal Production Directorate (APD); Director, Veterinary Services Directorate (VSD); Director, Plant Protection and Regulatory Services Directorate (PPRSD): Representative of the Ministry of Finance; Representative of Northern Development Authority; Regional Director of Agriculture; Poultry Farmer; Livestock Agribusiness Representative; and Project Coordinator as Secretary.

1.2 Objectives of the PMP

The AfDB supports a strategy that promotes the use of pest-control methods, including cultural practices, biological control, genetic control and, as a last resort, chemical means. Where pesticides are used for pest control, the client must develop capacity to select only low-toxicity pesticides that do not pose a threat to human health or the environment, and that will not affect natural pest enemies. As part of the requirements, REWARD will have to manage and dispose of pesticides in accordance with good international industry practice, such as the Food and Agriculture Organization (FAO) International Code of Conduct on the

Distribution and Use of Pesticides. The Client must not use, manufacture or trade in any chemical—including ozone-depleting substances and persistent organic pollutants—for which manufacture, trade or use is banned by an international treaty. The borrower or client must not use pesticides classified as Class Ia (extremely hazardous), Ib (highly hazardous) or II (moderately hazardous). Consequently, the purpose of preparing this PMP for the REWARD is to standardize pest management practices during program implementation in line with national regulatory compliance requirements and the AfDB OS 3 (Resource Efficiency and Pollution Prevention and Management). Part C of the OS 3 provides guidance on pests and vector management.

The specific objectives of the IPMP are to:

- Develop a Pest Management Plan (PMP) by using recommended best-practices;
- Assess the current and anticipate pest problems in the programme areas;
- Evaluate the capacity of the country's regulatory framework and institutions to promote and support safe, effective, socially and environmentally sound integrated pest management and to provide for appropriate institutional capacity support recommendations;
- Ensure compliance with regional standards, laws and regulations; and
- Develop monitoring and evaluation systems for the various pest management practices of the PMP based on the government laws and any existing relevant projects (e.g. the AfDB, FAO, WHO, UNEP etc.).

1.3 Rationale for the PMP

The essence of the PMP is to address concerns of relevant stakeholders with regards to pests and pesticides. It stresses the need to monitor and mitigate negative environmental and social impacts of the Program including the use of pesticides and promote ecosystem management with the human health risk being the underlying principle from seed usage, through planting and growth stage and also post-harvest issues including safe crops for consumption. It emphasizes the need for an integrated approach to the management of pests in line with the nation's policy on IPMP as well as funding agency's requirements on pest management and makes provision for adequate measures to enable REWARD sustain the adoption of IPMP techniques.

1.4 General Approach

The application of pesticides during the REWARD implementation is expected to be a major focus of project activity for the cultivation of rice. An appropriate IPM technique will be incorporated into the project option or intervention to mitigate the need or demand for the use of chemical pesticides for the farmers likely to benefit from the project.

The REWARD will assist and train farmers to be able to develop IPM approaches to the management of pests and diseases. This will be done holistically from seed selection, land preparation, through planting and farm maintenance to harvesting and post harvesting and storage issues. Farmers will be trained and encouraged to make detailed observations in their fields regularly so that they can detect early infestations and make the appropriate management through Agro-Ecosystem Analysis (AESA) as well any digital advisory services available. This will ensure that pest and disease problems do not escape notice and are not allowed to develop to the extent that they cause very severe damage and heavy crop losses. The decision to use chemical pesticides will be taken only as the very last resort.

Pesticide use in general and pest issues amongst downstream project actors or participants (such as farmers, farm assistants, agro-chemical dealers, resellers, Farmer-Based Organisations (FBOs), local communities) has been identified to be very intensive in the project targeted areas from consultation engagements which has to be surveyed regularly by MoFA and environmental specialists. The problem of chemical use without the appropriate knowledge is endemic in the rural areas of these districts.

Downstream program actors will be key in decision making processes with regards to pest management strategies and measures at the project implementation level. Institutions such as the Environmental Protection Agency (EPA), Plant Protection and Regulatory Services Directorate (PPRSD), MoFA - Directorate of Agricultural Extension Services (DAES)/regional officers, well known and trained Non-Governmental Organisations (NGOs) and Farmer-Based Organisations (FBOs) will provide expertise on pest management strategies or measures during the project implementation phase. The need to develop effective collaboration between these institutions to perform this activity have been identified as a major concern during consultations with stakeholders.

1.5 Methodology

In preparation of the Integrated Pest Management (IPM), both primary and secondary data were sourced. IPM has been defined in various ways but a more scientific definition describes it as, "the practical manipulation of pest populations using sound ecological principles to keep pest populations below a level causing economic injury". Consultations with different stakeholders were carried out between April and May 2025, both in-person and virtual to solicit information regarding pest management practices and pest problems for crop production and weed management as well as food storage. During the preparation of this report, specific reports on pesticides use on similar projects were used as key reference documents.

The specific documents included:

1. Review of the AfD Bank project preparation documents including the Project Concept Note (PCN);
2. Review of the AfDB Integrated Safeguard System (ISS), 2023. Prepared by the African Development Bank Group;
3. Government of Ghana - Ministry of Food & Agriculture, Ghana Irrigation Development Authority Feasibility Study of the Accra Plains Irrigation Project ENVIRONMENTAL IMPACT ASSESSMENT Draft Report, September 2009. Prepared by Al Obaid Engineering Consultants, Studi International, Comptran Engineering and Planning Associates;
4. Manual for Safe Use of Pesticides, MoFA/PPRSD-Ghana – Ghana Commercial Agriculture Project (GCAP). Prepared by PPRSD in collaboration with GCAP;
5. Integrated Pest Management Extension Guide 2 Integrated Pest Management Practices for the Production of Cereals and Pulses, MoFA/PPRSD-Ghana with German Development Cooperation (GTZ) by Anthony Youdeowei;
6. Government of Ghana- Ministry of Food and Agriculture, Savannah Agricultural Value Chain Development Programme, Pest Management Plan, Final Report, June 2022
7. Government of Ghana - Ministry of Food & Agriculture, West African Agricultural Transformation Program (WAATP) Pest Management Plan Final Report, June, 2018;
8. Government of Ghana - Ministry of Food & Agriculture, Ghana Commercial Agriculture Project (GCAP) Pest Management Plan Draft Final Report, November 2011. SAL Consult Limited, P. O. Box GP20200, Accra-Ghana;
9. MoFA. 2021. Agriculture in Ghana. Facts and figures. Statistics, Research and Information Directorate (SRID). Ministry of Food and Agriculture. Accra, Ghana;

10. Ghana – Agriculure Sector Policy Note, Transforming Agriculture for Economic Growth, Job Creation and Food Security. The World Bnak Group. IBRD – IDA, Agriculture Global Practice AFR01, June, 2017;
11. MoFA. 2004. Guidelines for the National Plant Protection Policy. PPRSD, July 2004; and
12. Republic of Ghana, Ministry of Food and Agriculture, Food Safety Task Force, World Bank Africa Agriculture and Rural Development (AFTAR), Revised Food Safety Action Plan – Final Draft.

1.6 Structure of the Report

The PMP Report is organised into ten main chapters as follows:

Chapter 1 Introduction;
Chapter 2 Policy, Regulatory and Legal Framework for Pest/Disease Management;
Chapter 3 Environmental and Social Baseline Conditions;
Chapter 4 Stakeholder Engagement and Outcomes;
Chapter 5 Existing and Anticipated Pest and Disease/Management Practices;
Chapter 6 Potential Impacts and Challenges associated with REWARD Interventions;
Chapter 7 Pest and Pesticide Management Action Plan;
Chapter 8 Programme to meet IPMP Requirements;
Chapter 9 PMP Implementation Budget; and
Chapter 10 Conclusion.

2.0 POLICY, REGULATORY AND LEGAL FRAMEWORK FOR PEST/DISEASE MANAGEMENT

Ghana has a number of laws, regulations, policies and plans that promote environmentally friendly pest management practices. Most of these policy and regulatory requirements lay emphasis on the adoption of integrated pest management methods in the agricultural production and processing sector. An assessment on the state of integration of pest management issues in different sectoral and cross-sectoral regulatory frameworks is undertaken in this chapter.

2.1 Policy Framework and Guidelines

Farming in Ghana relies heavly on rain for cultivation. However, there are a number of irrigation schemes developed by the Ghana Irrigation Development Authority (GIDA) across the country. Irrigation systems rely heavily on water and access to water is crucial for human development which is promoting the cultivation of rice on these schemes with anchor farmers also preparing to take advantage in the future. Currently due to the sizes of farms of anchor farmers, almost all REWARD benefiary farmers rely on rain for cultivation. The control of pests and the use of fertilizers are also critical to commercial agricultural production. A number of sectoral policies could impact on the performance and success of the REWARD and the key policies relate to agriculture, land, water, environmental protection, irrigation and pest/pesticide and other supporting activities.

The major national and international policies relevant to this program are captured in **Table 2.1.**

Table 2-1 Major National and International Policies and Guidelines

National Policies (Ghana)	International Policies
• Ghana's Food and Agriculture Sector Development Policy (FASDEP) • Ghana 's Medium Term Agriculture Sector Investment Plan (METASIP) • National Irrigation Policy, Strategies and Regulatory Measures, June 2010 • Guidelines for the National Plant Protection Policy, June 2004 • National Land Policy • National Water Policy, June 2007 • National Environment Policy • Environmental Protection Authority Act, 2025 (Act 1124 • Environmental Assessment Regulations, 1999 (LI 1652) and its Amendment of 2002, (LI1703) • Plants and Fertilizer Act, 2010 (Act 803) • Water Resources Commission Act, 1996 (Act 522) • Food and Drugs Act, 1996 (Act 523)	• AfDB Integrated Safeguard System (OS 3 – Resource Efficiency and Pollution Prevention and Management, Part C). • ECOWAS Regulation on the Harmonization of the Rules Governing Pesticides Registration • International Conventions • Food and Agriculture Organization (FAO) International Code of Conduct on the Distribution and Use of Pesticides • World Bank (WB) Environmental and Social Standards (ESS 3 – Resource Efficiency and Pollution Prevention and Management)

2.1.1 Food and Agriculture Sector Development Policy (FASDEP)

The first FASDEP was developed in 2002 as a framework for the implementation of strategies for the modernization of the agricultural sector. The revised policy, FASDEP II emphasizes the sustainable utilization of all resources and commercialization of activities in the sector with market-driven growth in mind. Enhancement of productivity of the commodity value chain, through the application of science and technology, with emphasis on environmental sustainability. The policy contains policy objective on food security and emergency preparedness to guide the management of pest and disease incidences, and climate change related risks of hazards and disasters affecting agricultural production and productivity.

REWARD, coming after SADP is one such project which seeks to commercialise agriculture using the Anchor Farmer Outgrower Approach as previously also adopted by SAPIP/SIP. The productivity activities under REWARD will therefore follow this policy requirement, hence its relevance to the Project.

2.1.2 Ghana's Medium Term Agriculture Sector Investment Plan (METASIP)

The METASIP developed by GoG was to implement the Food and Agriculture Sector Development Policy (FASDEP II) over the medium term 2011-2015. The plan provides the framework for the agriculture sector to play its role in the national economy in the context of the Ghana Shared Growth and Development Agenda (GSGDA) which is the national programme of economic and social development policies coordinated by the National Development Planning Commission (NDPC). METASIP is also in fulfilment of Ghana's participation in agriculture related initiatives of the Economic Community of West African States (ECOWAS) and the Africa Union Commission (AUC) under the framework of the ECOWAS Agriculture Policy (ECOWAP) and the Comprehensive Africa Agriculture Development Programme (CAADP).

The METASIP comprises the following six programmes which correspond to the FASDEP II and represent Ghana's priorities within the four CAADP Pillars, within the period 2011 - 2015:

- Food security and emergency preparedness
- Improved growth in incomes
- Increased competitiveness and enhanced integration into domestic and international markets
- Sustainable management of land and environment
- Science and technology applied in food and agriculture development
- Enhanced institutional coordination

The Plan has made provision for environmental issues including sustainable management of land and environment under the fourth programme. Some of the interventions planned under the programme to improve the use of improved technology in agriculture include the introduction of improved crop varieties i.e., high yielding, short duration, disease and pest resistance, and nutrient-fortified, as well as advocate for development and enforcement of regulations on the Pesticides Act.

As implemented under SADP, REWARD will engage in the use of improved technology such as no-till planters, boom sprayers, combined harvesters while providing machinery and mechanisation services to enhance the activities of the beneficiary farmers. Building on the successes of SAPIP/SIP and SADP, REWARD will take advantage of the collaboration between the Project and CSIR-SARI and UDS to continue the works on the production of breeder and foundation seeds of the target commodities (maize, rice and soybean) for onward production of certified seeds, among other activities. The maize varieties which were studied under this collaboration (Wang-dataa, Bilihifa and Sanzal-sima) are preferred in the northern Ghana for their earliness, tolerant to drought and Striga resistance. The seed Revolving Fund for the Breeder ad Foundation seeds Production will support the process.

2.1.3 Guidelines for the National Plant Protection Policy, June 2004

This policy was enacted in 2004 with the goal of achieving an efficient system that ensures that crop losses caused by biological, environmental and ecological factors are contained in a sustainable, and economical manner. The thirteen (13) principles underlying the policy include:

1. Capacity building at national, regional and district levels
2. Intra and inter-ministerial collaboration
3. Private sector involvement
4. Partnerships with international development partners
5. Regional and international cooperation
6. Legislation
7. Integrated Pest Management (IPM)
8. Coordination of IPM Activities
9. Contribute to IPM research
10. International trade
11. Planting materials production
12. Compliance
13. Participatory approaches and farmer empowerment

Principles 7, 8, and 9 provide for integrated pest management (IPM) issues. Principle 7 on IPM specifically states that: *promoting Integrated Pest Management (IPM) as the standard plant protection strategy for all crops to effectively reduce crop losses with minimum pesticide use.*

The Plant Protection and Regulatory Services Directorate, PPRSD is the national agency assigned the national mandate to organize, regulate, implement, monitor and coordinate plant protection services needed for sustainable agricultural growth and development.

The PPRSD has adopted the Food and Agriculture Organisation (FAO) definition of pest which is *any form of plant or animal life or any pathogenic organism that is injurious or potentially injurious to plants, plant products, livestock or people; pests include insects and other arthropods, nematodes, fungi, bacteria, viruses, vertebrates and weeds.*

The selected crop under REWARD which is rice, is susceptible to a number of pest infestations and diseases which could lead to huge economic losses, hence the relevance of the policy to the Project.

2.1.4 National Land Policy

This policy provides for the protection of water bodies and the environment in the long-term national interest under any form of land usage be it for human settlements, industry and commerce, agriculture, forestry and mining. Two key aspects of Section 4.4 (Ensuring Sustainable Land Use) of the Policy relevant to the REWARD project is provided below:

(h) In general, land use involving mining, other extractive industries, mechanised agriculture, cattle ranching, dairy farming and manufacturing industry will have to conform to prescribed environmental conservation principles and guidelines.

(m) All land and water resources development activities must conform to the environmental laws in the country and where Environmental Impact Assessment report is required this must be provided. Environmental protection within the 'polluter pays' principle will be enforced.

2.1.5 National Water Policy, June 2007

This policy was approved in June 2007 with the aim of providing the framework for the sustainable development of water resources in Ghana. As captured in the policy, the overall goal of the policy is to "achieve sustainable development, management and use of Ghana's water resources to improve health and livelihoods, reduce vulnerability while assuring good governance for present and future generations.

There are number of relevant sections of the policy that pertains to the REWARD. Section 2.2.3 focus on Water for Food Security. The key objectives of the section are to:

- Ensure availability of water in sufficient quantity and quality for cultivation of food crops, watering of livestock and sustainable freshwater fisheries to achieve sustainable food security for the country; and
- Ensure availability of water in sufficient quantity and quality to support the functions of the eco-systems in providing alternative livelihoods.

Relevant policy measures to be undertaken which are in conformity with the REWARD include:

- Policy measure iii - promote partnership between the public and the private sector in the provision of large commercial irrigation infrastructure taking into consideration effects on economy, culture, environment and health;
- Policy measure iv - encourage the efficient use of fertilizers to reduce pollution of water bodies and ensure conservation of water;
- Policy measure v - promote and encourage water use efficiency techniques in agriculture and reduce transmission losses of water in irrigation systems; and
- Policy measure vi - manage land use and control land degradation, including bush fires, to reduce soil loss and situation of water bodies.

Even though the policy is silent on the use of pests or pesticides, water quality concerns are cited in many instances in the policy document which could generally encompass pollution concerns not only from fertilizers but also from pesticides as well.

2.1.6 National Environment Policy/Action Plans

The main objective of this policy is to ensure sustainability by ensuring a sound management of resources and the environment, and to avoid any exploitation of these resources in a manner that might cause irreparable damage to the environment. The policy provides for maintenance of ecosystems and ecological processes essential for the functioning of the biosphere, sound management of natural resources and the environment, and protection of humans, animals and plants and their habitats. The policy objectives seem to be clearly in line with integrated pest management principles.

2.1.7 African Development Bank Integrated Safeguard System (ISS)

The Integrated Safeguards System developed in December 2013 as a Policy Statement and Operational Safeguards for the African Development Bank Group under its Safeguards and Sustainability Series provides an indication on the effective and sustainable solutions the Bank promotes to address the challenges of environmental and social issues.

REWARD is classified category 1 according to the environmental assessment regulations 1999 of Ghana and the AfDB Integrated Safeguard System (ISS) requirements. The activities envisaged in the project present an environmental and social risk considered high. The target areas for implementation are also

classified as environmentally sensitive areas according to the Ghana environmental assessment regulations (1999) schedule 5 (Regulation 30 (2)).
Projects supported by the Bank should meet the requirements of all the following E&S OSs, as applicable:
OS 1: Assessment and Management of Environmental and Social Risks and Impacts
OS 2: Labour and Working Conditions
OS 3: Resources Efficiency and Pollution Prevention and Management
OS 4: Community Health, Safety, and Security
OS 5: Land Acquisition, Restrictions on Access to land and land use, and Involuntary Resettlement
OS 6: Habitat and Biodiversity Conservation, and Sustainable Management of living Natural Resources
OS 7: Vulnerable Group
OS 8: Cultural Heritage
OS 9: Financial Intermediaries
OS 10: Stakeholder Engagement and Information Disclosure.

The OSs are designed to help Borrowers to manage the risks and impacts of their projects, and improve their E&S performance through a risk- and outcomes-based approach. The desired outcomes are described in the objectives of each OS, followed by specific requirements to help Borrowers achieve these objectives through the means that are appropriate to the nature and scale of the project, and proportionate to the level of E&S risks and impacts.
The development of the agricultural production, storage and processing could lead to the risk of increase use of pesticides and chemical fertilizers, with a risk of soil and water pollution, a risk on the health of farmers which triggers OS 3 of the AfDB's ISS.

Operational Safeguard 3: Resource Efficiency and Pollution Prevention and Management (Part C)
OS 3 recognizes that economic activities often cause air, water, and land pollution, and consume finite resources that may threaten people, ecosystem services, and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHGs) threatens the welfare of current and future generations. In addition, more efficient and effective resource use, pollution prevention, and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable.

Part C provides guidance on Pests and Vector Management. Where projects involve recourse to pest management measures, the Borrower shall give preference to integrated pest management (IPM) or integrated vector management (IVM) approaches using combined or multiple methods. The environmentally safe procurements, distribution, storage, use, and disposal of pesticides and their packaging are to be considered with respect to this OS as well as OS1, 2, and 4.

In the procurement of any pesticide, the Borrower shall assess the nature and degree of associated risks, taking into account the proposed use and the intended users.

The Borrower shall not use any pesticides or pesticide products or formulations unless it is in compliance with the EHSGs. In addition, the Borrower shall also not use any pesticide products that contain active ingredients that are restricted under national law, applicable international conventions or their protocols, or that are listed in, or meet the criteria of, their annexes, unless for an acceptable purpose as defined by such conventions, their protocols or annexes, or if an exemption has been obtained by the Borrower under such conventions, their protocol or annexes, consistent with Borrower commitments under these and other applicable international agreements. The Borrower shall also not use any formulated pesticide

products that meet the criteria of carcinogenicity, mutagenicity, or reproductive toxicity as set forth by relevant international agencies.

For any other pesticide products that pose other potentially serious risk to human health or the environment and that are identified in internationally recognized classification and labelling systems, the Borrower shall not use pesticide formulations of products if: (i) the country lacks restrictions on their distribution, management, and use; or (ii) they are likely to be used by, or be accessible to, lay personnel, farmers, or others without training, equipment, and facilities to handle, store, and apply the products properly.

The following additional criteria apply to the selection and use of such pesticides: (i) they have negligible adverse human health effects; (ii) they are shown to be effective against the target species; and (iii) they have minimal effect on non-target species and the natural environment. The methods, timing, and frequency of pesticide application are aimed to minimize damage to natural enemies. Pesticides used in public health programmes will be demonstrated to be safe for inhabitants and domestic animals in the treated areas, as well as for personnel applying them; (iv) their use will take into account the need to prevent the development of resistance in pests; and (v) where registration is required, all pesticides will be registered or otherwise authorized for use on the crops and livestock, or for the use patterns, for which they are intended under the project

2.2 Regulatory Framework

2.2.1 National Laws

The Government of Ghana (GoG) has over the years developed some legislations and institutional framework to govern environmental pollution, plant protection, irrigation, and pest and pesticide management. The aspects of the law that pertains to REWARD are provided in the **Table 2.2** below:

Table 2-2: Legislations/environmental pollution, plant protection, irrigation, and pest and pesticide management

National Law	Relevancy to REWARD
Environmental Protection Act, 2025 (Act 1124)	This Act which repeals and replaces the Act, 1994 (Act 490) seeks to strengthen the legal framework for environmental protection in Ghana. The Act specifies the guidelines and rules guiding the dealing with distribution, use and disposal of pesticides in Ghana. The act aims at controlling the volumes, types, components, wastes effects or other sources of pollution elements or substances that are potentially dangerous for the quality of life, human health and the environment. Part II of the Act 1124 specifically deals with pesticides control and management. This section of the Act provides the rules for registration, pesticides classification, approval, clearance, using, disposing of and non-disclosure of confidential information, the granting of license, labelling and pesticides inspections.
Environmental Assessment Regulations, 1999 (LI 1652) and its Amendment of 2002, (LI1703)	The regulation makes an environmental assessment mandatory as part of project implementation and permit acquisition process. The Regulations describe the procedures to be followed to obtain permits for both existing and proposed undertakings through the conduct of environmental impact assessments and preparation of environmental management plans. The

National Law	Relevancy to REWARD
	Environmental Assessment (Amendment) Regulations 2002, LI 1703 establishes the charges to be taken by the EPA for review and issuance of a Permit.
Plants and Fertilizer Act, 2010 (Act 803)	The Act combines the Seed Inspection and Certification Decree, NRCD 100 of 1972 and the Prevention & Control of Pests and Diseases of Plants Act of 1965, Act 307. The Act provides for the efficient conduct of plant protection to prevent the introduction and spread of pests and diseases to regulate imports and exports of plants and planting materials; the regulation and monitoring of the exports, imports and commercial transaction in seeds and related matters; and control and regulation of fertilizer trade.
Water Resources Commission Act, 1996 (Act 522)	The Act conferred on the Water Resource Commission (WRC) the mandate to regulate and control the use of water resources through granting of water rights and water use permits. The Water Use Regulations, (L.I.1692) provides the procedure for allocating permits for various water uses including domestic, commercial, municipal, industrial, agricultural, power generation, water transport, fisheries (aqua culture), and recreational.
Food and Drugs Act, 1996 (Act 523)	Section 13 of the Act deals with prohibition on disposal of chemical substances and it states that: *A person commits an offence if that person uses or disposes of a chemical substance in a manner likely to cause* (a) *contamination of food or water for human or animal consumption, or* (b) *injury to, or be dangerous to the health of a person or an animal.* The Act defines a chemical substance to include an insecticide, rodenticide and a pesticide. It stipulates that "chemical substance" means a substance or mixture of substances prepared, sold or represented for use as: (a) a germicide, (b) an antiseptic, (c) a disinfectant, (d) a pesticide, (e) an insecticide, (f) a rodenticide, (g) a vermicide, or (h)a detergent, or any other substance or mixture of substances declared by the Minister, after consultation with the Board, to be a chemical substance.

2.2.2 Some key International Conventions

Ghana is a signatory to many conventions on the protection of the environment, which have relevance to the PMP. Some of these conventions ratified by Ghana pertaining to REWARD include:

- International Code of Conduct for the distribution and use of FAO pesticides. AfDB also recommend the use of this Code.
- The Basel International Convention on the Transboundary Movement of Hazardous Waste of March 22, 1989;
- Convention concerning protection against the risks of poisoning due to benzene, adopted in Geneva in 1971;
- The Rotterdam Convention on Prior Information and Contentment Principle (PIC)
- Bamako Convention on the Prohibition of the Import into Africa of Hazardous Wastes and on the Control of Transboundary Movements and the Management of Hazardous Wastes Produced in Africa, adopted in Bamako on 31 January 1991;

- The Basel Convention on Persistent Organic Pollutants (POPs), adopted in Stockholm 22 May 2001;
- International Standards for Phytosanitary Measures (ISPM) FAO;
- The Montreal Protocol on Substances that Deplete the Ozone Layer, adopted on 16 September 1987;
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, adopted on 10 September 1998;
- Vienna Convention for the Protection of the Ozone Layer, adopted on 22 March 1985;
- International Plant Protection Convention adopted on 6 December 1951 and entered into force on 4 April 1991.
- Ramsar Convention on Wetlands for Wetlands of International Importance, adopted on February 2, 1971 and entered into force in 1972.

2.2.3 Regulatory Activities at ECOWAS level

Members of the ECOWAS countries joined the process of harmonization of the rules defining the accreditation of pesticides in the ECOWAS region in 2005. A regulation was subsequently issued in 2008 after several regional validation workshops. The purpose of this Common Regulatory C / REG.3 / 05/2008 harmonizing the rules governing the registration of pesticides in the ECOWAS region is, in particular, to:

- Protect the people and the West African environment against the potential dangers of pesticide use;
- Facilitate intra and inter-state trade in pesticides, through the establishment of mutually agreed rules and principles at the regional level to dismantle trade barriers;
- Facilitate convenient and timely access to quality pesticides for farmers. This regulation applies to all activities involving experimentation, as well as authorization, trade, use and control of pesticides and bio-pesticides in the Member States.

Ghana, although a stakeholder in the consultations on the harmonization process, is yet to implement this regulatory requirement for pesticides registration.

2.3 Administrative and Institutional Capacity

Ghana has put in place the necessary national framework for the control and management of pest and pesticides in the country with institutions such as the Environmental Protection Authority (EPA), Plant Protection and Regulatory Services Directorate (PPRSD), Ghana Standard Authority (GSA), Food and Drugs Authority (FDA) etc. as the leading coordinating bodies. The EPA has the responsibility of monitoring and coordinating activities of all the institutions in pest management. However, this responsibility has been delegated to the PPRSD of MoFA which is more at the consumption level of pesticide use in Ghana. EPA focus more on the importation of chemical, permitting for the sale of pesticides and the listing of registered and banned pesticides. The need for institutions to collaborate is necessary for a successful implementation of the IPMP. It is imperative for the Project coordinating Unit (PCU) of the REWARD project to collaborate with other supporting institutions, to appropriately utilize the capacity within the institutions to deploy or use the IPMP as an important portion of the safeguards instruments developed for the REWARD project, necessary for accomplishing environmental and pest management goals. Some of these key national institutions responsible for the safe management of agro-chemicals and its related matters are represented below:

Environmental Protection Authority (EPA)

The EPA is a regulatory body under the Ministry of Environment, Science and Technology (MEST) with the oversight responsibility for pest management and control and it has the following prerogatives:

- The registration of pesticides
- The limitation or banning of the use of a pesticide if necessary
- The granting of licences to all categories of pesticides' resellers
- The levying of penalties.

The Chemical Control and Management Centre (CCMC) of the EPA is responsible for pesticides control and management. It has offices in all regions as well as three district offices. The Agency periodically provides a list of registered pesticides and banned pesticides for public consumption. The recent list is provided in Annex 1**.** The list is periodically updated and there is the need to liaise with the agency for any updates during project implementation.

The Pesticide Technical Committee (PTC) is a committee of the EPA Board. It is the organ of approval of pesticides and they meet quarterly. The committee consists of 13 members drawn from relevant institutions with expertise in pesticide management. The institution includes:

- The Chemistry Department of the National Nuclear Research Institute (NNRI) of the Ghana Atomic Energy Commission (GAEC);
- Plant Protection and Regulatory Services Directorate of the Ministry of Food and Agriculture;
- Ministry of Health;
- Ghana Standards Authority;
- Ghana Revenue Authority/Customs Division;
- Association of Ghana Industries;
- Ghana National Association of Farmers and Fishermen;
- Ministry of Lands and Forestry;
- Ministry of Environment, Science and Technology (MEST) through the Environmental Protection Authority (EPA).

Consultation with EPA and PPRSD revealed that the use of chemical in the REWARD target areas is very intensive especially in the rural /hinterland. Some pesticides are smuggled into the country through the boarder communities such as Bimbilla and Tatali areas of the Northern Region (NR). Most of these chemicals smuggled are unregistered. The monitoring of this activity is challenging mainly due to the lack of adequate staff in the EPA Offices to cover every area of the Regions regularly and the weak collaboration with other relevant stakeholders such as Customs Division (CD) of the Ghana Revenue Authority (GRA), PPRSD and the Police services. They also identified post registration management is a key challenge and will need support in that regard to enforce the regulation on pesticides.

The Ghana Standards Authority (GSA)

The GSA is a regulatory body under the Ministry of Trade and Industry (MoTI) with the full responsibility of ensuring the quality of the infrastructure including the Metrology, Standards, Assessment/Test and Quality control (MSTQ). It ensures goods and services are of acceptable quality for both local and international consumers. The Authority makes routine analyses of pesticides residues in fruits and vegetables in order to facilitate the exportations of these products and also protect the public health and ensure safety.

The GSA has offices across the country. GSA has been supported by the World Bank-funded Agriculture Services Sub-Sector Investment Programme (AgSSIP) and United Nation Industrial Development

Organisation (UNIDO) to bring its Maximum Residue Limit (MRL) analysis capacity up to ISO 17025 requirements.

The Food and Drugs Authority (FDA)

The FDA is a regulatory agency under the Ministry of Health responsible for ensuring that any activity concerning chemicals be registered including, pesticides. Section 18 of law 3058 stipulates that no person will be allowed to manufacture, prepare, sell, export or import any type of chemical product unless the product has been primarily registered with the FDA. According to the above-mentioned provision (supply) no product can be imported into Ghana without its prior registration by the FDA, and the appropriate fees paid. The word "chemical product" is however, defined according to the law to include germicide, pesticide, insecticide, rodenticide among others. By this law, the FDA is authorized at any normal hour to inspect any container or package, and if they suspect it to contain any type of pesticide, they are also vested with the authority to seize such products. The FDA has offices across the country.

The Customs Division (CD) of the Ghana Revenue Authority (GRA)

The Customs Division (CD) of the Ghana Revenue Authority (GRA) is a regulatory body under the Ministry of Finance and Economic Planning and works in close collaboration with the EPA and PPRSD, and reviews the EPA documents, certificates and licenses to make sure they concern the importation of approved chemicals, meat and agrochemical products. The importation reports of chemical products are submitted by the CD to the EPA on a quarterly basis. The CD staff are members to the various technical committees of the EPA including the hazardous waste committee, the pesticide technical committee and other related projects undertaken by the EPA. The Customs Excise and Preventive Services (CEPS) is a member of the national coordination team of the Convention of Stockholm on Persistent Organic Pollutants (POPs).

Ministry of Food and Agriculture (MoFA) - Plant Protection and Regulatory Services Directorate (PPRSD)

The Ministry of Food and Agriculture (MoFA) is the lead agency responsible for the agricultural sector within the context of a coordinated Government Programme. To carry out its function, plans and programmes are coordinated through policy and strategy frameworks. The Ministry is responsible for the regulation of pesticides use in the country. The Plant Protection and Regulatory Services Directorate (PPRSD) of MoFA was established in 1965 by an Act of Parliament: Prevention and Control of Pests and Diseases of Plants Act of 1965 (Act 307) now replaced by "Plants and Fertilizer Act, 2010 (Act 803).

The PPRSD as one of the Technical Directorates of MoFA, is the national institution with the mandate and capacity to organize, regulate, implement and coordinate the plant protection services (including pest management and pesticide use) needed for the country in support of sustainable growth and development of agriculture.

The PPRSD has its headquarters in Pokuase near Accra and there are also regional officers in all the regions of the country. It is also represented at the main entry and exit points throughout the country. It is not directly represented at the district level however; it collaborates with the district MoFA offices to carry out its functions at that level. The PPRSD is divided into four main Divisions and these include:

- Crop Pests & Disease Management Division: The division develops Good Agricultural Practices (GAPs), guidelines for Integrated Pest Management (IPM) of food crops. The division also provides information on pests and disease situation. The division also carries out training in GAPs and provides comprehensive diagnostic and identification services of plant pests and diseases for stakeholders, monitors the pest situation in the country, ensures effective control of plant pests, manages calamity pest outbreaks (e.g. armyworms, grasshoppers etc), and carries out classical bio-

control measures (mass rearing and release of bio-agents), and serves as secretariat for National Fruit Fly Management Committee and National IPM programme.

- Pesticide and Fertilizer Regulatory Division: The Division supervises and trains Regulatory Inspectors, publishes information materials, registers and trains pesticides and fertilizer dealers and applicators, keeps records as well as statistics of pesticides and fertilizers and manages pesticide and fertilizer stocks in the country. It supervises bio-efficacy trials carried out by research.
- Ghana Seed Inspection Division: The division is responsible for seed certification. Services provided are indicated in Table 2.3 below:

Table 2-3: Services provided by the Ghana Seed Inspection Division

Type	**Service**
Seed growers	▪ Registration of Seed Growers ▪ Monitoring of seed and planting material production of crop species ▪ Certification of Foundation and Certified Seeds and also Primary and Secondary planting materials. ▪ Training of major stakeholders (Seed Inspectors, Registered Seed Growers, Seed Dealers, Extension Staff of MoFA and NGO's etc) ▪ Facilitation of promotional activities in the seed industry.
Seed dealers	▪ Registration of Seed Dealers ▪ Monitoring of Seed Dealers' outlets
Seed importers and exporters	▪ Registration of importers ▪ Monitoring of importers' outlets ▪ Registration of exporters ▪ Monitoring of exporters' outlets
Farmers	▪ Education and awareness creation on the benefits of utilization of certified seed/planting materials

National Seed Testing Laboratory (NSTL)

The facility carries out seed sampling and seed quality tests such as moisture, purity, germination and health before seeds are certified for distribution and marketing. The laboratory is yet to be accredited by the International Seed Testing Association (ISTA). The facility is located at Pokuase near Accra.

Table 2.4: Services provided by National Seed Testing Laboratory (NSTL)

Seed growers	Seed growers are expected to contact the nearest regional agricultural office and register with the regional/zonal seed coordinator. All the locations of seed fields must be declared at the time of registration for monitoring and field inspection. Registration of seed growers is for two years and renewed annually.
Seed dealers	Seed dealers are also registered at the nearest regional agricultural office by the regional/zonal seed coordinator to qualify as a seed dealer. All dealer outlets are expected to be declared at the time of registration for monitoring. Registration is for two years and renewed annually
Seed importer	Seed importers are also required to register with the regional/zonal seed coordinator at the nearest regional agricultural office. Registration is for two years and renewable annually. All outlets of the importer must be declared at the time of registration for monitoring. Seeds imported into the country must be declared to the quarantine officers at the entry point and must be accompanied with an international

	certificate such as ISTA certificate or its equivalent along with phytosanitary and other relevant certificates.
Seed exporters	To become a seed exporter in Ghana, one needs to register with the regional/zonal seed coordinator at the nearest regional agricultural office. Registration is for two years and renewable annually. All outlets of the exporter must be declared at the time of registration for monitoring. Seed exporters must obtain an international certificate (Orange International Certificate of ISTA) from the National Seed Testing Laboratory (NSTL) along with phytosanitary and other relevant certificates before exportation.

The Project consideration to rehabilitate and install equipment at the Tamale Seed centre will help seed producers in the Project target area to enhance their capacity to process more volumes of seed to the required standard.

Plant Quarantine Division

This division of PPRSD works closely with the Customs Division of GRA at all the official entry points. It supervises and trains Phytosanitary Inspectors, develops and publishes information material, keeps records of plant imports and exports, identity of the importers and exporters, as well as the pests and diseases of quarantine importance. It issues phytosanitary certificates and import permits according to the International Plant Protection Convention (IPPC) format. It inspects plant materials and makes sure they are free from pests. It also operates the National Sanitary and Phytosanitary Enquiry Point. The division also carries out inspection on marketing quality standards on fresh fruits and vegetables for export. The Division implements relevant International Standards for Phytosanitary Measures (ISPMs).

<u>Directorate of Crop Services (DCS) of MoFA</u>

The Directorate is responsible for the following among other things:

- Ensuring that there are planting materials (seeds) in adequate quantities at affordable prices and at appropriate times and places.
- Promoting the production of food, industrial and export crops in the country.
- Monitoring the development of the crop sub sector.
- Facilitating the capacity building of staff in the districts.
- Providing technical advice to the public on all crops within our mandate.
- Promoting the sustainable use of soil and water resources for agricultural production.
- Recommending issuance of permits and waivers for the importation of agricultural materials for the crops sub-sector/industry.
- Sourcing, soliciting, and analyzing information for the crop sub sector development.

The Environment, Land and Water Management Unit of the DCS is directly responsible for environmental management and monitoring issues. The directorate collaborates with other institutions particularly PPRSD to provide improve seeds that could withstand harsh weather conditions and pesticides. The directorate identified the Fall Army worm the biggest challenge to the crop sector, however, interventions by government and other international donor support has helped curb the situation and farmers have been equipped with the necessary knowledge and skills in dealing with the pest.

<u>Directorate of Agricultural Extension Services (DAES) of MoFA</u>

The DAES is responsible for overseeing agricultural technology diffusion through the management of an extension delivery service in the country. Its mission is to work with the regional and district Departments of Agriculture and other stakeholders to ensure that extension services are carried out in an effective and

efficient way towards the social and economic development of Ghana. However, lack of logistical support has hindered the performance of the directorate as highlighted by the director during an engagement as part of the preparation of this PMP.

DAES is tasked to perform the following functions:

- Extension policy formulation and planning.
- Review various extension approaches, framework document on Research Extension Linkage Committees (RELCs), FBOs and private service providers in extension to improve on extension service delivery.
- Facilitate human resource development at all levels in extension delivery.
- Coordinate extension activities.
- Collaborate with a range of organisations/ agencies including NGOs, private service providers and public organisations in providing extension service.
- Disseminate information on appropriate approaches to all extension service providers.
- Coordinate the establishment of community field demonstrations on released technologies responding to beneficiary needs.
- Develop efficient extension methodologies including Farmers Field Schools, Study tours for field officers and farmers, and Field Days.
- Promote released technologies through various information systems and communications media to improve awareness of technologies.

Women in Agricultural Development (WIAD) - MoFA

This Directorate is one of the seven Technical Directorates of MoFA. Its functions are to promote:

- Food based nutrition education in relation to food production and diet improvement;
- Value addition to agricultural produce, food processing and preservation;
- Food safety;
- Natural Resource management (farm, home, processing site); and
- Gender mainstreaming of all agricultural policies, programs and projects.

The National Information Centre on Poisons

The National Information Centre on Poisons is located at the Ridge Hospital in Accra and has the following functions:

- Help health professionals in making diagnostics and managing intoxications by chemicals (including POPs), toxins, venons and drugs.
- Provide information to health professionals on the toxic effects of poisons.
- Provide information to the public on prevention and the management of first aid in case of acute intoxication.
- Train the public on the devastating effects of chemicals on the environment.
- Provide toxicological surveillance through the collection of data on chemical induced incidents, exposure and poisoning.
- Organise training sessions on the prevention and management of cases of intoxication for public health inspectors and all authorized agents such as PPRSD.

Currently, Ghana has one Poison Control Centre located at Ridge Hospital in Accra. However, the centre has only one well qualified staff. Furthermore, there is the need to establish a well-equipped laboratory and provide other logistical support such as computers and modern equipment to enhance their operations.

These laboratories operate according to different methodologies, in the search for residues, pests / disease and analysis of pesticides, at different levels of use, in water, soil and planting material / seed and animals.

Phytosanitary products manufacturing companies

Phytosanitary products marketed in Ghana are either imported or formulated or packaged by approved companies as distributors in Accra and other cities in the country (Bayer Cropscience SA, Winca Sunshine Agrochemicals, Calli Ghana, Louis Dreyfus Ghana Limited, etc.).

Agricultural Professional Organizations and Civil Society

These organizations are groups of cooperative farmers or Non-Governmental Organisations (NGOs) for the direct acquisition of pesticides from importers or distributors.

Ghana National Association of Famers and Fishermen (GNAFF)

The Ghana National Association of Farmers and Fishermen is the umbrella organization which seeks the welfare of all member farmers involved in rural agricultural production. It is made up of commodity groups (crops, livestock and fisheries. GNAFF was established in 1992 and has over 1,000 employees. Its mission is to:

- facilitate procurement of agricultural inputs (fertilizers, pesticides) and also marketing of members' agricultural produce,
- organize training programmes and commodity group visits for exposure among others.

Ecological Restorations Ghana

Ecological Restorations (ER) carries out advocacy, raises awareness and builds capacity on environmental issues including sound management of chemicals including pesticides. These organizations collaborate as part of their activities with a number of stakeholders including professionals in the phytosanitary sector.

Professionals in the Phytosanitary Sector

There are three (3) main professional pesticide associations in Ghana:

- CropLife Ghana;
- Ghana Agri Input Dealers Association (GAIDA); and
- Pesticides Importers Association.

Crop Life - Ghana is the association of agrochemical importers and distributors in Ghana. The association is affiliated with Crop Life Africa Middle East (CLAME). It is currently made up of 16 major agrochemical companies in Ghana and counting. Crop Life Ghana controls about 90% of the fertilizer market as well as about 75% of the pesticide market in Ghana (Annex 2; statistics on fertilizer imports and exports). It is committed to sustainable agriculture through innovative research and technology in the areas of crop protection, non-agricultural pest control, seeds, and plant biotechnology. The key activities of Crop life Ghana:

- promoting responsible uses (RU) and effective handling of Crop Protection Products (CPPs) through effective stewardship programs;
- organizing training programs for both members and stakeholders in the industry; and
- supporting the regulatory agencies in the formulation of policies on pesticide usage, regulation and inspection.

Ghana Agri Input Dealers Association (GAIDA) and Pesticides Importers Association (PIA) are national bodies of agricultural input dealers in Ghana. Their mission is to provide services and training for Agri-

Input Dealers in Ghana for the Development of competitive agri-input market. CropLife-Ghana, GAIDA and PIA are trade union chambers that aim to implement the FAO Code of Conduct.

In the context of Ghanaian law, they constitute effective professional groups with administrative and political authorities. CropLife-Ghana, GAIDA and PIA are considered by the Public Administration as the privileged interlocutors in the phytosanitary profession.

Beside these organisations, there are also various farmers' associations including the Ghana Federation of Agriculture Producers (GFAP), established in 2009. The federation operates with a council made up of representatives of four Farmer Based Organisations (FBOs) - the Apex Farmers Organisation of Ghana (APFOG), Farmers Organisation of Ghana (FONG), Peasant Farmers Association of Ghana (PFAG and the Ghana National Association of Farmers and Fishermen (GNAFF). Integration of these different groups under one federation is much better. Others such as the Vegetable Producers Exporters Association of Ghana (VEPEAG), Ghana Agricultural Associations' Business and Information Centre (GAABIC) and the Seed Producers Association of Ghana (SEEDPAG) also exist to take care of members' interest. With regards to livestock, the Ghana National Association of Poultry Farmers (GNAPF) is the umbrella body of the poultry sectors with branches across the various regions of the country.

These organizations take care of members' interest and support members to meet the requirements of EPA/PPRSD. All institutions require training support and education of members on statutory obligations and requirements with regard to pesticide trading, use and control.

Distributors and Carriers
Carriers are involved in the distribution of pesticides in Ghana. Generally, these particular actors are found in the sector because of the financial benefits they can draw without being professionals in the sector of phytosanitary products.

Resellers or Distributors
This group is the intermediary between the manufacturing companies and the users who are farmers, a very important link in the sector because of their role in the transport of phytosanitary products, even in villages and camps.

Pesticide Users
It is the farmers who will benefit from the training actions of the national initiatives. These farmers are mainly men, but also women and young people. Users of pesticides include approved applicators who are part of the chain of professionals in the phytosanitary sector.

Agricultural Extension Dissemination
Technology dissemination at the district level is undertaken by trained Agricultural Extension Agents (AEAs) of MoFA. However, there are challenges with inadequate number of extension agents resulting in high extension agents-farmers' ratio of 1:2192 (DAES, 2017). Recently, government-remunerated extension officers have increased to 4,286 pegged at 1:765 as at 2019 (Table 6). This is still short of the ideal situation of 1:500.

It must also be emphasized that there are also private initiatives and NGOs involved in agricultural advisory services and support to farmers under the private sector (Private Sector Extension Service Providers). Key among them include:

- CARE International;

- Agricultural Development and Value Chain Enhancement Program (ADVANCE);
- International Fertilizer Development Centre (IFDC); and
- Alliance for Green Revolution in Africa (AGRA).

Most of these private sector entities engage in the distribution of fertilizers and pesticides to farmers to enhance crop yields.

Table 2-4: National Summary of AEAs Status

No	Regions	Number of Newly Recruited Officers at Post from 2018 to Date			Number of AEAs @ Post			Number of VET-AEAs @ Post			Total AEAs @ Post		
		M	*F*	*T*	*M*	*F*	*T*	*M*	*F*	*T*	*M*	*F*	*T*
1	Ahafo	44	17	**61**	58	17	**75**	13	5	**18**	115	39	154
2	Ashanti	209	75	**284**	327	98	**425**	59	20	**79**	595	193	788
3	Bono	100	17	**117**	130	31	**161**	24	12	**36**	254	60	314
4	Bono East	69	9	**78**	74	7	**81**	30	6	**36**	173	22	195
5	Central	95	14	**109**	156	40	**196**	43	12	**55**	294	66	360
6	Eastern	151	24	**175**	244	44	**288**	56	14	**70**	451	82	533
7	Greater Accra	86	48	**134**	98	60	**158**	8	4	**12**	192	112	304
8	North East	57	4	**61**	57	6	**63**	27		**27**	141	10	151
9	Northern	138	25	**163**	137	15	**152**	50	24	**74**	325	64	389
10	Oti Region	35	4	**39**	47	4	**51**	17	1	**18**	99	9	108
11	Savannah	60	5	**65**	58	5	**63**	26	3	**29**	144	13	157
12	Upper East	123	19	**142**	85	59	**144**	0	0	**-**	208	78	286
13	Upper West	93	18	**111**	100	17	**117**	37	13	**50**	230	48	278
14	Volta	61	14	**75**	103	17	**120**	27	6	**33**	191	37	228
15	Western North	46	**7**	**53**	42	4	**46**	**16**	**0**	**16**	104	11	115
16	Western	60	9	**69**	80	11	**91**	33	6	**39**	173	26	199
	TOTAL	**1,427**	**309**	**1,736**	**1,796**	**435**	**2,231**	**466**	**126**	**592**	**3,689**	**870**	**4,559**

Source: Directorate of Agricultural Extension Services – MoFA - December 2021

Research Institutions

Academic and research institutions in Ghana continuously play a vital role in developing IPM strategies on pests for several commodities including maize, cowpea, mangoes, lemon, rice, cucumber, cotton etc. In addition, development of alternative management systems for use in communities practicing urban related agriculture, IPM Kit development, demonstration and transfer of technology in IPM have been carried severally. Nevertheless, full adoption has not been very widespread despite the efforts undertaken. The use of pesticides is increasing despite the high cost of the products relative to the financial capacity of majority of farmers. One of such major research institutions is the Council for Scientific and Industrial Research (CSIR).

The CSIR is the foremost national science and technology institution in Ghana. It is mandated to carry out scientific and technological research for national development. The Council was established by NLC

Decree 293 of 10th October 1968 and re-established by CSIR Act 521 of 26th November 1996. The Council, however, traces its ancestry to the erstwhile National Research Council (NRC), which was established by the Research Act 21 of August 1958, a little over a year after independence, to organize and co-ordinate scientific research in Ghana and provides the necessary platform for Ghana's accelerated development.

The council is mandated to pursue, among others, the implementation of government policies on scientific research and development, coordinate Research and Development (R&D) activities and other Scientific & Technical (S&T) institutions nationwide and assist the government in the formulation of S&T policies for national development. The CSIR is further required to commercialize appropriate technologies, in partnership with the private sector and other stakeholders, and encourage in the national interest, scientific and industrial research of importance for the development of agriculture, health, medicine, environment, technology and other service sectors of the economy. The council has 13 institutes under its umbrella with offices across the regions in the country. The institutes which activities are directly linked to pesticide use and management in the agricultural sector include but not limited to the CSIR-Crops Research Institute (CRI), CSIR-Savannah Agricultural Research Institute (SARI) and the CSIR-Animal Research Institute, CSIR-Plant Genetic Resource Research Institute (PGRRI) etc.

2.3.1 Regulatory and Institutional Gap Analysis

2.3.1.1 Legislative and regulatory Gap

The enactment of laws and policies particularly the Environmental Protection Act of 2025 (Act 1124 by Government of Ghana shows government commitment towards the sound management of pesticides. Consequently, the EPA has established a pesticide management scheme, which involves the management of pesticides from cradle to grave. However, challenges still exist with regards to effective implementation of the established laws and policies. This has been attributed to the absence of a full complement of relevant regulations to give effect to some of the provisions of the law. There is therefore the need to address the gap in the legal framework and other legislative inadequacies by reviewing and enacting the relevant regulations to enhance compliance.

2.3.1.2 Institutional Capacity Gaps

The implementation and enforcement of the established policies and laws have been hindered as a result of low human and institutional capacity. Institutions involved with pesticides regulation or management do have experts with the necessary qualifications. However, issues of institutional concerns include:

- Inadequate experts to handle the enormity of the task involved. For instance, there were only 9 PPRSD staff in the then 3 Northern Region up until 2019 where a new batch of Agriculture officers were recruited into the unit. These newly recruits will need some years of practice to enhance their expertise in the area of pests and disease management.
- Remuneration and motivation in most state institutions for experts are so poor while majority of these experts are often poached by foreign and private organisations to leave the government sector.
- Lack of personnel is exacerbated by the absence of other resources like logistics and funds to carry out post registration and licensing monitoring activities on pesticides. For instance, the EPA is in the process of establishing a pesticide quality control laboratory. The laboratory requires equipment and accreditation to be fully operational. The EPA has the limitations of both the financial and human resources to handle the demands of the laboratory. In effect, the EPA and all the identified institutions be it in research, regulation, awareness or others would require financial support and institutional capacity to be effective in dealing with pesticides. Thus, the REWARD project should support the

establishment and operation of an efficient working laboratory for pesticide, water quality and other environmental pollution analysis. There are also gaps with regards to the extension capacity of IPM approaches and methods. The current agricultural extension agent (AEA) to farmer ratio is high which makes difficult for farmers to access AEA for services. An extension officer resourced with the necessary transportation logistics and equipment, is responsible for over 2000 farmers. However, engagements with selected stakeholder groups reveals that the current farmer to farmer ratio is 1:2500-3000 in the proposed target area.

It is therefore imperative to work towards achieving the UN-recommended ratio of one extension officer to 500 farmers and to ensure adequate equipment of extension agents of technologies and good practices of integrated pest management. The GoG has made the necessary efforts to improve the situation through the supply motorbikes, pick-up vehicles and recruitment of extensionists to enhance visibility as well as lower the AEA to farmer ratio.

3.0 ENVIRONMENTAL AND SOCIAL BASELINE CONDITIONS

This section presents a description of the existing environment, comprising the bio-physical and socio-economic conditions of target areas selected to benefit from interventions under the REWARD. All the seven (7) districts are located within four (4) northern regions in the Northern Savannah Ecological Zone (NSEZ) of the country. They are also known as the Savannah Regions (based on climatic and vegetation characteristics), quite distinct from the recently created Savannah Region (which is only 1 of the 5 northern regions of Ghana – **Figure 3.1).**

Figure 3-1: Map of Ghana showing the beneficiary districts (source: SAL Consult, 2025)

The Northern Savannah Ecological Zone (NSEZ) forms more than half of the total Ghana land surface cover of about 239,000 square kilometres (23.9 million ha). The beneficiary regions lie between latitudes

8^0 and 11^0 N and longitude 1^0 E and 3^0W. Togo bounds it to the east, Burkina Faso to the north, Cote d'lvoire to the west and the high forest ecological zone to t: he south. The economy of the NSEZ is based mainly on agriculture, which is the basis of livelihood for a majority of the population. The small-scale family holding is the basic unit of production.

3.1 Country Characteristics – Ghana

3.1.1 General

The Republic of Ghana is located between latitudes 4° and 12°N, and longitudes 4°W and 2°E. It has a total border of 2,093 km, including 548 km with Burkina Faso to the north, 688 km with Côte d'Ivoire to the west, and 877 km with Togo to the east. It has a coastline on the Gulf of Guinea, part of the Atlantic Ocean, measuring 539 km. It has an area of 239,540 km^2. The country is divided into 16 administrative regions and 260 districts with Accra as the administrative capital. Ghana is drained by three (3) main river systems comprising the Volta, Southwestern and Coastal River Systems. The Volta in Ghana occupies nearly one third (30%) of the land area of Ghana, the southwestern 22% and the minor coastal 8%. Global water resources are estimated at 53.2 km^3 per year, consisting of 30.3 km^3/year of internally produced water resource, and 22.9 km^3/year of runoff from other countries.

The country is characterized by fairly low relief with few areas of moderate elevation in the north and east. The land is generally 600 meters above sea level. Physiographic regions include the coastal plains, the forest dissected plateau, and high hill tops which are important ecological subsystems in a generally undulating terrain. At the southern and northern margins of the Volta Basin, there are two prominent areas of highland – the Kwahu Plateau, and the Gambaga Escarpment. On the eastern margins of the Volta Basin is a relatively narrow zone of high mountains running in a south-west to north-east direction with the Akwapim, Buem, Togo Ranges registering the highest point (Mt. Afadjato) in the country.

Average rainfall over the country is about 1,260 mm/year but ranges from 890 mm/year in the coastal zone near Accra to 2,030 mm/year in the south-western rainforests. The rainfall is bi-modal in the south-western forest zone, giving a major and a minor growing season; elsewhere, a uni-modal distribution gives a single growing season from May to October. Except for the south-western zone, the reliability/predictability of rainfall, particularly after crop germination, is a major factor affecting crop growth and agriculture in general.

3.1.2 Climate, Air Quality and Greenhouse Gases

The five regions fall within the Guinea and Sudan Savannah climatic zones (also known as the Tropical continental or savannah climatic zones). The climate is influenced by the movement of two air masses: Northeast Trade Winds and the Southwest Monsoons. These air masses converge at the inter-Tropical Boundary (ITB) which, depending on the season determines the rainfall pattern over the district. The Guinea and Sudan Savanna zones are both characterized by a unimodal rainfall regime lasting from April to October, although mean annual rainfall is higher in the Guinea Savanna zone (1000-1200 mm) than in the Sudan Savanna (900-1000 mm). The period between November and March is dry and characterized by the desiccating Harmattan winds, rendering the zone prone to bush fires. The mean annual maximum temperature ranges from 33°C to 35°C with a minimum of about 22°C. During the dry season, the Harmattan prevails, causing high rate of evapo-transpiration and soil moisture deficiency. Relative humidity is high during the rainy season but falls to about 20% in the dry season. Agricultural activities within the zone contribute significantly to the GHG burden through poor farming practices by farmers. Prominent among these activities are deforestation (tree cutting), bush burning and charcoal production. **Figure 3.2** shows the agro-ecological/climatic zones of Ghana.

Figure 3-2:Map showing the Agro-ecological / Climatic Zones of Ghana
(Source: https://journals.sagepub.com/doi/full/10.1177/11786302211043033)

Figure 3-3: Drainage Map of Ghana showing the Black and White Volta River Systems
(Source: https://maps-ghana.com/img/0/drainage-map-of-ghana.jpg)

3.1.3 Water Resources

The Northern Savannah Ecological Zone is mainly drained by the White Volta and its tributaries Morago, Red Volta, Atankwindi and Asibelika in the Upper East Region (UER), Kulpawn with its tributary, Sisili in the Upper West Region and the Black Volta, Nasia and Oti in the NR (**Figure 3.3).** All the principal branches of the Volta flow permanently during the wet periods. In the dry season the volume of water in the rivers of the two upper regions reduce considerably, breaking into pools or drying up at the peak of the dry period. The Volta with its tributaries is an important source of surface water in the Northern Savannah Ecological Zone. Groundwater is the most important source of potable water in the project area. However, the yields are generally insufficient to meet the needs of large communities or irrigation agriculture.

3.1.3.1 The White Volta Basin (WVB)

Geographical description

This area, located in the northeastern tip of Ghana, falls within Sudan savannah and guinea savannah agro-ecological zones. The selected areas cover a total of 12,000sq km with a population of approximately 1.4 million. The area has a very high population density relative to land and other resources available. It covers the UER and two districts in the North East Region. The target area is located in the White/Red Volta basin just south of the Burkina border and east of the Togo border. It is characterised by harsh weather conditions - with low mono-modal rainfall amounts of 900 – 1,100mm per annum, mean temperature ranging from 27.8 – 28.5^{0}C. Specifically, in the Sudan savannah enclave, the vegetation type is open grass with scattered short drought- and fire-resistant deciduous trees. In significant stretches, grass cover is very sparse, the land is bare and severely eroded. This agro-ecological zone is susceptible to desertification, and there is the fear that increased human activities could bring this about sooner than later (Biney, 1990).

Agriculture

The people in the target area are typically involved in subsistence crop-livestock farming systems. The crops include millet, sorghum, fonio, potatoes, groundnuts, cowpea, onions, leafy vegetables. Livestock rearing is common to every household with small ruminants, poultry (guinea fowl and fowls) and to a small extent piggery. There is also production of mango in the area; and shea trees grow wild. Some fishing is done on the white Volta and its tributaries. Small cottage industries – weaving of basket and hats from grass; weaving of local fabric for sewing of traditional smocks and dresses for ladies. There is small scale gold mining in and around Nangondi and Talensi areas. The produce of the area is marketed mainly in the big towns such as Bolgatanga, Navrongo and Bawku in the region; though cash crops like onions, parboiled rice, woven baskets and smocks are mainly sold in southern Ghana cities or exported in the case of the baskets and smocks.

Apart from the harsh and prolonged dry season, the area experiences excessive flooding from the hite Volta basin, especially during spillage of the Bagre Dam just upstream in Burkina Faso. The construction of Pwalugu Dam, which is expected to hold back and contain the flash floods from the spillage of the Bagre Dam has barely commenced. There are 2 main public irrigation schemes in the area – Tono Irrigation Scheme (2,490ha) recently rehabilitated with funding from GoG/WB under GCAP and Vea Irrigation Scheme (880ha). In addition to these, there are numerous small dams/ *dug-outs* for community and livestock watering, though some have the potential for additional use for irrigation purposes. There are extensive flood plains within the area, notable ones being the Fumbisi, Gbedimbilisi and Wiasi Valleys, all of which have received one form of intervention or other by way of land development (contour earth bunding, dykes) through donor funding. The irrigation schemes and flood plains are used for the cultivation of mainly rice, onions and leafy vegetables. Households have small hand-dug wells which they use for production of vegetables for domestic consumption. The rice is processed as parboiled using local techniques.

Challenges

The constraints in this target area are numerous and include - dense population in certain areas leading to pressure on land which results in land degradation, inability of youth and women to have access to land, low soil fertility especially on the rocky slopes in Bongo area, soil erosion/ degradation from continuous cropping using inappropriate methods leading to loss of soil cover, inundation from flash floods, uncontrolled transhumance activity, nutrition deficient diet, increasingly poor and erratic rainfall patterns, bush burning. The above factors cause a lot of rural-urban migration. For example, the youth in the Bawku

areas are noted for onion cultivation, but due to unavailability of land they are continuously on the move, throughout the country in search of land for production.

3.1.3.2 The Black Volta Basin

Geographical description

The Black Volta has a total catchment area of 142,056 km^2 including areas outside Ghana. Only 33,302 km^2 (23.5%) of the catchment area are located in Ghana. Its main tributaries are Kamba, Kuon, Bekpong, Kule Dagare, Aruba, Pale, San, Gbalon, Chridi, Oyoko, Benchi, Chuco and Laboni. The catchment areas are all within Ghana. The Black Volta basin is primarily located in northern-western Ghana. The basin includes portions of the Upper, Northern and Brong Ahafo Regions. Annual rainfall in the basin varies between about 1150 mm in the north and 1380 mm in the south; pan evaporation is on the order of 2540 mm per year, and runoff is about 88.9 mm per year. The annual runoff from the Black Volta Basin is about 243 m^3/s. Mean annual flow is about $8300x10^6$ and the mean monthly runoff from the basin within Ghana varies from a maximum of about 623 m^3/s to a minimum of about $2m^3/sec$. It contributes for about 18% of the annual total flows to the Volta Lake. The potential storage site at Bui has a volume in excess of 12.3 $x10^9m^3$ and could regulate the basin yield at a minimum of about 200 m^3/s. The specific suspended sediment yield in this basin ranges from 8.0 - 12.0 tonnes/yr/km^2. Current surface water use is estimated to be only about 0.03 m^3/s for domestic water supply.

Agriculture

The major land use is agriculture with food crop cultivation under extensive bush fallow. The major food crops include yam, cassava, maize, sorghum, millet, groundnuts, and beans. Animal grazing on the free range is a significant activity. In the northwest of the basin, particularly the Lawra district, lands are highly degraded both in terms of physical status and fertility levels and can hardly support meaningful crop cultivation. Vegetation has also been degraded due to the incidence of annual bushfire. This has led to seasonal human migration and great reduction in the number of livestock.

Challenges

One major problem facing the farmers in the Black Volta Basin is that of storage. Currently the post-harvest losses of farm produce stand at about 30%. For this reason, farmers are forced to dispose of all that they produce in return for low prices especially during periods of bumper harvest; also because of lack of access to market centres and /or inaccessible farms. In the Nadowli District for instance, some of the perishable crops grown are yam, cowpea and vegetables like tomato, okro and green leaves. These produce are sold immediately after harvest. In the rainy season, villages like Kamahegu and Selee are completely cut off from any market centre due to immotorable roads. The construction and rehabilitation of feeder roads in the district should therefore be given a paramount concern in order to expose the farming communities to market incentives.

About 75% of farmers rely on traditional methods of farming using simple tools such as cutlasses and hoes and are highly dependent on rainfall for crop production. Only about 25% of the farmers rely on intermediate technology using tractor services, animal drawn implements and irrigation. Due to the predominance of traditional methods of farming it has resulted in the depletion of soil nutrients and consequently low yields, which is responsible for the low incomes and hence low standards of living, and food insecurity in the Black Volta Basin districts.

3.1.4 Geology, Topography and Soils

3.1.4.1 Geology and Topography

The Upper East and the Upper West regions are underlain by granitoids of post Birimian age while the NR is underlain by sandstones, shales and limestones of the Voltaian system fringed at the west part by the post Birimian granitoids. The granitoids include granitic and gneissic rocks of grey colours and shades of pink. The gneisses are folded and also jointed with the rest of the formation. These rocks tend to be hard and less weathered due to the drier climatic conditions prevailing in the Northern Savanna Zone. They undergo less severe weathering compared to the southern part of Ghana. There are two main physiographic regions recognisable in the zone viz. the Savanna High Plains and the Voltaian Sandstone Basin.

3.1.4.2 Savanna High Plains

This is a gently rolling plain with average heights between 180 and 300 metres above sea level (ASL). Small rounded hills or inselbergs of Birimian origin can be found occasionally. This zone is found north of the forested dissected intermediate belt. Except for the Mole National Park, part of which is in the Voltaian sandstone basin, other protected ecosystems are located within this topographic region. They are: Gbele Resource Reserve, Kenikeni, Nuale, Naaha, Ambalara, Kulpawn Tributaries, Kulpawn Headwaters, Mawbia, Sisili Central, Chiana Hills, Tankwidi West, Tankwidi East, Red Volta and Morago forest reserves. The soils of these areas include ground-water laterites and savanna ochrosols, which are widely distributed. Less widely distributed are various lithosols and brunosols as well as acid gleisols and some tropical black earth. The soils of the high plains are more fertile compared to those of the Voltaian Basin but erosion is a serious problem.

3.1.4.3 Soils

The most extensive soil type in the study area is the Groundwater Lateritic Soil which covers approximately 75% of the area (**Figure 3.4).** The principal characteristic of this soil type is the presence of a well cemented layer of iron stone (iron pan) at a relatively shallow depth below the surface. This layer is largely impervious to infiltrating rainwater resulting in the topsoil becoming water-logged right up to the surface in the wet season, but dry out completely in the dry season. Soils in the UER and NR are generally formed by weathering of the bedrock although some drift of soil transported by wind and water is also found. The soils have predominantly light textured surface horizons with heavy textured soils confined to valley bottoms. There are extensive areas of shallow concretionary and rocky soils which have low water holding capacities and limited suitability for agriculture.

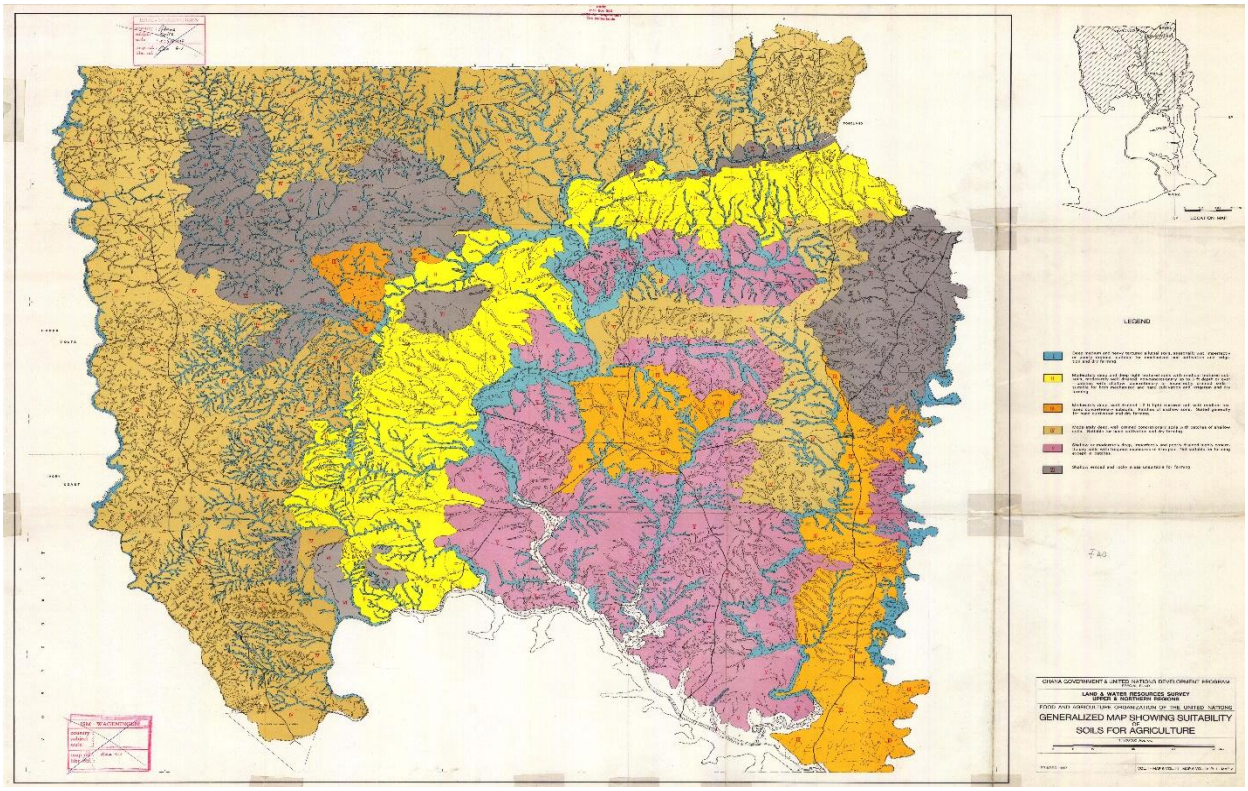

Figure 3-4:Soil Suitability Map of the Northern Ghana

(Source:https://esdac.jrc.ec.europa.eu/ESDB_Archive/EuDASM/Africa/images/maps/download/afr_ghgmssa.jpg)

3.1.5 Biodiversity Resources

The Savannah zone includes the grassland of the north and the derived savannah on the fringes of the forests. The interior savannah contains 1,519 vascular species known to be indigenous or naturalized to the savannah zones of Ghana. Four (4) species including *Ceropegia gemmifera*, *Commiphora dalzielii*, *Pteleopsis habeensis* and *Eugenia coronata* are rare in Ghana and internationally. The Guinea Savannah consists generally of fire tolerant, deciduous, broad-leaved trees interspersed in a ground flora of mainly grass, sometimes more than 1.5m high. The more important grasses of grazing value include *Andropogon gayanus* and in densely populated areas, the common grasses include *Diectomis fastigiata*, *Pennisetum pedicellatum* and *Loudetia togoensis*. Other species that occur are *Heteropogon contortus*, *Aristida purpurea*. The common trees include *Vitellaria paradoxa* (shea), *Parkia biglobosa* (dawadawa), *Piliostigma thonningii*, *Combretum glutinosum*, *Anogeissus latifolia*., *Detarium sp*., *Afzelia sp*., *Prosopis sp*., *Pterocarpus* sp., *Antiaris toxicaria*., *Vitex sp*., *Piliosstigma sp*., *Lonchocarpus sp*. and *Acacia sp*.

The Sudan Savannah occurs mainly in the Bawku East, Bawku West and Bolgatanga municipalities at the extreme north-eastern corner of the Northern Savannah Zone. Its total coverage is less than 10% of the zone. The vegetation is made up generally of open savannah with short grass interspersed with relatively short low branching deciduous, broad and thin-leave trees. The common trees include species of *Adansonia digitata*, *Butyrospermum parkii*, *Acacia sp*. and *Parkia biglobosa*. The vegetation in most of the project area is characterized by a mosaic of forest, savannah, marshes and grassland. The ecology is for the most part severely altered. This is a reflection of prolonged unregulated grazing, burning, and intensive cultivation. There are 72 forest reserves in the Northern Savannah made up of 23, 33 and 16 in the former Northern, Upper East and Upper West Regions respectively. They range in size from 0.4 square kilometres to 1,116 square kilometres. However, many of these areas are under pressure from subsistence farmers, livestock herders and others who engage in illegal activities in the reserves.

According to the 2020 Facts & Figures: Agriculture in Ghana, issued by the Statistics Research, and Information Directorate of the Ministry of Food and Agriculture, the rate of agricultural expansion is unprecedented in the country's history, overrunning many of the other land cover types, including Ghana's savannah, woodlands, and forests. The report establishes that between 1975 to 2000, agricultural lands expanded from 13 to 28% of Ghana's total area and continued to expand rapidly, reaching 32% of Ghana's land area in 2013; this expansion having significance beyond the simple area numbers. This is because agricultural lands often represent a radical transformation from a diverse variety of vegetation types and natural habitats to crop-dominated landscapes. The savannah areas of Ghana are known to have experienced a large loss, from about 51 to 40% of the total land area from 1975 to 2013. The formerly uninterrupted savanna landscapes of the Central Sudan Savanna, Main Transitional Zone, and Central Transitional Zone are now highly fragmented, with large tracts of natural habitat broken into patches of farmland, reducing habitat suitability for many types of wildlife (SRID-MoFA, 2021).

Many of the large wildlife species, which are common to tropical Africa, are also found in Ghana. They live mostly in the savannah ecosystem and include *Panthera leo* (lions), *Panthera pardus* (leopards), *Loxodonta aficana* (elephants), *Syncerus caffer* (buffalo), *Neotrigus pygmaeus* (royal antelope) and Colobus and *Cercopithecus sp* (monkeys), *Hippopotamus amphibius* and *Crocodilus sp*. Snakes include pythons and poisonous ones such as *Naja nelanoleuca* (cobra), *Bitis gabonica* (gaboon viper), Lizards, e.g. *Veranus niloticus*, often of striking colours are common, as are large snails, spiders and scorpions which are found in large numbers. The insect fauna is also very rich in diversity. The bird species include *Francolinus sp* (bush fowl) *Falconidae sp* (falcons, hawks, and eagles), *Psittacus erithacus* (grey parrot), *Neophron sp*. (vultures), *Guttera edouardi* (guinea fowl) and many more. Savannah fauna comprises at least 93 mammal species, about half of which can be considered to be large ones, over 350 bird species, 9 amphibians and 33 reptiles. About 13% of the 860 recorded butterfly species in Ghana are associated with the savannah. The Wildlife Conservation Regulations of 1971 (LI. 685) has schedules which contain lists of wild animals found in Ghana. Fifty-five of these are completely protected.

Populations of many wildlife species found in the savannah have dwindled as a result of human-induced interventions, mainly through over hunting, inappropriate agricultural practices and expansion of agricultural land, road construction and bush burning. The demand for wild animal meat (popularly called bush-meat in Ghana) is ever increasing, resulting in widespread hunting. As human populations in the northern parts of the country increases, exerting enormous pressure on the finite good "land" and creating land hunger among mostly the rural people, intact savannah woodlands and secondary groves which provide wild animals refuge and source of food become fragmented and unable to hold large populations of animals. The gallery forest, which represents the most biologically rich habitat in the savanna zones of central and northern Ghana, have also experienced a decline that has accelerated, mainly because of clear-cutting for agriculture, from 6,200 sq.km in 1975 to 3,750 sq.km in 2013 (SRID - MoFA, 2021).

Wild animal movement between reserves, groves and sanctuaries in the northern savannah may be limited because these are either fragmented or interspersed with farmlands. Studies have shown that wild animals move from Togo into Ghana and vice versa, using gallery forests along the Red Volta River. It is also on record that wild animals move from the Global Environment Facility (GEF) supported Nazinga Game Ranch in Burkina Faso to farms on the Ghana side of the Ghana-Burkina Faso border. Communities outlying protected areas have occasionally had their farms and property destroyed by wild animals mainly elephants that move outside the reserves, particularly in the dry season, in search for water and food. In 1997 elephants invaded some villages including Widinaba, Zongoiri, Nangodi, Sekoti and Datoko, all at the fringes of the Red Volta Forest Reserve, which is a natural trail for elephants moving from Togo into

Ghana. Where villages received no help from staff of the Wildlife Division in driving these animals back into the reserves (or gallery forests), they resorted to killing the rampaging animals.

3.1.6 Energy and Water Supply

The main source of energy or fuel for lighting in the Savannah regions is electricity generated by means of hydropower and provided by the Volta River Authority's (VRA) Northern Electricity Distribution Company (NEDCo). The main hydrogenating stations of the VRA are the Akosombo and the Bui Dams. Majority of households in rural areas also use Kerosene lamps while a few communities benefit from solar sources. There are private power generating plants located within the regions. According to NEDCo, most households are unable to pay for the electricity and therefore affects revenue generation and expansion of distribution networks. Most households in the NSEZ rely heavily on wood, charcoal and crop residue for cooking and heating.

The 2010 Population and Housing Census (PHC) established that the commonest sources of drinking water in the old Northern Region are borehole/tube well (35.1%), river/stream (17.4%), pipe-borne outside dwelling (12.2%), pipe-borne inside dwelling (8.7%), dugout/pond/lake/dam/canal (7.6%), public tap/standpipe (6.9%), protected well (5.6%) and unprotected well (4.2%). Putting all the protected sources together, means that 69.6% of the population in the region have access to potable water, an increase of 30.2% over the 2000 PHC figure. With respect to the districts, Tamale Metropolis has a greater proportion of households using pipe-borne water (87.9%) than the other districts, while West Gonja has a greater proportion of its inhabitants using borehole/tube well (71.1%).

In the Upper West Region, the use of borehole/pump/tube well was the most common, accounting for almost two-thirds (64.2%) households in the region. A small percentage (11.4%) of households also reported pipe-borne outside dwelling as source of drinking water. In Wa municipality, pipe-borne water both inside and outside dwellings (39.8%) was the main source of drinking water. Borehole/pump/tube well was common in Wa West (79.3%), Jirapa (75.1%) and Nadowli (74.6%). For urban and rural localities, borehole/pump/well was the main source of drinking water. The urban average was 28.6%, with a high of 50.1% in Jirapa, while the rural average was 73.4%, with Sissala East highest at 87.6 %.

3.1.7 Culture and Religion

Each of the Savanna regions consists of at least three ethnic groups and spoken languages are varied accordingly. The major ethnic groups are each represented by a paramount chief. The Northern Region has four paramount chiefs who represent four major ethnic groups. Islam is the dominant religion in all 5 Northern Regions, whereas Traditional and Christian religions are prominent in the Upper East and Upper West Regions respectively. Aside agriculture, the people engage in the manufacture and sale of traditional artifacts and musical instruments. Blacksmithing and pottery are also common in these regions.

3.1.8 Issues in the use and management of synthetic chemical pesticides in Northern Ghana

A study published by the Northern Presbyterian Agricultural Services (NPAS) and its Partners (ICCO Netherlands and Christian Aid, UK) in 2012 on *Ghana's Pesticide Crisis*, argued that Ghanaian farmers who use chemical pesticides to control insects and diseases on their crops are potentially exposed to pesticides through the skin, or the eyes or through inhalation or ingestion, with key risks being death, cancer, birth defects and damage to the nervous system. The following sections summarise the key findings and arguments presented by the NPAS pesticides report.

3.1.8.1 Pesticide poisoning of farmers

NPAS' survey of 183 farmers in 14 villages in the UER found that more than a quarter had recently suffered from directly inhaling chemicals and one fifth from spillage of chemicals on the body. In late 2010, 15 farmers died from suspected pesticide poisoning in the same region. Most of these deaths are believed to have resulted from poor storage of pesticides, which seeped into food stocks. Senior health officials believed that some 'natural' deaths among Ghanaian farmers might be related to pesticide use, partly since poisonings are hard to diagnose. A 2008 study (W. Ntow et al) - a comprehensive analysis of pesticide contamination on farmers in Ghana - found the presence of organochlorine pesticide residues, including DDT, in the breast milk and human blood of vegetable farmers. Some women farmers had accumulated pesticide residues in breast milk above the 'tolerable daily intake' guidelines beyond which they have adverse health effects on their children.

3.1.8.2 Unsafe Use of Pesticides

NPAS and its partners identified 6 key aspects of the unsafe use of pesticide by farmers:

1) Around 7 banned or restricted chemical pesticides – aldrin, dieldrin, endosulfan, lindane, DDT, methylbromide and carbofuran (the latter which is banned above a certain level of toxicity) - appeared to be still in use by some Ghanaian farmers. The 2012 NPAS study found that four banned or restricted chemicals were on sale in local agro-dealer shops – DDT, aldrin, lindane and dieldrin.
2) Other dangerous chemical pesticides that the government had cleared for use and failed to ban were also being used, such as atrazine, paraquat and chlorpyrifos.
3) Farmers were misusing pesticides by spraying too close to harvest (thus contaminating the crop before consuming it), over-applying the dosage, applying pesticides intended for cash crops to growing food crops or applying pesticides intended for growing crops onto stored crops, using obsolete or expired pesticides and mixing different chemical pesticides together.
4) Most farmers failed to use any protective equipment while virtually no farmer used all the recommended equipment. Only farmers contracted to cotton and cocoa companies receive protective equipment, otherwise these need to be paid for. The health hazards were amplified given that some farmers allow their children to do the spraying.
5) Storing pesticide containers near to, or even in, food stores was widespread and had contributed to several deaths and an untold number of illnesses. There was also widespread re-use of containers for storing food or water for humans or livestock.
6) The NPAS survey in UER found that 43% of farmers sampled had had some training on the safe use of pesticides, but only just over half had received such training from MoFA; most of the rest had been trained by local NGOs. Many problems result from insufficient training, advice and education provided to farmers by the Ministry of Food and Agriculture (MoFA) and its extension service. Training is especially critical given that most farmers are unable to read and write.

3.1.8.3 Poisoning the Public

The harmful effects of pesticide use go beyond the impact on Ghana's farmers, and include the consumers of food. Residues from six banned or restricted chemical pesticides - DDT, endosulfan, lindane, aldrin, dieldrin and endrin – have been found in food samples in studies done by W. Ntow et al. Further academic studies in the past five years show the presence of pesticide residues in fish, water, sediments, fruit and vegetables, meat and human fluids (blood and breast milk) in Ghana. While testing for pesticide residues on export crops such as cocoa is routine and stringent, same cannot be argued when it comes to domestic consumption of food by Ghanaians, as no such stringency exists. Similarly, all export-oriented cash crop farmers have been trained in the safe use of pesticides but most of those producing food for Ghanaian families have not. Just as there is no systematic testing for the impacts of pesticides on non-export farmers, there appear to be no routine tests conducted on the food available in Ghanaian markets.

3.1.8.4 Marketing of Pesticides

NPAS and its partners also argued that the pesticide problem is compounded by unscrupulous private companies. According to the NPAS report, the increase in pesticide imports into Ghana in recent years is matched by an increase in the number of importing companies, of whom there are now more than 50. Yet many imports are illegal. Surveys conducted by the Environmental Protection Agency (EPA) in 2007 showed that around 30% of pesticides on sale were either unlicensed or smuggled. Officials still estimate that at least 10-15% of all imports are illegal, either brought in by unlicensed dealers or involving expired or adulterated goods. Some imports arrive in bulk and are repackaged into small containers, often carrying inadequate or misleading labelling, often only in French. There is an industry of private companies behind pesticides that is driving increased use in Ghana. Advertising, which is prominent on the television, radio and billboards, claims that pesticides are farmers' friends but often say nothing about the potential effects on human health or that protective equipment must be worn. Adverts are meant to be approved by the EPA but often this does not happen.

3.2 Country Overview of Agricultural Activities

The Ghana Census of Agriculture (GCA), 2017/18 report revealed that agricultural activities in the country remain rural and rudimentary with little innovation and modernisation. Most agricultural holders use traditional tools and equipment for production whereas the use of modern tools and equipment such as tractors, shellers, power tillers, hatchery/incubator, meat processing equipment and milking equipment are negligible. While fertilizer is not used by most holders, the use of pesticides is highly prevalent among holders. Crop cultivation is predominantly dependent on rain and mortality in livestock is high. The sector is characterised by the consumption of own produce. Agriculture production is largely small-scale with most parcels of land used for the cultivation of crops smaller than 2 acres. The level of education among agricultural holders is low with males dominating the sector. In addition to this, the youth, generally, find agribusiness unattractive.

3.2.1 Agricultural Practices

The most common type of land tenure arrangement used by both male and female holders in both urban and rural areas to produce crops and forest trees is ownership through either freehold (52.2%) or inheritance (23.0%) which together constitute 75.2% of all parcels. For institutions, ownership through freehold (64.0%) and inheritance (11.3%) constitute 75.3% of the type of land tenure arrangements. However, most holders including institutions do not have any documentation covering the land tenure arrangements. Only 12.9% of land parcels used for crop and forest tree production by households and 33.7% by institutions have complete documentation. More than half (56.7%) of land parcels used to produce crops and forest trees are small (less than 2 acres), with a higher proportion (71.4%) of parcels belonging to females being less than 2 acres. Six in ten (59.4%) of all arable crops are produced on land parcels less than 2 acres and one quarter (24.5%) are on parcels that are greater than 2 but less than 5 acres. Table 11 provides information on the crooped areas of major crops in hectares. In terms of these areas, the top five crops are Maize (10,203,000), Cassava (9,294,000), Yam (4,305,000), Plantain (3,678) and Groundnut (3,339). Table 12 provides data on the growth rate of average cropped area of major crops where Rice (paddy), Maize, Plantain and Yam recorded positive growth rates over the periods 2009 – 2011 to 2012 – 2014 as well as 2015 – 2017 to 2018 – 2020. Meanwhile, production in metric tonnes over a 10-year period as illustrated in Table 13 has been dominated by the following: Cassava (183.284), Yam (75,166), Plantian (42,887), Maize (20,879) and Cocoyam (13,769).

However, parcels used for cultivating forest trees are much larger in size. More than half (51.4%) of the parcels for forest tree cultivation by households are 10 acres or larger of which 72.0% are 20 acres or larger. In the case of institutions, 59.7% of forest trees is cultivated on parcels 50 acres or more. Three tree crops (cocoa, cashew and oil-palm) account for 95.0% of total land under the cultivation of tree crops. Land parcels used in the cultivation of tree crops are larger in size than arable crops. A third (35.7%) of parcels used by households for the cultivation of tree crops are less than 2 acres. A similar pattern is observed for institutions with a higher proportion of land parcels greater than 20 acres.

Table 3-1: Cropped Area of Major Crops ('000 Hectares)

Crop	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Maize	1,023	1,042	1,023	1,025	880	865	985	1,021	1,150	1,189	**10,203**
Cassava	889	869	875	889	917	879	917	977	1,021	1,061	**9,294**
Yam	204	426	422	428	430	427	493	470	500	505	**4,305**
Plantain	336	337	340	357	363	358	363	387	409	428	**3,678**
Groundnut	357	345	329	335	336	327	316	320	337	337	**3,339**
Rice (Paddy)	197	189	216	224	233	236	241	260	282	291	**2,369**
Sorghum	243	231	226	227	228	201	224	228	226	227	**2,261**
Cocoyam	204	196	194	200	200	206	204	203	214	213	**2,034**
Cowpea	182	169	162	166	163	147	154	157	169	169	**1,638**
Millet	179	172	161	162	162	137	156	142	148	139	**1,558**
Soya Bean	86	85	85	87	86	87	102	103	112	116	**949**

Sources: Statistics Research & Information Directorate, MoFA (2021)

Table 3-2: Growth Rate of Average Cropped Area of Major Crops

CROP	AVERAGE AREA ('000 HA)		GROWTH RATE	AVERAGE AREA ('000 HA)		GROWTH RATE
	2009-2011	2012-2014		2015-2017	2018-2020	
Maize	9,898	10,300	4.07%	9,100	11,203	23.10%
Rice (Paddy)	1,804	2,100	16.42%	2,366	2,778	17.42%
Millet	1,807	1,652	-8.57%	1,516	1,431	-5.58%
Sorghum	2,544	2,279	-10.44%	2,177	2,275	4.52%
Cassava	8,834	8,774	-0.67%	9,042	10,202	12.83%
Yam	3,892	4,253	9.29%	4,426	4,915	11.06%
Cocoyam	2,114	1,969	-6.87%	2,035	2,104	3.36%
Plantain	3,298	3,446	4.49%	3,614	4,085	13.02%
Groundnut	3,489	3,362	-3.63%	3,267	3,314	1.43%
Cowpea	1,706	1,655	-2.99%	1,544	1,653	7.06%
Soybean	798	856	7.28%	919	1,105	20.27%

Sources: Statistics Research & Information Directorate, Mofa (2021), Based On Table 4.1 And Appendix 16
Growth Rate Is Based On The Comparison Of The Average Of 2009 – 2011 With The Average Of 2012 – 2014 And The Average Of 2015 - 2017 With Average Of 2018 – 2020.

Table 3-3: Production of Major Crops ('000 Metric Tons)

Crop	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Cassava	14,240	14,547	15,990	16,524	17,213	17,798	19,008	20,846	22,750	24,368	183,284
Yam	5,855	6,639	7,075	7,119	7,296	7,440	8,253	7,789	8,754	8,946	75,166
Plantain	3,619	3,556	3,675	3,828	3,952	4,000	4,279	4,688	5,479	5,811	42,887

Crop	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Maize	1,683	1,950	1,764	1,769	1,692	1,722	2,011	2,306	2,911	3,071	20,879
Cocoyam	1,299	1,270	1,261	1,299	1,301	1,344	1,387	1,461	1,551	1,596	13,769
Rice (Paddy)	463	481	570	604	641	688	722	769	925	987	6,850
Rice (Milled)*	278	332	393	417	443	475	498	531	638	738	4,743
Groundnut	465	475	409	427	417	426	438	521	563	565	4,706
Sorghum	287	280	257	259	263	230	278	316	347	356	2,873
Cowpea	237	223	200	201	203	206	211	237	254	257	2,229
Millet	183	180	155	155	157	159	163	182	230	236	1,800
Soya Bean	165	152	139	141	142	143	170	177	193	209	1,631

Sources: Statistics Research & Information Directorate, MoFA (2021)
Note: *69% Extraction Rate between 2012-2019, 67% Extraction Rate for 2020 Milled Rice

Knapsack sprayers are the most common (about three-quarters) modern agriculture equipment used by both households (73.0%) and institutions (74.2%). The use of tractors by households (24.7%) and mist blowers (22.0%) are less common. A similar pattern is observed for institutions where use of tractors is 21.1% and mist blowers is 21.7%. Pesticides are commonly used relative to fertilizer and irrigation.

4.0 EXISTING AND ANTICIPATED PEST AND DISEASE / MANAGEMENT PRACTICES

The use of highly persistent and toxic chemicals must be avoided in pest management during the implementation of the IPM of the proposed project. Natural pest control methods should be employed to effectively reduce or eliminate pest or disease infestation without harming humans, crops and other organisms like chemicals sometimes do. The major crop targeted under this program is rice which involves the application of agro-chemicals and inputs such as fertilisers, herbicides, insecticides, nematicides and fungicides. The crop calendar below which includes rice production provides an overview of the time when most applications of agrochemicals occur.

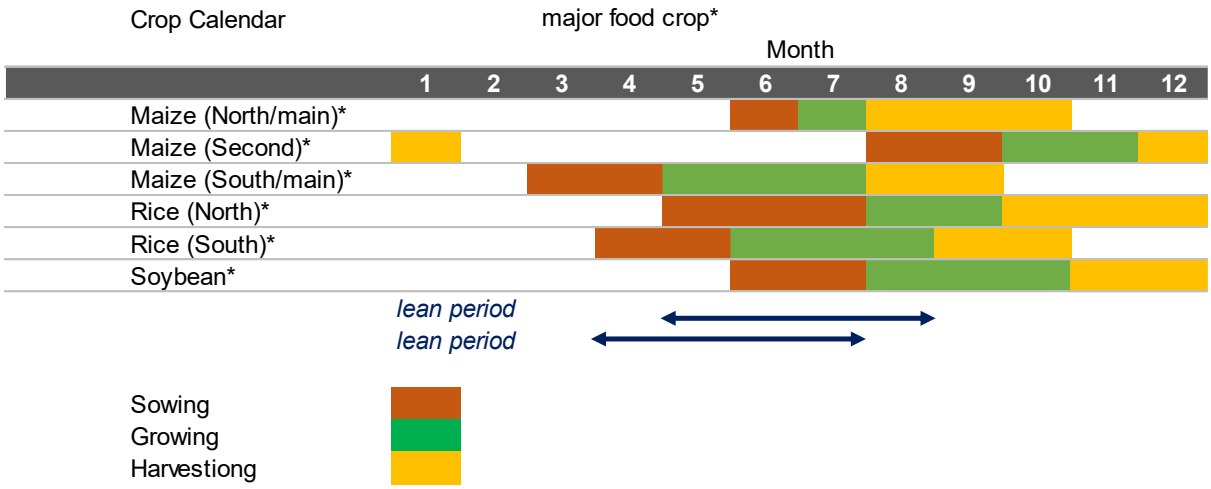

Figure 4-1:Cropping calendar showing timing of different activities for some crops
(Source: FAO/GIEWS, FEWSNET; Haruna et al., 2017)

4.1 Major Pests and Diseases

Crop pests and diseases pose enormous and wide scale risk to food security, the livelihoods of millions of Ghanaian smallholders and the national economy in general. In recent years, the Ghanaian economy has suffered huge losses due to crop pests and diseases affecting both staple crops and cash crops. For instance, the Fall Armyworm (FAW) which emerged in Ghana in 2016, damaged maize crops and put staple crops at risk. A total of 96.3% of farmers who experienced FAW had at least half of their farms infested with the country losing about US$64million in 2018 due to the infestation that affected about 20,000ha of farmlands

Migratory and outbreak pests

The key migratory and outbreak pests of economic significance in Ghana are armyworm (*Spodoptera exempta*), birds, and the red locusts. With an exception of the elegant grasshopper, the management of the rest of the pests under this heading is co-ordinated by the PPRSD of the MoFA.

Locust: Locusts live and breed in numerous grassland plains/savanna zones. During periods with favourable weather, locusts multiply rapidly and form large swarms that can cause huge damage to plants in a very short period of time.

Grasshopper has become increasingly damaging on cereal crops (maize and rice) in parts of the country. There being no research done on the management of the pest, farmers are forced to use any recommended insecticide whenever outbreaks occur.

Armyworm: The African armyworm (*Spodoptera exempta*) is a major threat to cereal production in a number of African countries. It is a major pest of cereal crops (maize, rice, sorghum and millets) as well as pasture (grass family) and therefore a threat to food security and livestock. The problem with armyworms is that they are highly migratory so that larval outbreaks can appear suddenly at alarming densities, catching farmers unawares and unprepared.

Armyworm (*Spodoptere exempta*) outbreak has occurred in Ghana thrice in the last two decades. The first outbreak occurred in 2002, second in 2006 and the third in 2017. Large expanses of farmlands were destroyed in such instances. The recent armyworm outbreak was in 2017 on maize fields in Ghana and quickly dispersed through to cover all the regions. In the 2002, the outbreak was largely concentrated in the UER, and a total of 790 (Ha) were affected in four communities. In 2006, the outbreak occurred in five regions namely Brong Ahafo, Ashanti, Volta, Northern and Eastern regions. The worms destroyed crops in the grass family like maize, rice and sugar cane etc. In addition, animals that fed on infested pasture got bloated and died. The caterpillar outbreak is a threat to 3, 13 and 15 of the Sustainable Development Goals (SDGs), health and environmental sustainability, both of which are among the 17 UN SDGs. According to the Sanitary and Phytosanitary of the Centre for Agriculture and Biosciences International, it was estimated that the Fall Armyworm (FAW) could cause damage worth about $3 billion to Africa's maize crop if proper measures are not put in place. The infestation was first reported in the Yilo Krobo district of the Eastern Region in 2016.

Due to its economic significance, management and control is centrally coordinated by PPRSD. Its control combines monitoring in identified breeding areas, forecasting and early warning of potential outbreaks. In the northern regions, insect traps are usually set in first week of May and monitored. In 2002 however, the trap could not register significant catches before the sudden outbreak of the Armyworm. This brings to the fore the need to adopt other surveillance methods in addition to the setting of the trap to enable early detection of pests and diseases as part of the early warning system. The weapon of choice is the use of pesticides for spraying using gang sprayers instead of aerial spray. This method was adopted for the 2006 outbreak. Farmers are advised to inspect their fields for signs of infestation. If the crop is attacked, farmers should spray with diazinon, fenitrothion or chlorpyrifos, whichever is available at the nearest pesticide store.

The information about potential outbreaks is passed to the regions and districts from where it is further passed to farming communities through the extension system. Both ULV (ultra-low-volume) and knapsack sprayers can be used depending on available formulation in the outbreak areas. A different approach, a biological one using a virus fatal to armyworms, NPV (Nuclear Polyhedrosis Virus), is also being investigated in various countries, including the UK, Canada and Tanzania.

Invasive alien species

Invasive alien species have become a problem in diverse ecosystems in Ghana. They affect both savannahs and tropical forests and they are found on land, in fresh water systems and along the coast in the country. The International Union for Conservation of NatureI (IUCN) identified 26 invasive alien species in Ghana which include the following key pests:

- Witch weeds, Striga spp.
- Siam weed, Chromolaena odorata (Acheampong weed)

- Water hyacinth, Eichhornia crassipes
- Invasive fruit fly, Aleurodicus disperses

These invasive alien species have had a huge adverse effect on the production of cereals such as maize and rice. Climate change, trade liberalization, and agricultural intensification (introduction of increased fertilizer use, introduction of new crops and varieties, changes in land use and landscape etc) could cause the occurrence of new pest problems. This requires frequent pest risk surveillance and continuous updating of the existing pest list. The EPA and the PPRSD are currently the lead institutions in managing invasive alien species.

4.1.1 Major Pests and Diseases of Cereals (Rice)

Table 4-1: Major Pests and Diseases of Rice

Pest		**Comments**
Insect	Armyworms (*Spodoptera exempta)*	Cause serious defoliation in upland rice plants, leaving only the stems. Are regarded as occasional pests but when there is outbreak they completely devastate farms
	African gall midges (*Orseolina oryzivora)*	bore into stems and up to the apical or lateral buds, feeding on the tissues of the buds. Attack young rice plants.
	Stalked-eye shoot flies *(Diopsis spp)*	Dark brown fly. Lay eggs at the base of rice plants and hatched maggots feed on the stem tissues.
	Stem borers *(Chilo spp, Maliarpha separatella, Sesamia calamistis)*	Caterpillars bore into the stem of rice, attack rice at full tillering stage prevent the grains from filling up and ripening. (e.g white borer, striped borer, pink borer and yellow borer)
Disease	Rice blast (*Pyricularia oryzae)*	Most widespread and destructive disease. Affects all the leaves and stem of plant, starting with spots on leaves
	Rice brown leaf spot (*Helminthosporium oryzae)*	Fungus disease which starts as tiny brown spots on rice leaves. Attack seedlings more often.
	Rice yellow mottle virus (RYMV)	Attacks rice plants; show yellow leaves and stunted growth

Source: MoFA/PPRSD/GIZ: Integrated Pest Management Extension Guide 2

Table 4-2: Major Pests and Diseases of Maize

Pest		**Comments**
Insect	Armyworms (*Spodoptera exempta)*	Attacks leaves
	Larger grain borers (*Prostephanus truncatus*)	Attacks stored maize grain
	Greater grain weevil (*Sitophilus spp.)*	
	Stem borers *(Busseola fusca, Sesamia calamistis, Eldana saccharina)*	Destruction of leaves and boring into stems
Disease	Maize streak virus (virus transmitted by insects known as leaf hoppers)	Can be recognized by the long white streaks on maize leaves, interrupted by yellow and white sections
	Striga (witchweed) (*Striga hermonthica, S. asiatica)*	Is a parasitic weed that grows on the roots of maize and prevents the crop from growing properly

Source: MoFA/PPRSD/GIZ: Integrated Pest Management Extension Guide 2

Aphids (*Aphis craccivor) - soyabean*

Anthracnose disease (soyabean)

Rice brown leaf spot *(Cochliobolus miyabeanus)*

Larger grain borers -maize *(Prostephanus truncates)*

Armyworms (*Spodoptera exempta) - rice*

Streak disease of maize *(Maize streak virus)*

Figure 4. 1 Major Pests and Diseases of REWARD Targeted Crops

4.1.2 Pesticides to be used in REWARD

The EPA has a list of approved and registered pesticides for use by farmers (Annex 1). Additionally, there is a list of banned pesticides (Annex 1). This list is updated periodically with the last update in 2021. These pesticides are tested to improve the quality of the pesticides used i.e., the reduction of the toxicity and the increase of the efficiency.

Engagements with farmers in previous project areas revealed knowledge of farmers with regards to the banned pesticides. However, some of these banned agrochemicals still exist in some agro-shops for sale usually from neighbouring countries such as Côte d'Ivoire which may be an indication of lack of enforcement by regulatory bodies. Indications from the Chemicals Control and Management Centre (CCMC) of the EPA point to the fact that the registered pesticides are popular at the level of producers of the targeted crops. Even though farmers are aware of the banned chemicals, some farmers continue to apply the banned chemicals for a number of reasons including the cost of the banned chemical compared to approved pesticides; availability in local markets and difficulty in accessing approved pesticides i.e., proximity.

Another major group of agrochemicals that could be used on the Project is fertilisers. **Table 4.2** summarises volumes of fertiliser imports over a 5-year period (ie. 2016 to 2020). The detailed listed of approved pesticides in Ghana is provided in Annex 1

Table 4-2: Summary of Register of Pesticides - December 2021

Category	FRE	PCL	Banned	Total
Insecticides	143	136	32	311
a. Public health	13	16	0	29
b. Stored produce	7	5	0	12
Fungicides	68	57	0	125
Herbicides	198	239	0	437

Category	FRE	PCL	Banned	Total
Plant Growth Regulators	7	2	0	9
Molluscicide	1	0	0	1
Rodenticides	1	7	0	8
Nematicides	3	5	0	8
Adjuvants	3	2	0	5
Biocides	5	8	0	13
Repellents	0	2	0	2
Total	**449**	**479**	**32**	**960**

Source: EPA/CCMC, 2022

Table 4-3: Fertilizer Imports from 2016 to 2020

	QUANTITY	2016	2017	2018	2019	2020
NPK	MT	258,290	153,767	224,176	217,024	299,423
NPK (Liquid)	LT	127,565	14,351	-	99,334	734,325
Urea	MT	16,353	78,591	42,005	77,011	90,025
Muriate Of Potash	MT	14,268	26,018	15,993	42,235	55,621
Sulphate Of Ammonia	MT	14,417	36,833	10,084	17,326	44,084
Phosphates	MT	109,961	23,280	703	4,189	9,668
Nitrates	MT	3,450	2,203	90,019		80,796
Potassium Sulphate	MT	3,627	N. A	74	3,831	44,084
Cocoa Fertilizer	MT	N. A	N. A	N. A	-	N.A
*Others: Solid	(MT)	20,459	178,875	-	63,494	119,326
Liquid	(LT)	523,646	2,839,351	-	1,570,654	665,431
TOTAL	**SOLID (MT)**	**440,826**	**499,566**	**383,054**	**425,110**	**119,326**
	LIQUID (LT)	**651,211**	**2,853,702**	**-**	**1,669,988**	**1,399,756**

Source: Crops Services Directorate, Plant Protection and Regulatory Services Directorate (2012 - 2017), (Ministry of Food and Agriculture). Nitrate Fertilizers Include Potassium and Calcium Nitrate. Npk Includes 15-15-15 and Other Npks. *Others: (Znso4, Fe3so4, Ca (No3)2 Mgso4, K2so4, Mg (No3 Nh4no3)2,5

4.2 IPM Strategy for Pest Control

The integrated pest management is the adopted strategy for the fight against pests in Ghana. However, the use of the integrated combat is not widespread despite the efforts undertaken. The use of pesticides is increasing despite the high cost of the products relative to the financial capacity of majority of farmers. Research Institutions in Ghana have had some good results regarding the efficient use of botanical products. In actual fact, several institutes including the Crops Research Institute, Faculty of Agriculture / Kwame Nkrumah University of Science and Technology (KNUST) University of Ghana, Legon, Savannah Agricultural Research Institute (SARI) have conducted projects concerning the integrated management of pests in several operations (soybeans, maize, pawpaw, OFSP, cucumber, etc), the development of a control system for the use of pesticides for communities practicing rural related agriculture, IPM Kit development, demonstration and transfer of technology in IPM.

During consultation with the PPRSD of MoFA, the directorate indicated efforts being made to build the capacity of farmers in the application of pesticides on farms. Through the support of international development partners including the German Development Cooperation (GIZ) and the United States Agency for International Development (USAID), the directorate has developed separate booklets and manuals presented in the Annex to serve as extension guides on integrated pest management practices for food production including cereals (rice).

Table 4-4: Manuals/booklets developed by PPRSD for IPM practices

Manual	Compiled by	Highlights
Manual for Safe Use of Pesticides (Annex 5)	PPRSD of MoFA	• This manual was developed by the PPRSD of MoFA under GCAP. • It provides a guidance to farmers and stakeholders involved in pest management and related fields. • The manual offers a practical and informative guidance on how to comply with legislations and best practices regarding the use, transportation and storage of pesticides by stakeholders. • It provides insight into the disposal of obsolete pesticide stocks and empty pesticide containers. • This document promotes safe and healthy practices associated with the overall use of pesticides. • It seeks to contribute to minimizing the potential risks involved in handling and application of pesticides by suggestion precautionary measures.
Integrated Pest Management Practices for the Production of Cereals and Pulses	PPRSD of MoFA	• To recognize the most common pest, diseases and weeds that attack crops in the field and in storage; • Identify the damage done by particular pests and diseases at different growth stages of crops; • Know and understand the options that are available for effective IPM of major crop pests, diseases ad weeds; • Work with farmers on how to apply IPM methods to manage crop pests, diseases and weeds to achieve sustainable and environmentally sound crop production
Principles and practices of Integrated Crop and Pest Management (ICPM)	PPRSD of MoFA	See Table 4.5

The national IPM approaches developed for cereals and pulses are largely based upon 15 principles, practices and what happens in each case. The principles are presented in the table below.

Table 4-5:IPM Approaches for Cereals

Principles	Cereals
Principle 1	Obtain good seeds
Principle 2	Select fertile soils and suitable planting sites
Principle 3	Plan crop rotation
Principle 4	Adopt appropriate planting distances and planting patterns
Principle 5	Plant crops at appropriate times
Principle 6	Weed early and regularly
Principle 7	Adopt good soil management practices
Principle 8	Adopt suitable water management practices
Principle 9	Visit fields regularly
Principle 10	Maintain high levels of sanitation in the field

Principles	Cereals
Principle 11	Manage pests and diseases efficiently
Principle 12	Enhance and protect the populations of natural enemies (e.g. predatory ants, spiders and parasitic wasps)
Principle 13	Minimize the application of chemical pesticides
Principle 14	Adopt good harvesting methods
Principle 15	Adopt good, clean storage systems

Sources: MoFA-PPRSD/GTZ: Integrated Pest Management Extension Guide 4/Integrated Pest Management Extension Guide 2

4.2.1 Preventive Fight Methods

This control is usually applied for pests such as locusts. Regulatory bodies collaborate with international partners during indicated periods of the year in order to follow the evolution of the situation of the populations. Surveillance of other agricultural pests is the responsibility of farmers. However, plant protection services also identify pests to determine areas at risk of infestation that compromise food security. The use of drones for pest management is also a method the PPRSD is looking forward to using to make pest control/management easier and faster.

Some of the preventive control consist of the destruction of the causative agent in the fields of the target and surrounding crops. Some farmers also adopt the use of crushed neem grains with oil to prevent insect attack. The following methods as summarised in **Table 4.6** can be used for preventive control.

Table 4-6: Preventive Fight Methods

Method	Comments
Prophylactic measures	In many crops, seeds are used as propagation material. They can be contaminated (internally and externally) by fungi, bacteria, viruses and nematodes. These parasites will develop with the germination and growth of plants. Prophylactic measures consist of: • using only seeds, seedlings, discards or tubers of known and certified origin produced by official bodies. The seeds can be disinfected, by fumigation or by coating; • choosing soils with good natural drainage, suitable for planting; • destroying the residues of previous crops. Plant residues (stems, roots) or even fruits and tubers that remain in the plots after harvest often contain pests or diseases, thus constituting a source of infestation for the next crop. Indeed, parasites can survive during the dry season and infest the next crop. It is recommended to (i) burn stems and stubble, (ii) compost with residues; • rotating crops, ie plant crops that do not have any pests in common (rotation of cereals with root and tuber crops). Crop rotation prevents the proliferation of diseases and pests by breaking their development cycle; • making physical barriers by protecting crops from pest attack by nets. Vertical nets, insect-proof plastic films, silica-based inert powders with abrasive and drying properties.
Genetic control	This control technique is based on the use of resistant or disease tolerant varieties. The cultivation of resistant varieties is the simplest and often least costly solution for the farmer in his fight against plant diseases. In the absence of adequate resistance characteristics, the tolerance can be used, with the proviso that tolerant plants can be

Method	Comments
	infected and serve as a reservoir of germs and therefore a source of contamination for sensitive varieties.
Cultural or agronomic control	This control is carried out by adopting favourable cultural techniques. These include: (i) Ploughing; (ii) Adequate cropping system; (iii) Good date of planting or planting; (iv) Cover crops; (v) Weeding; (vi) Associated crop;
Biological control	This is a method of pest control of crops (insects, mites, rodents, etc.), diseases (fungal, bacterial, viral, etc.) or weeds (weeds) by means of living organisms' antagonists, called biological control agents or auxiliaries of crops. Biological control ensures the preservation of fauna or flora useful (create environments favourable to the development of auxiliaries.). An auxiliary is defined as a predatory or parasitic animal that, by its way of life, assists in the destruction of pests that are harmful to crops. Most of these auxiliaries are insects (usually wasps), and a small proportion of nematodes and mites. Auxiliary organisms have demographics related to those of the populations of their "hosts". They are dependent on the density of the pest populations (disease, pest and weed).
Environmental management practices	Planting hedges: predators need this resource to reach sexual maturity and thus reproduce, providing prey / replacement hosts, shelter during work or treatment on the plot. Grass strips: the implementation of grass strips is relatively simple, inexpensive and their impact is fast. Different and complementary devices can be set up according to the auxiliaries that one seeks to promote. Grass strips make it possible to meet the specific requirements (varieties of pollen, nectar) of many auxiliaries, to give them easier access to these resources, and to attract them to the immediate vicinity of crops

4.2.2 Curative Fight Methods

By this method, locust invasions are managed at the national or even sub-regional level. Farmers encountering pest problems usually rely on competent MoFA services to receive control advice that they will apply in the field. Additionally, the decentralization of the PPRSD offices across the country plays a very important advisory role at this level. Neem grains and other pesticide mixtures help control the diseases and pests identified in the target crops. Some of the curative fight control include:

Table 4-7: Curative Fight Control Methods

Control	Comments
Mechanical control	There are a number of physical processes that can reduce parasite populations or bio-aggressors when they are already installed in cultivated plots: • *Destruction of diseased or infested plants*: This method is particularly indicated in cases where there is a disease that can disperse quickly in the plots (fungi, viruses, nematodes ...). It is the case of fruit fly (*Rhagoletisochraspis*) for tomato crops. Plants

Control	Comments
	affected by the disease should be isolated, desiccated and buried or incinerated; Plants affected by the disease should be isolated, desiccated and buried or incinerated; • *Trapping pests (insects and rodents)*: it is achieved by the installation of traps classic (trapping live animals) type box with a rocking input system. It is a very effective method but quite restrictive and time consuming (takes time). Trapping is also used to estimate a population of animals (rodents) on a plot; • *Pickup* • *Harvest or sanitary size*
Biological control	• *Inundative release of auxiliary or predatory insects, and parasitoid*: In all ecosystems, there are organisms called "auxiliaries" which are natural enemies of "pests". Biological control consists in favouring the populations of these auxiliaries by releases. This keeps the "pest" populations under control. An example is the Trichogram flood release to control sugar cane drillers. • *Plant extracts or biopesticides*: Many plants produce insecticidal substances that can be sprayed on crops after extraction. It is a preparation based on Neem, Tobacco and papaya leaf. In Ghana, very few programs are being developed to initiate experimentation with the use of biological pesticides
Reasonable chemical control:	The application of pesticides at effective doses during treatments that are as few as desirable, carried out at the most appropriate times and with the required treatment equipment. This control method has the advantage of: (i) Effectively protecting its crop and harvest; (ii) Respecting maximum pesticide residue limits (MRLs); (iii) Improving its income by reducing the use of inputs (fertilizer and especially pesticides)

Additionally, subregional initiatives led by Institut Togolaise de Recherche Agronomique (ITRA) and Institut de Conseil d'Appui Technique (ICAT) in Togo have led to convincing results. The use of chemical pesticides is being replaced by biocidal plant extracts such as "neem" (*Azadirachta indica*), *Lannea microcarpa*, red pepper, cow dung, etc., which are used as a natural pesticide.

ITRA has particularly initiated the experimentation of the use of biological pesticides (especially extracts of the leaves of "neem" or *Azadirachta indica*) on vegetable crops. However, certain constraints have been encountered in the purification of the molecule extracted from the "neem". The difficulties of using these approaches by farmers are related to the availability of neem leaves and grains and the influence of climatic conditions in coastal areas. Other promising tests have also made from papaya leaf extracts. These different results of proven initiatives could be capitalized as part of integrated pest management in Ghana.

4.3 Alternatives to Pesticides

Over the years, efforts have been made particularly by the research institutions to develop alternative products to the use of agro-chemical products especially containing POPs (Persistent Organic Pollutants) with the aim of reducing the use of pesticides in agriculture and the areas of use of these pesticides. These alternatives include cultural control, physical control, genetic control, integrated pest management, biological control, the use of bio-pesticides, the use of pesticides of the organophosphorus family, carbamates, pyrethroids, etc.

Some forms of control are being tested and are alternatives to POPs pesticides. Many other plants (garlic, pepper, onion, tobacco, pyrethrum, etc.) are also used as bio-pesticides and research is continuing. Additionally, research is ongoing to test bio-pesticides on certain cereal crops and the results of this research will make it possible to propose actions of information and sensitization of the populations on the necessity to use these bio-pesticides.

During the consultation, farmers indicated knowledge and understanding of alternative products to pesticides. They indicated practices such as the use of neem grains, or bark of cailcédrat as bio-pesticides; the use of oxen or goats' excrement to protect crops against ruminants; sands, ashes, chilli powder for the preservation of corn, and others (powders of mahogany bark, neem leaves) as alternatives to pesticides application. Farmers are also aware of cultural techniques such as cultural association, crop rotation, transplanting, organic manure, etc. Nonetheless, they indicated their preference for chemical pesticides due to their efficacy, and accessibility to treat large areas as compared to the alternative approaches. Table 4.8 provides a list of alternative products to POP pesticides by their area of use.

Table 4-8: List of Alternatives to POP pesticides by area of use

Area of use	POPs pesticides formerly used	Alternative
Agriculture	Aldrine, Chlordane, Dieldrine, Endrine, Heptachlore, DDT, Hexachlorobenzène	• Practice of biological control (use of organismsnatural enemies to control crop pests and the use of conventional or repellent insecticides); • Use of bio-pesticides (neem seed porridge, fermented neem leaf solution, neem leaf powder, neem seed oil, papaya leaf, dried pepper, garlic and onion extracts); • Organophosphorus, pyrethroid, and other new generations of agricultural insecticides; • Cultural practices aimed at reducing the pest population and promoting the natural enemies of these pests (combination of crops, rotation and rotation in time and space, varietal choice, timing of the sowing period to make them less vulnerable to pest attack); • Practical physical control (burning of parasitic plants, disinfection of soil with water vapor, use of mechanical traps, sun drying of foodstuffs before storage, systematic destruction of products, highly infested or infected plants, weeding good time); • Practice of genetic control (use of resistant or tolerant varieties)

4.4 Assessing Knowledge and Practices in Pesticide Management

During the preparation of this report, a number of stakeholder engagements were held with key agencies including the Directorate of Crop Services (DCS) - MoFA, Directorate of Agricultural Extension Services (DAES) - MoFA, the Plant Protection and Regulatory Services Department (PPRSD) – MoFA, and the Environmental Protection Authority (EPA) of the Ministry of Environment, Science and Technology (MEST). Details are found in Annex 6. In the case of the Chemicals Control and Management Centre

(CCMC) of the EPA, it was observed that knowledge about IPM and good phytosanitary practices are relatively well mastered. Nonetheless, there is still the need for capacity building for users including agro-dealers, vegetable-gardeners, cereal, and legume and root tuber farmers on regulatory procedures, product characteristics and good practices.

It was also revealed that farmers and sellers continue to ignore the adequate and relevant use of pesticides and the different alternative methods. Implementation of safety measures is generally inadequate, and it is important and necessary to control the places of storage and sale of pesticides in order to avoid or at least reduce the exposure of the population to these products. Risks remain greater in the country where information and awareness are insufficient on the necessary safety arrangements for handling pesticides. In the framework of REWARD, it is necessary to provide information-education-communication (IEC) actions through the DAES with the use of local radios and posters.

Based on the stakeholder consultation on pesticide management, a number of recommendations have been proposed by the Consultees including:

- Build capacity on responsible use of pesticides given the low level of knowledge of farmers;
- Encourage farmers into organic farming to minimize environmental degradation and reduce the increased use of plant protection products;
- Strengthen agricultural advice around the popularization of integrated pest management (IPM) methods among farmers;
- Enhance the capacity of health workers in the management of pesticide poisoning cases and the establishment of databases on the various cases treated;
- Establish storage facilities for unregistered pesticide and empty packaging products and regulate the removal of such packaging by distributors; and
- Resource technical platform of health centres for better management of cases of intoxication

4.5 Key Pests and Recommended Management Practices

4.5.1 Major Natural Enemies and Enhancing Natural Enemy Populations

One important aspect of the IPM approach is the role of natural enemies, or beneficials. Natural enemies are the predators and parasites, parasitoids and beneficial micro-organisms that attack crop pests and disease organisms. Predators are hunters that usually feed on a range of insects or other animals, while parasitoids are often very specific to a certain pest in which they develop. The table below shows the major natural enemies and the pests they feed upon.

Table 4-9: Major natural enemies and the pests they feed upon

Natural Enemy Groups	Examples	What they feed upon
Predators	Predatory mites	Pest mites and thrips
	Spiders	A wide range of insects, such as flies, aphids, caterpillars, butterflies, moths, planthoppers
	Mantids	A wide range of insects, such as flies, aphids, moths, caterpillars
	Assassin bugs	Other bugs, aphids, leafhoppers, maggots, caterpillars
	Predatory ants	Insect eggs, caterpillars, grubs, maggots, termites
	Ladybirds (larva and adult)	Aphids, scale insects, mealy bugs, white flies, mites
	Lacewings (Larvae only)	Aphids and other soft-bodied insects, as well as insect eggs and mites

Natural Enemy Groups	Examples	What they feed upon
	Ground beetles (larva and adult)	Caterpillars, grubs, bugs, beetles, maggots
	Hover fly (larvae only)	Aphids, thrips and other soft-bodied insects
	Robber fly	Caterpillars and small insects
Parasites	Parasitic wasps	Caterpillars, aphids, scale insects, maggots, mealy bugs, white flies, insect eggs, beetles
	Parasitic flies	Caterpillars

Source: Integrated Pest Management Extension Guide 1. Principles of Integrated Pest Management: Growing Healthy Crops, Anthony Youdeowei, MoFA/GTZ

Populations of natural enemies can be increased in the field so that they help to control crop pests. Simple techniques for doing this are based on creating a conducive environment for their development and on providing attractive substances to concentrate them on infested crops. Some actions that can be taken include the following:

- Minimise the use of chemical pesticides, as these will kill the natural enemies and thus destroy their populations; if it is absolutely necessary to spray crops with pesticides, use selective rather than broad-spectrum pesticides;
- Mulch your crops with dried leaves and other plant materials; mulch provides protected, cool and moist sites suitable for the breeding and resting of natural enemies such as predatory ants, spiders, centipedes and ground beetles;
- Predatory ants are attracted to sugar/water solutions; prepare a sugar solution by adding about 90kg of fine sugar to 1 litre of water; mix thoroughly until all the sugar dissolves, and then spray this solution on the leaves of the infested crop once a week or as needed; this solution will attract ants onto the crop plants where they will prey on thus eliminate the pests;
- Water solutions of the juices of ripe fruits (e.g. mango) can serve as a cheap substitute for sugar;
- Leave strips of flowering weeds around the crop field to serve as a refuge for natural enemies.

4.5.2 Recommended IPM Practices for Cereals Crop Pests/Disease

Table 4-10: Recommended IPM Practices for Rice

Pest		Recommended management practices
Insect	Armyworms (*Spodoptera exempta)*	• Use pheromone traps to detect when adult months are flying and preparing to lay eggs • During outbreaks immediately contact PPRSD / DAES • Use approved short-term persistence pesticides to spray young caterpillars
	African gall midges (*Orseolina oryzivora)*	• Plant recommended early maturing varieties • Destruction of eggs in the seedbeds • Early planting • Proper fertilization • Use recommended plant spacing • Observe simultaneous planting • Destruction of stubble after harvest • Clean weeding • Biological control for *C. partellus* (already introduced and released)
	Stalked-eye shoot flies *(Diopsis spp)*	
	Stem borers *(Chilo spp, Maliarpha separatella, Sesamia calamistis)*	

Pest		Recommended management practices
		• Plough after harvest to expose the eggs to natural enemies
	Weeds (all type)	• Early clean weeding • Use recommended herbicides if necessary
	Birds, rats, rodents	• Scaring • Bush clearing • Early weeding and field sanitation • Early harvesting • Monitoring and management of outbreak flocks • Bird trapping • Farmers to scout potential breeding sites and destroy nests □ Monitoring and organise aerial spray based upon advice from PPRSD • Spot spraying, targeting roosting sites (carried out by PPRSD)
Disease	Rice blast (*Pyricularia oryzae)*	• Destruction of crop residues • Clean seeds • Avoid use of excessive nitrogen fertilizers • Use of wide spacing to avoid overcrowding • Use resistance varieties where available • Appropriate crop rotation • Timely planting • Burying crop debris
	Rice brown leaf spot (*Helminthosporium oryzae)*	
	Sheath rot (Acrocylindrium oryzae)	
	Rice yellow mottle virus (RYMV)	• Field sanitation including burning of crop residues and removal of volunteer plants • • Use of resistant varieties

4.5.3 Management of Post-Harvest Pests of Cereal Crops

Losses due to damage caused by the larger grain borer, weevils, rats/rodents, aflatoxins, and grain moths can be minimized through the following IPM strategies:

- Selection of tolerant varieties
- Timely harvest
- Dehusking and shelling
- Proper drying
- Sorting and cleaning of the produce before storage
- Cleaning & repair of storage facilities
- Use rodent guards in areas with rat problems
- Use improved granaries
- Use appropriate natural grain protectants where applicable
- Use recommended insecticides at recommended dosage
- Store grain in air tight containers. Where airtight containers are used store these in a shady place, preferably in-doors on raised platform to allow air circulations and prevent attack by mould.
- Carry out regular inspection of the store and produce. Timely detection of any damage to the grain and/or storage structure is essential to minimise potential loss or damage

Biological control of the Large Grain Borer (LGB) using *Teretriosoma nigrescens (Tn)* to minimise infestation from wild sources will be beneficial once appropriate strains of the *Tn* are identified and

validated. This is a task of the Plant Protection and Regulatory Services Directorate (PPRSD) because the agents must be reared and released in strategic sites.

4.5.4 Pesticide applications – cereals - in line with IPM approaches

The following considerations should be applied in the application of pesticides for cereals:

(i) A decision to use chemical pesticides should be taken only as the very last resort and should also be based on conclusions reached from an agro-ecosystem analyses (AESA).
(ii) All pesticides should be EPA approved and PPRSD recommended.
(iii) If it is necessary to spray crops with pesticides, use selective rather than broad-spectrum pesticides.
(iv) All herbicides should be applied using knapsack sprayers.
(v) All the insecticides for storage pests of cereals/pulses are in dust form and therefore used as supplied without mixing with anything else.
(vi) The list of pesticides can change as new products are recommended and/or some of the chemicals are withdrawn. Therefore, always consult the retailer/stock list, the nearest PPRSD extension worker if in doubt and/read the label.

4.6 Controlling Pesticides used in Crop Protection

Every pesticide produced in Ghana and imported is expected to be subjected to approval. This constitutes the primary barrier making it possible to filter the products entering the countries. In order to ensure that it is done, Phyto-sanitary Controls are stationed at the borders (sea ports, airports, and roads). It is done by the PPRSD and assisted by custom officials at the entry points also in charge of pesticides control. The control of pesticides is also done in principle at the distribution level in the towns/villages through decentralized services, which see to it that distributors, dealers and resellers abide by the established texts (sales permit).

In order to ensure the efficient use of the pesticides for the fight against crop pests/diseases, the maximum residue limits (MRL) have been defined by European markets/EU standards. Where undefined, the Codex Alimentarius / “Food Code” (a collection of international standards, guidelines and codes of practice to protect the health of consumers and ensure fair practices in the food trade) is considered. Ghana is required to comply with sanitary and phytosanitary measures (SPS) and especially the pesticides residue values available in farm products that should not exceed the acceptable maximum residue limit, otherwise produce from Ghana will be banned. Currently, compliance with MRL is restricted to crops earmarked for export. Unfortunately, there are no restrictions on MRL for crop products sold locally. It is an accepted fact by West African countries that the presence of residues in food stuff is a reality. The Ghana Standard Authority laboratory is qualified for the analysis of the MRL. It is important both from an economic point of view (exports) and also from a sanitary/health point of view to systematically carry out the monitoring of MRL for crops sold in the local markets.

4.7 Management and Use of Pesticides

4.7.1 Production and importation of pesticides

In West Africa, there are no industrial units ensuring the synthesis of active materials through branded laboratories. Thus, production of pesticides in the proper way is not effective in the whole of these countries. Finished products are rather imported notably through mother companies represented at the national level or active matters for formulation purposes. In Ghana, the following can be cited – Abuakwa

Formulation unit, Wienco, Dizengoff, CHEMICO, Reiss & Co., Calli Ghana. The volume of pesticide imports for the 2020 is provided in the table below (**Table 4.11**.

Table 4-11: Summary of Pesticides Import -2020

Chemical Type	Unit	Quantity
Insecticides	MT	6,354.1
Herbicides	MT	30.154.1
Fungicides	MT	1,105

Source: EPA/CCMC, 2021

4.7.2 Selling and Distribution Practices

The distribution channel is entirely private. Suppliers who import the products feed the market through distributors, retailers who supply traders and they display for sale. Certain distribution spots – sales point- are well kept and abide by commercial rules; in general, the products are well displayed on shelves. However, at the level of many retailers and traders who display for sale there are great risks.

On account of the low financial capacity of local farmers/peasants and other buyers, some of the products are sold in retail. This practice is carried out without caution notably with decanting. Smaller retailers may decant products into smaller containers to meet farmers' purchasing ability, usually without proper labels, which should describe active ingredients and concentration, dosage, handling instructions and hazards, batch and date of expiry.

Some retailers are polyvalent and therefore engage in other types of commerce in the same premises. Distribution is also carried out sometimes without authorisation as required by the regulation and with the personnel not having received any training in the pesticide chemical products domain in general. In fact many of these actors do not have the requisite approvals/permits/license. Nevertheless, retailers affiliated to suppliers receive this type of training through the suppliers themselves.

<u>Other challenges</u>

The problems associated with the adulteration of pesticides by some pesticide dealers have created real concern for a wide variety of interest groups in recent times. Stakeholders from the Environmental Protection Authority (EPA), Ministry of Food and Agriculture (MoFA) as well as farmers have observed that some pesticide dealers adulterate and fake pesticides, using methods such as the alteration of expiry dates of pesticides, the change of labels on pesticide containers, and the preparation and bottling of mixtures in already used pesticide containers.

These criminal and unethical practices are attributed to the desire of bad dealers to make huge profits. These unscrupulous dealers exploit the low literacy levels and financial capacity of their customers, most of whom are smallholder farmers, who cannot tell the difference between fake and genuine products and the implications and sources of low-priced pesticides.

4.7.3 Use of pesticides by farmers

In most cases, farmers themselves or farm assistants spray the plant protection products. The protection of farmers and farm assistants against any type of contamination by pesticides is not guaranteed. Farmers use various types of applications and in most cases the appropriate personal protective equipment (PPEs) such as hand gloves, overalls etc are not worn. The time of spray during the day is sometimes not appropriate.

Farmers have been observed spraying during hot afternoons when sunshine is at its peak and such farmers who are usually not in appropriate PPEs are exposed through inhalation and skin contacts.

As regards the bad use of pesticides, the treatments are done several times which leads to product waste but also to a lack of good judgement as regards their efficiency. The documents that allow to monitor product traceability are very scarce or even non-existent as well as the notification of product usage. All of this could lead to the availability of residues in the products with the associated difficulties to export these.

4.7.4 Management of pesticide containers

The management of pesticides containers is under the responsibility of resellers and farmers because of the retail sales system. They find themselves with the most important share of the empty containers which are differently managed.

- Sales to pesticides buyers who do not have empty containers and who straightforward reuse these containers;
- Sales for other uses; and
- Farmers/buyers reuse empty containers for storage purposes at household levels including drinking water.

Littering of farms with empty pesticide containers

With big commercial farms or companies, management of pesticide containers is expected to be clearly stated in their environmental management plans (EMP) to the EPA. Usually, these companies indicated that they will liaise with the appropriate MoFA office to provide guidance on the disposal of the containers.

Facilities for the treatment of large empty containers are not known to be installed or in use in the country at the moment. Such facilities will be useful for the treatment of high-capacity drums for recycling or reuse. A collection and disposal system and cleaning of pesticide containers need to be put in place by PPRSD-MoFA and the EPA under REWARD. Currently there are few private companies recycling empty containers and other plastics. Farmers supported by the project should be linked to these companies for efficient disposal of empty containers.

4.7.5 Accidents resulting from pesticide use

As regards the sanitary consequences of the use of pesticides, there are often cases of death or intoxication. Indeed, cases of lethal intoxication have been recorded for human, and animals. PAN Africa keeps a database on the cases that occurred in Senegal and in some countries of the sub region. The Ghana Poison Control Centre is expected to keep records on pesticide poisoning and accidents. The existence of the Centre is not very popular among many Ghanaians. The Centre needs to be supported for the collection and keeping of accurate statistics on these events. Currently, the data on pesticide poisoning and accidents resulting from pesticides use or disposal must be fragmented and remains in the various newspapers that have reported such cases, and various hospital cases. There is the need to create awareness raising actions that will target the different pesticide users in order to avoid accidents and incidents.

4.8 General Health Problems and Environmental Hazards associated with Pesticides

There are acute and chronic health effects, and these effects may manifest as local or systemic effects. They include skin irritations, such as itching, rashes, blisters, burns, wounds, irritation of throat leading to cough or difficulty in breathing with or without wheezing or choking, chest pain, burning mouth and throat with

pain on swallowing, runny nose, sore throat, headache, dizziness, sudden collapse with or without unconsciousness.

Others include eye irritation, blurred vision, lots of tears or saliva or mucus secretion and sweating, nausea, vomiting, chest infections due to aspiration of vomits, fever, abdominal pain or discomfort, diarrhoea, uncontrolled urination and defaecation, slowing of heartbeat or rapid heartbeat, weakness including muscles for breathing, muscle twitching or pains, tremors, convulsion, coma, hallucinations, pain and numbness in legs, allergic reactions. Others are problems with liver, kidney, or nerves functions, improper functioning of the heart etc. The table below provides a summary of pesticide problems relating to human health, environment and crops.

Table 4-12: Pesticide problems relating to Health, Environment and Crops

Hazards to health	**Hazards to Environment**	**Hazards to crops**
Acute poisoning: 3 million poisonings including 20,000 unintentional deaths occur annually (WHO). Symptoms of acute poisoning include severe headaches, nausea, depression vomiting, diarrhoea, eye irritation, severe fatigue and skin rashes. Chronic ill-health problems can affect women and men, girls and boys exposed to pesticides, whether because of their occupation or because they live near areas of use. Such problems can include neurological disorders, cancers, infertility and birth defects and other reproductive disorders.	Contamination of drinking water and ground water. Water contamination kills fish. Soil contamination. Wildlife and domestic animals can be killed by spray drift or drinking contaminated water. Exposure may also cause infertility and behavioural disruption. Persistence in the environment and accumulation in the food chain leads to diverse environmental impacts. Loss of biodiversity in natural and agricultural environments	Pesticide resistance: 520 species of insects and mites, 150 plant diseases; and 113 weeds are resistant to pesticides (FAO). Resistance can create treadmill syndrome, as farmers use increasing inputs to little effect, while elimination of beneficial insects Causes secondary pest outbreaks. High cost of pesticides can lead to falling incomes for farmers: Newer products are often safer but are more expensive. Farming communities lose knowledge of good horticultural practices and become dependent on expensive external inputs.

5.0 STAKEHOLDER ENGAGEMENT PLANNING AND OUTCOMES

5.1 Purpose of Stakeholder Engagement

Stakeholders in the field of pest and vector management were engaged to obtain the full support of key actors within the sector to promote the effective implementation of the PMP. Stakeholder involvement in the development of the PMP was a participatory process involving interactions between technical resource persons and various stakeholders including:

- Government institutions directly or indirectly involved in pest or vector management;
- Anchor farmers and their out-growers;
- Agricultural importers and exporters organizations;
- Non-Governmental Organizations;
- Agrochemicals industry;
- Private crop protection advisory firms;
- Producers of biological control agents; and
- Bilateral and multilateral development partners.

This facilitated the preparation of appropriate action plans for project sub-components to implement ecologically sound management of pest and vectors. It also aided in decision making through increased mutual understanding, promoting the feeling of ownership and establishing good rapport, and gaining technical expertise and first-hand knowledge on the subject matter. The institutions and agencies identified for consultation have regulatory mandate, oversight responsibility, extension service provision or enforcement powers in the pest and vector management sector. The other stakeholders identified were groups of people, companies, individuals or associations that have interest in the sectors, or whose operations are key to the implementation of the PMP.

5.2 Stakeholder Engagement Methodology

5.2.1 Stakeholder Identification and Mapping

In identifying the stakeholders, an initial prospective list was developed by matching the main issues of the IPMP with the various stakeholder groups in a Stakeholder Identification Matrix (SIM). Table 35 gives the SIM used to help elicit inputs from the various stakeholders with respect to their relevance for involvement in the engagement processes. The review of the relevant legislation of incorporation and institutional mandates also defined the relevance of the identified stakeholders to the assignment and their areas of interest in order to identify the key issues of engagement (Table 35). The key stakeholders identified have been listed under the respective category in **Table 5.1**.

Table 5-1: Stakeholder Identification Matrix

No.	Stakeholder Categories / Main Issues	Sector Oversight/Actors	Enforcement Agency	NGOs/Civil Society /Associations	Regulatory Authority
	Institutional collaboration	DAES / PPRSD / VSD	CD/ GPS	CLG / GAIDA / PIA	EPA / FDA / GSA
	Monitoring activities	DAES / PPRSD / VSD	Customs Division	CLG / GAIDA / PIA	EPA / FDA / GSA
	Capacity building	DAES / PPRSD / VSD	Customs Division	CLG / GAIDA / PIA	EPA / FDA / GSA
	Extension services	DAES/APD		CLG / GAIDA / PIA	
	Pest and vector management issues	PPRSD / VSD/ AnFOG	Customs Division	CLG / GAIDA / PIA	EPA / FDA / GSA
	Outbreak of animal disease	PPRSD VSD/AFOG/APD		CLG / GAIDA / PIA	EPA / FDA / GSA
	Disposal of unwholesome/pest infested produce	PPRSD/AnFOG	Customs Division		EPA / FDA / GSA
	Accreditation of pesticides	PPRSD	Customs Division	PIA	EPA / FDA / GSA
	Requirements for international standards	PPRSD	Customs Division	CLG / GAIDA / PIA	EPA / FDA / GSA
	Importation of pesticides	PPRSD	Customs Division	PIA	EPA / FDA / GSA
	Pest and vector control methods	DAES/ PPRSD / VSD	Customs Division	CLG / GAIDA / PIA	EPA / FDA / GSA

Table 5-2: Categorization of Stakeholders

Government Ministries (Sector Oversight)/Actors		NGOs /Civil Society/ Associations

➢ Ministry of Food and Agriculture (MOFA):
• Directorate of Agricultural Extension Services (DAES)
• Directorate of Crop Services (DCS)
• Plant Protection & Regulatory Services Directorate (PPRSD)
  ○ Crop Pest and Disease Management Division
  ○ Pesticides and Fertilizer Regulatory Division
  ○ Ghana Seed Inspection Division
  ○ Plant Quarantine Division
• Anchor Farmers-Out Growers (AnFoG) – list provided in Annexes 5.4, 5.5
		➢ CropLife Ghana (CLG)
		➢ Ghana Agri-Input Dealers Association (GAIDA)
		➢ Pesticides Importers Association (PIA)
		Enforcement Agencies
		➢ Customs Division (CD) of the Ghana Revenue Authority (GRA)
		➢ Ghana Police Services (GPS)
		Regulatory Institutions
		➢ Environmental Protection Agency (EPA)
		➢ Ghana Standards Authority (GSA)
		➢ Food and Drugs Authority (FDA)

5.2.2 Stakeholder Engagement Planning

The district agricultural officers were instrumental in stakeholder engagement activities at the district level. The consultant carried out prior training to equip the officers for the tasks. The officers undertook the engagements through in-person meetings in all project districts targeted areas and digitally transmitted the information to the consultant for cleaning and incorporation into reports. Subsequent communication was held via WhatsApp as follow-up to clarify information provided at the engagement or to request for relevant documents.

5.3 Engagement Issues and Guides

Institution-specific stakeholder issues were developed and delivered through semi-structured questionnaire to elicit initial stakeholder responses. This comprised background information on the PMP solicited from PCU as well as the specific issues of relevance and interest to the respective stakeholders. The engagement reports for the specific stakeholders from the project districts are presented in the Annexes 5.1 to 5.7. Photographs of engagement are also provided in Annex 6.

5.4 Stakeholder Engagement Highlights

The highlights from the engagement with stakeholders has been provided in **Table 5.3** with the full consultation outcomes presented in the Annexes. This will inform pest and vector management on the Project as well as apprise the PMP. During the stakeholder engagement, a number of issues were identified and prioritized by stakeholders to improve pest and pesticide management.

At the institutional, legislative and regulatory level, issues such as porosity of national borders which allow for the influx of banned chemicals into the country; non-compliance with the regulations; insufficient regulation; need for capacity building; inadequate human resources, equipment logistics and financial resources for the field monitoring of IPM approaches were identified as the main concerns.

Monitoring is also a major concern for stakeholders with issues such as lack of personnel and equipment in assessing the impacts of pesticides and insufficient control over the use of pesticides identified. Inaccessibility of approved pesticides near farmers, lack of efficient treatment and waste disposal systems at the farms and insufficient extension of alternative methods to pesticides and integrated pest management were also identified as concern by farmers.

Farmers also raised concerns on issues regarding lack of regular training for farmers on pesticide use and management of empty packaging, inadequate information on the dangers related to the use of pesticides and illiteracy of the populations.

Table 5-3: Major Highlights from Staekholder Engagements

Stakeholder	Key Highlights
Anchor Farmers for Crops	• Agrochemical chemical essential for their production activities • Basically, use herbicides (pre and post – emergent), fertilizers, insecticides, fungicides • Anchor farmers use boom sprayers for the farmers but hire labour to spray difficult to reach areas (2% of farmers) using knapsack. These casual workers are usually illiterate in the areas with no professional spraying training

Stakeholder	Key Highlights
	• Chemical purchased in bulk and stored in designated warehouses, have also been supported by SAPIP with inputs since 2018 • Volumes of chemical used depend on farm size. • Major challenge is with the management of waste containers, therefore resort to burning which is also harmful to the environment • Options for waste container management and training for causal workers engaged for spraying and fertilizer application necessary
Agro- Input Dealers	<u>Overview of Respondents and Meetings</u> ● Data was collected from 11 agro-input dealers between April 15 and 22, 2025 ● The dealers were located in the Northern, Upper West, North East, and Savannah regions of Ghana. Districts included Savelugu, Tamale Metro, Mion (Northern Region); Wa Municipal, Nandom (Upper West); Mamprusi-Moagduri (North East); and West Gonja (Savannah). ● Meetings were held in various communities and rice valleys such as Nakpanzoo, Nyankpala/Sari, Tindantua, Charia/Kolivege Bor, Ko, Zanwara/Kubori, and Busunu. <u>Profile of Agro-Input Dealers</u> ● **Operating Duration:** The years of establishment ranged from 2016 to 2021, with one business operating for 10 years. Calculated operating durations were approximately 4 to 10 years as of April 2025. One dealer did not specify their establishment year. ● **Legal Status:** Businesses operated under various legal statuses including "Registered company" (3), "Sole proprietorship" (4), "Individual" (1), "Sampaaba enterprise kubori." (1), "Yes" (1, implying registered), and "Registrated" (1). ● **Certification/Licensing:** 6 out of 11 dealers reported being certified or licensed. Certifying bodies included the Plant Protection and Regulatory Services Directorate (PPRSD), Ministry of Food and Agriculture (MoFA), District Assembly, EPA, Registrar General Department, or having a business certificate. 5 dealers reported no certification. <u>Products and Services Offered</u> ● **Inputs Sold:** Most dealers sold a combination of fertilizers, seeds (hybrid, OPV, etc.), and crop protection chemicals (herbicides, pesticides, fungicides). Many also supplied tools & equipment (hoes, sprayers, PPE, etc.). Some offered irrigation equipment and animal feed/veterinary products. ● **Commonly Stocked Products:** Examples include Yara fertilizer, NPK, Urea, various herbicides (e.g., Nicoking, Alligator), maize seeds (e.g., Lake), and knapsack sprayers. ● **Crops Catered To:** Inputs were primarily for rice and maize. Many also catered to soybean and vegetables. One dealer mentioned cowpea under "Others". ● **Additional Services:** Many dealers offered technical advice/training and linkage to markets. Some provided bundled inputs with credit and mobile extension services. One mentioned "Baafo services". <u>Operational Details</u> ● **Busiest Season:** The majority (7 out of 11) cited the "Major season (Mar–Jun)" as their busiest, while 3 stated "Year-round". ● **Monthly Turnover:** This varied significantly, with figures like "1000" (units unspecified), "GHc 400,000", "Ghs 80,000", "50 boxes", "5,000" (units

Stakeholder	Key Highlights
	unspecified), "30,000" (units unspecified), "20-30 bags of 100kg fertilizer 50 bottles of herbicides and weedicides", and "GH7000". ● **Main Customers:** All dealers identified "Smallholder farmers" as their main customers. Estimates for customer demographics (male, female, youth) were provided by most, showing a predominantly male clientele but also significant numbers of female and youth farmers. ● **Input Sourcing:** Most sourced inputs from "Local distributors". Some also sourced from importers, direct from manufacturers, or government programs (e.g., Planting for Food and Jobs). ● **Delays/Stockouts:** 6 out of 11 dealers reported facing delays or stockouts during peak seasons. Causes cited included issues with transport (means and cost), suppliers unable to supply on time, high cost of inputs, security agency delays, lack of financials, few manufacturing companies, storage issues, and delays in clearing goods from the harbour. ● **Digital Tools:** Only 4 out of 11 dealers reported using digital tools (e.g., Smartphone GPS, Zoho workdrive, Laptop, Mergdata) for inventory or sales tracking. ● **Offering Credit to Farmers:** 8 out of 11 dealers offered inputs on credit to farmers. The percentage of customers receiving credit ranged from 5% to 50%. ● **Accessing Business Credit:** Only 3 out of 11 dealers reported accessing credit or loans to run their business, from sources like input suppliers, individuals, and banks. <u>Project-Related Feedback (REWARD Project)</u> ● **Project Awareness:** 5 out of 11 dealers had heard about the REWARD project before the meeting. ● **Perceived Positive Impacts:** Dealers believed the project could increase yield/production (especially rice), create jobs (for women, youth, farmers), build farmer capacity, reduce poverty, improve livelihoods, and increase income for farmers and input dealers. ● **Potential Adverse Effects:** Some concerns included potential land litigation, removal of economic trees affecting women/youth, land disputes, and soil erosion/degradation if not managed well. Several dealers foresaw no adverse effects. ● **Questions about the Project:** Queries included which group of farmers the project is targeting, how it will help input dealers, if it will be a continuous project, whether there would be input support, and when the project will commence. ● **Recommendations for Project Implementation:** Suggestions included proper land ownership consultations, involving and supporting input dealers, timely provision of inputs to credit-worthy farmers, extending valley areas, sponsoring input dealers, and avoiding political interference. <u>Key Challenges Faced by Businesses</u> ● The most common challenges (selected as top 3 by dealers) were: ○ Limited access to capital (10 dealers). ○ Farmer inability to pay (7 dealers). ○ Transportation costs (6 dealers). ○ Inadequate storage facilities (5 dealers). ○ Fake or low-quality products in the market (4 dealers). ○ Lack of technical knowledge (4 dealers). ○ Limited demand (3 dealers). ○ Regulatory challenges (2 dealers).

Stakeholder	Key Highlights
	○ One dealer also specified "Lack of means of transport" as an "Other" challenge. Support Needs for Business Growth ● The most frequently requested types of support were: ○ Credit or financial services (all 11 dealers). ○ Linkage to input suppliers (5 dealers). ○ Business management training (5 dealers). ○ Digital inventory/point-of-sale systems (5 dealers). ○ Training in safe agrochemical handling (5 dealers). ○ Branding and packaging support (4 dealers). Engagement and Partnership ● All 11 dealers expressed openness to partnering with agricultural projects, NGOs, or government programs. ● Types of partnerships of interest included input supply partnerships, training and capacity development, any partnership with mutual benefits, gaining knowledge on agricultural technologies, capacity building, access to credit services, financial partnerships, and support with capital. Facilitator Observations ● Facilitators generally noted good cooperation and participation from the dealers. ● Observations on communities included average standards of living, farmers' financial vulnerability affecting input access, and the potential for the project to bring development. Some respondents were noted as proactive and knowledgeable.
PPSRD	• PPRSD is involved in pest management, disease surveillance and also provides advisory support on levels of disease outbreak • PPRSD also provides advisory and training for farmers and District Staff of Agriculture on how to handle and use the chemicals. • The main pests and diseases managed by the Directotrate include the following: • Rastrococcus iceryoides (mango mealybug); • Fruit flies; • Vegetable flies; • Paracoccus marginatus (papaya mealybug); • Spodoptera frugiperda (fall armyworm); • Mononychellus tanajoa (cassava green mite); • Sternochetus mangiferae (mango stone weevil); • Tetranychus urticae (spider mite of fruits and vegetables); • Tetranychus urticae (red spider mite on pawpaw); • Maize streak • Leaf roller • Leaf miner • Leaf rust • Ground leprosy • Stem borer • Prostephanus truncatus (larger grain borer); and • Spodoptera exempta (African armyworm – it appears once in two years. They attack grains, mainly rice.). New Pest or Vector Control Methods or Approaches that are being tested or introduced into Ghana

Stakeholder	Key Highlights
	• Pheromone traps • Sticky traps • Biological control methods (mass produce biological control agents and released on the field) • Bio pesticides; and • IPM (use of synthetic pesticides). Inadequate experienced staff in the project target areas.
DCS	• The Directorate sets relevant production standards, i.e., Good Agricultural Practices (GAPs) for various crops • The Directorate provides sensitization on appropriate pest management techniques directly to key stakeholders. • The major pest management issues include, but not limited to o Re-infestation of agricultural crops by pests and vectors migrating from similar or related crops that are growing in the wild or are even grown as ornamental plants; and o Pesticides residues being higher than the permissible maximum residue limits (MRLs) • Current chemical usage in target area high even among smallholder farmers due to ignorance and as a cheaper alternative to expensive human labour • Chemical retailing and use in the hands of illiterates a major concern that need to address fast • Dry season gardening is the major culprit of heavy pesticide use in the area
DAES	• The authority set to provide farmers with the necessary training on Good Agricultural Practices (GAPs) including the safe use of pesticides and agrochemicals. • Current agriculture agent to farmer ratio 1: 2,500 and 1:3,000, ideally, the ratio should be 1:500. • Digitization of extensions services has become very crucial now • Since December 2016, Fall Army Worms have become the main pest of interest in the country. They affect rice and maize and could have significant challenges for food security in the country. Rice and maize are also project target crops
EPA	• EPA is in- charge of chemical registration, licensing for importation and sale in the country. In collaboration with stakeholders, like PPRSD, CUSTOMS DIVISION, GSA, etc • Major challenges with chemical usage: • Serious contamination of underground water – Case of nitrogen identifed in water in Bongo • Farmers mostly use non-selective insecticides which effect both beneficial and enemy pest • Most of the farmers are illiterate and so do not follow the MSDS cards of chemicals, leading to wrong application of chemicals • Effective disposal of chemical waste containers still a challenge for farmers • Cases of person storing chemicals with food items in shops have also been witnessed • Farmers harvest produce for markets before the withdrawal periods of these chemicals

Stakeholder	Key Highlights
	• Although a significant number of retailers are registered with the Agency in the target areas, a good number operate illegal • The Agency carries out training on chemical usage in schools, on radio and for its collaborative partners (Attached sample training materials in Annex 4) • The Agency undertakes both compliance and enforcement monitoring on chemical usage

6.0 POTENTIAL IMPACTS AND CHALLENGES ASSOCIATED WITH REWARD INTERVENTIONS

The use of various agro-chemicals especially pesticides is a common feature of crop farming activities across the country and is expected to intensify during the implementation of the REWARD interventions. This section assesses the potential risks / impacts associated with the procurement, transport, storage, use handling and disposal of pesticides as summarised in **Table 6.1** below:

Table 6-1: Summary of the Environmental and Social risks of Pesticide Application

Activities / Sources		**Pesticide Threat / Risks**	
		Biological Environment	**Physical Environment**
Transport	• Uncontrolled import, sale and distribution of pesticide	• Inhalation of product vapours, VOCs • Inhalation of contaminated dust (from pesticides in powdery forms); • Skin burns from contact.	Accidental spills; contamination of soil and groundwater resources through leaching in the event of an accident
Storage	• Non-compliance with National regulations and FAO standards on pesticide storage and/or obsolete stocks; • Lack of training of pesticide traders. • Inadequate appropriate storage facilities and skill to store grain	• Odour nuisances; • Contact with the skin during handling; • Bioaccumulation of pesticides.	In the event of an uncontrolled spill or leak: • Soil contamination • Surface Water Contamination • Impairment of ambient air quality • Fire outbreaks
Handling / manipulation	• Insufficient training and awareness-raising activities for authorised distributors; • Lack of supervision of phytosanitary agents and producers. • Pesticide residues resulting from agricultural intensification/diversification	• Inhalation of harmful vapours; • Dermal contact by splash during preparation • Potential loss of biodiversity (both fauna and flora) due to pesticide activity on non-target organisms • Elimination of the natural enemies of crop pest and consequent alteration of biological pest control methods	• Accidental spills (during sprayer filling and pesticide preparation) leading to contamination of soil and groundwater resources
Disposal of Packaging containers	• Failure of the empty packaging management system (storage, collection,	• Health concerns related to the ingestion of pesticide residues when reusing	• Spill of products on soils;

Activities / Sources		Pesticide Threat / Risks	
		Biological Environment	**Physical Environment**
	transport, rinsing and compaction) • Lack of appropriate equipment for the disposal of empty packaging.	empty containers (plastic cans and metal drums) that have not been properly cleaned; • Dermal and respiratory conditions • Chronic intoxication of personnel in the distribution chain	• Groundwater contamination • Surface Water Contamination
Washing of empty containers	• Information and awareness system failure	• Low level of public awareness of the health risks associated with handling pesticides • Acute poisoning of fish and other crustaceans	• Contamination of water sources by washing containers • Pollution of points (wells) and water bodies (ponds). • Water contamination by runoff or by wind action

The next few sections discuss into detail the major risks and impacts likely to be associated with the use of pesticides under interventions envisaged as part of the REWARD project. These include the following:

1. Impact of pesticides on waterbodies;
2. Impact of pesticides on aquatic life;
3. Public health concerns from water-borne or water-related diseases;
4. Improper pesticide-use and disposal of pesticide containers;
5. Abuses in pesticide supply and sales; and
6. Production losses and food security concerns from Armyworm and other crop pests and disease outbreaks.

6.1 Impact of Pesticides on Waterbodies

The improper or excessive use of agro-chemicals on farms could eventually affect local freshwater resources: both surface water bodies and groundwater. Apart from these, there are a number of seasonal rivers and creeks within the Savannah zone which link up with other water resources directly depended upon by downstream communities.

The improper/excessive use of agro-chemicals such as herbicides can contaminate waterbodies through run-off especially during the rainy season and/or water-logging, resulting in adverse changes such as pH modification of these water bodies, making the environment unsuitable for sustaining life-forms in such waterbodies. The ecological effects of pesticides (and other organic contaminants) are varied and are often

inter-related. Subsequently, effects at the organism or ecological level are usually considered to be an early warning indicator of potential human health impacts.

The major types of effects including the following will vary depending on the organism under investigation and the type / nature of pesticide: death of the organism; cancers, tumours and lesions on fish and animals; reproductive inhibition or failure; suppression of immune system; disruption of endocrine (hormonal) system; cellular and DNA damage; teratogenic effects (physical deformities such as hooked beaks on birds); poor fish health marked by low red to white blood cell ratio, excessive slime on fish scales and gills, etc; intergenerational effects (effects are not apparent until subsequent generations of the organism); other physiological effects such as egg shell thinning.

6.2 Impact of Pesticides on Aquatic Life

Pollution from pesticides and other agrochemicals could affect aquatic animals by contaminating waterbodies and killing aquatic plants and resulting in severely low oxygen levels and the suffocation of fish. Poor or inappropriate usage of pesticides could threaten the survival of small aquatic organisms that form the basis of the food web. In the aquatic ecosystems, runoff of organochlorine insecticides following rain events in adjacent streams lead to severe fish kills and the eradication of the stream invertebrate fauna over stretches of several kilometres.

Both fish species, as well as aquatic flora and fauna, become exposed to a variety of pesticides in three common ways as dermal, direct absorption all the way through integument by swimming in contaminated surface water with pesticide as well as subordinate surfaces of waters in form of lentic and lotic water bodies, direct or indirect uptake of pesticides through inhalation by the way of gills during respiration, and directly throughout, drinking pesticides contaminated water or feed pesticide-contaminated prey. There could also be some minor causes that affect the attention of fish species and aquatic flora and fauna to pesticides and result in toxicity. By the utilization of pesticide-contaminated food, animal and their by-products also transfer toxicity to consumer's i.e. various carnivorous fish species feed upon the variety of aquatic insects already killed due to the toxicity of pesticide may transfer effect to next tropic level. Mainly surface water of the riverine ecosystem generally comes first with pesticides contact, and various organic substances like algae, mosses, vascular hydrophytes, leaf litter, and branches, etc. may also behave as secondary causes of toxicity.

6.3 Public Health Concerns / Impacts

Water-borne or water-related diseases are commonly associated with incidents of pesticide contamination. Sources of drinking water may be subject to contamination from several sources including runoff or leachates from farms which have suffered over-application of agrochemicals such as fertilisers and pesticides, thereby requiring the appropriate treatment to remove disease-causing contaminants.

Contamination of drinking water supplies can occur in the source water as well as in the distribution system after water treatment has already occurred. There are many sources of water contamination, including naturally occurring chemicals and minerals (for example, arsenic, radon, uranium), local land use practices (fertilizers, pesticides, concentrated feeding operations), manufacturing processes, and sewer overflows or wastewater releases. The presence of contaminants in water can lead to adverse health effects, including gastrointestinal illness, reproductive problems, and neurological disorders. Infants, young children, pregnant women, the elderly, and people whose immune systems are compromised because of AIDS, chemotherapy, or transplant medications, may be especially susceptible to illness from some contaminants.

Bilharzia is an infection caused by parasitic worms or blood flukes of certain species of the genus *Schistosoma*. Adult parasites live in the blood of mammals, but their life cycle requires a phase of asexual multiplication within a fresh-water snail host. The flukes infect humans through exposed skin in water, usually through swimming, bathing or wading. Improved sanitation such as latrines and safe drinking water, as well as yearly treatment with praziquantel, will reduce the prevalence of bilharzia.

6.4 Improper pesticide use and disposal of pesticide containers

This is fuelled by poor knowledge, inadequate equipment and storage, application of unregistered and non-approved pesticides and the use of an excessive dosage. With an average annual use of 12,355 MT of pesticides over the period 2007 – 2010, pesticides use is relatively moderate in Ghana although increasing astronomically in the past decade. The inappropriate use of pesticides is reflected in the pesticide content of vegetables. A recent study by Yafetto *et al., 2019* indicate that vegetables produced by farmers in Ghana are significantly contaminated and have poor microbiological quality that could potentially result in outbreak of food-borne illnesses. The production of rice will increase under the REWARD and this will require proper storage to prevent pests from ravaging the grains. Improper use of pesticides during storage is also a concern as pesticide residues above the maximum residue limits (MRLs) are more likely to occur with stored grains.

Pesticide containers have been found to be reused at homes. Improper washing or cleaning could lead to harmful consequences where containers are reused as food or drink containers. The population groups at risk include women, children, elderly and rural farmers who are mostly illiterate and principal users of empty containers without proper treatment. An increase in pesticide containers in the project area is expected during the implementation stage and proper collecting system and disposal is required to minimize reuse of containers for domestic activities. This is in light of surveys that established that storing pesticide containers near to, or even in, food stores was widespread and had contributed to several deaths and an untold number of illnesses. There was also widespread re-use of containers for storing food or water for humans or livestock (NPAS, 2012). The same report established that farmers were misusing pesticides by spraying too close to harvest (thus contaminating the crop before consuming it), over-applying the dosage, applying pesticides intended for cash crops to growing food crops or applying pesticides intended for growing crops onto stored crops, using obsolete or expired pesticides and mixing different chemical pesticides together.

6.5 Abuses in pesticide supply and sales

The abuses associated with the supply and sale of pesticides are likely to occur under the Programme and these abuses could include:

- Use of banned and or unregistered pesticides;
- Decanting of pesticides into improper containers without appropriate labels and use information at the retail level and farm gate points;
- Supply and sale by unauthorized persons /persons without EPA/PPRSD license and permits; and
- Supply and sale of adulterated and or expired pesticides.

Surveys conducted by the Environmental Protection Agency (EPA) in 2007 showed that around 30% of pesticides on sale were either unlicensed or smuggled. Officials still estimate that at least 10-15% of all imports are illegal, either brought in by unlicensed dealers or involving expired or adulterated goods. Some imports arrive in bulk and are repackaged into small containers, often carrying inadequate or misleading

labelling, often only in French. These practices, if not checked under the implementation of REWARD, will only worsen and pose more serious threats to farmers and the general public.

6.6 Production losses and food security concerns from Armyworm and other crop pests and disease outbreaks

Armyworms are occasional pests but when they occur, the devastation is alarming and disastrous. The project will put large tracts of land under cereal (rice) cultivation and this can easily be devoured within few days during armyworm outbreaks. Food security concerns will arise because an outbreak could wipe-off most if not all cereal/pulses farms within few days. Cereals (rice) are key staple foods of Ghanaians. Adequate armyworm surveillance is required to contain and eliminate any threat. The threat has however been significantly reduced in the past few years because of extensive training farmers have received from the Ministry of Agric through the Directorate for Crop Services (DCS) as well as the Plant Protection and Regulatory Services Directorate (PPRSD).

Though pests and diseases have been with mankind since farming began, the problem has been accentuated as a result of expanded farm sizes, intensive methods applied and the desperate need to make adequate returns on investment. According to MoFA, crop losses due to pests in the fields in Ghana are estimated to be 30%. Horticultural production has always been a hot spot for both pests and disease losses and the sometimes-excessive use of agrochemicals. Any form of production losses will impact negatively on crop prices in the local market.

7.0 INTEGRATED PEST AND PESTICIDE MANAGEMENT ACTION PLAN

The main purpose of the plan is to protect the biophysical and human environment through the promotion of the use of integrated pest management methods, capacity building of farmers, destruction of obsolete stocks, and environmental impact assessment of agricultural development projects likely to use a considerable quantity of pesticides, the management of empty containers and the provision to farmers of protection and spraying equipment. Various impacts and challenges are likely to be associated with the implementation of REWARD regarding pest and pesticide management issues. The impacts and challenges identified from previous sections of the report include:

- Lack of IPM sustenance measures even though national pest control strategy is IPM;
- Likely pollution of water resources and aquatic life from pesticide usage;
- Public health concerns from water-borne diseases such as malaria and bilharzia that can cause the use of pesticides in controlling their vectors;
- Poisoning from improper use of pesticides by farmers and farm assistants;
- Poisoning from improper disposal of pesticide containers;
- Production losses from threats from other crop pests and diseases;
- Abuses associated with pesticide supply and sales; and
- General health and safety of farmers and environmental hazards.

Appropriate mitigation measures and implementation tools as well as monitoring indicators are required to be instituted to contain any adverse impact or risk identified and discussed. The key actors to be involved in the implementation of the mitigation and management activities have been identified as well. Table 39 below provides the action plan for pest and pesticide management during the implementation of REWARD.

Table 7-1: Integrated Pest and Pesticide Management Action Plan

Impact issue / Pest & pesticide threat/ risk	**Mitigation Measures**	**Implementation tool**	**Expected result**	**Monitoring indicators**	**Responsibility/ Key implementing actors**
Improper use of pesticides by farmers and farm assistants	Educate farmers and farm assistants on proper use of pesticides and pesticide use hazards	Pesticide hazards and use guide manual or leaflet for the project (include simple pictorial presentations)	Proper use of pesticides by farmers and farm assistants	• Number of cases of pesticide poisoning occurring under the project	PPRSD-MoFA; GHS/local hospitals and clinics
	Control and supervise pesticide use on farms	Adoption of IPM approaches/ techniques	Farmers trained in IPM techniques	• Number of farmers trained, Training records	PPRSD-MoFA, DAES-MoFA and Regional officers
	Monitor pesticide residue in crops	Random sampling procedure for crops and storage products	Pesticide residue in crops within acceptable limit/MRL	• Levels and trend of pesticide residue in sampled crops • Number of times exported crops are rejected due to pesticide residues	Ghana Standards Authority (GSA) / PPRSD-MoFA
Pollution of water resources and aquatic life	Control and supervise pesticide use by farmers	Adoption of IPM approaches/ techniques	Farmers trained in IPM techniques	• Number of farmers trained, Training records	PPRSD-MoFA, DAES-MoFA and Regional officers
	Proper disposal of pesticide containers by resellers/farmers	Pesticide container collection and disposal plan	Pesticide container disposal plan developed and implemented	• Number of farmers/ resellers aware of pesticide container disposal plan	PIU/MoFA/EPA
	Monitor pesticides in water resources	Environmental quality monitoring plan (linkage with Project ESMP)	Pesticide concentration in water resources	• Levels of pesticides in water resources	GIDA Environment Desk/ EPA
Public health concerns from water-borne or water related diseases in project areas under irrigation	Design appropriate irrigation systems and ensure functional operation system (removing aquatic vegetation, lining canals	a) Adoption of environmentally friendly irrigation system designs; b) Selection of experienced and proven contractors and	a) Well functioning and environmentally friendly irrigation system; b) infrequent breakdown of system	• Number of times system breakdown in a given year	GIDA

Impact issue / Pest & pesticide threat/ risk	Mitigation Measures	Implementation tool	Expected result	Monitoring indicators	Responsibility/ Key implementing actors
	with cement or plastic, regularly fluctuating water levels, periodic rapid drying of irrigation canals)	consultants for project designs and construction; c) Effective operational maintenance system			
	Monitor malaria and bilharzias cases in project area	Hospital/clinical records of malaria cases in project area	Malaria/bilharzia cases before and during project implementation established	• Trend in malaria/bilharzia cases during project implementation	Ministry of Health (MoH) / Ghana Health Service (GHS); Hospitals and clinics in project areas
	Make Deltamethrin Impregnated mosquito bed nets available at affordable prices to farmers and local community members Make latrines and safe drinking water available in farming communities and provide yearly treatment with Praziquantel to minimize the bilharzia prevalence.	Project malaria and bilharzia control plan	Non-significant increase in malaria/bilharzia cases under project	• Frequency of reported malaria/bilharzia cases among farmers and communities • Monitor the number of malaria and bilharzia cases in the irrigated project areas from existing health centers.	Ministry of Health (MoH) / Ghana Health Service (GHS); Hospitals and clinics in project areas
Poisoning from improper disposal of pesticide containers	1. Educate farmers, farm assistants and local communities on health hazards associated with use of pesticide containers	1. Pesticide hazards and use guide manual or leaflet for the project	Farmers, farm assistants, FBOs, local communities educated on pesticide health hazards	• Number of cases of pesticide poisoning through use of pesticide containers; • Number of farmers returning empty pesticide containers at collection points;	a) PPRSD-MoFA, b) GHS/local hospitals and clinics

Impact issue / Pest & pesticide threat/ risk	Mitigation Measures	Implementation tool	Expected result	Monitoring indicators	Responsibility/ Key implementing actors
	2. Properly dispose pesticide containers	2. Pesticide container cleaning and disposal plan	Pesticide container cleaning and disposal plan developed and implemented	• Number of farmers, FBOs, resellers trained in proper cleaning of pesticide containers	PPRSD/EPA
Threat from other crop pests and diseases	Educate and train farmers to adopt good agricultural practices (GAP)	Adoption of IPM techniques/ approaches	Farmers trained in IPM techniques and GAP	• Number of farmers trained, Training records • Incidence of crop pests • Production losses from crop pests	PPRSD-MoFA/ MoFA-DAES/ Regional officers
	Apply EPA approved and PPRSD recommended pesticides if necessary	Inspection of pesticides at farm/storage gate prior to use (Project Policy)	Applied pesticides registered and approved by key stakeholders and in conformity with IPM principles	• Records of pesticides applied at each farm	PPRSD-MoFA; MoFA-DAES/ MoFA Regional Officers
Production and market losses from armyworm outbreaks	Educate and train farmers to adopt good agricultural practices (GAP)	Adoption of IPM techniques/ approaches	1. Farmers trained in IPM techniques and GAP	• Number of farmers trained, Training records • Production losses from crop pests	PPRSD-MoFA/ MoFA-DAES/ Regional officers
	Establish pest surveillance system	Early detection and warning system in place	Zero or minimal fruit fly/ armyworm cases	• Incidence of armyworm cases recorded	PPRSD-MoFA; MoFA-DAES / Regional officers
	Apply EPA approved and PPRSD recommended pesticides if necessary	Inspection of pesticides at farm/storage gate prior to use (Project Policy)	Applied pesticides registered and approved by key stakeholders and in conformity with IPM principles	• Records of pesticides applied at each farm	PPRSD-MoFA; MoFA-DAES/ MoFA Regional Officers

Impact issue / Pest & pesticide threat/ risk	Mitigation Measures	Implementation tool	Expected result	Monitoring indicators	Responsibility/ Key implementing actors
Abuses in pesticide supply and sales	Identify all pesticide distributors and resellers interested in providing services and products to farmers under the Project	Registration policy for all interested distributors and resellers under project	Only approved and licensed dealers and resellers supply pesticides under project	• Company registration documents • Evidence of license/permit to operate in pesticides • Evidence of location and contacts of suppliers / resellers	PPRSD of MoFA/ CCMC of EPA
	Confirm status and integrity of pesticides supplied under project	a.) All pesticides are to be in the original well labeled pesticide containers prior to use b.) No decanting of pesticides under this project c) Inspection of pesticides at farm gate prior to use	a) Only approved and registered pesticides used under project b) Banned pesticides avoided c) Fake and expired pesticides avoided d)Integrity of pesticide guaranteed at farm gate level	• List of pesticides supplied and used in line with Ghana EPA and USEPA list of registered and approved pesticides • Cases of pesticides found in non-original containers • inspection records for pesticides at farm gate prior to use	PPRSD-MoFA; MoFA-DAES/ MoFA Regional Officers
	Ban big pesticide containers to minimize decanting cases	Decanting policy (No decanting of pesticides under project)	All pesticides delivered for use are in the original containers	• Cases of pesticides found in non-original containers	PPRSD-MoFA; MoFA-DAES/ MoFA Regional Officers
Impact on post-harvest losses due to pests	1. Provide adequate and proper storage facilities	Post-harvest loss reduction plan based on IPM techniques in place	a.) Post harvest losses avoided or minimised b) Applied pesticides registered and approved by key stakeholders and in	• Number of farmers trained in IPM techniques for post-harvest storage; Number and condition of storage facilities in use	MoFA-DAES
	2. Monitor incidence of post-harvest pests			• Number of cases of post-harvest pests	PPRSD-MoFA

Impact issue / Pest & pesticide threat/ risk	Mitigation Measures	Implementation tool	Expected result	Monitoring indicators	Responsibility/ Key implementing actors
	3. Confirm status and integrity of pesticides at storage gate prior to use	Inspection of pesticides at farm/storage gate prior to use (Project Policy)	conformity with IPM principles	• Records of pesticides applied at storage sites/ rooms	PPRSD-MoFA; MoFA-DAES/ MoFA Regional Officers
General health and safety of farmers/crops and environmental hazards	Educate farmers to adopt GAP based upon IPM techniques; and do not use chemical pesticides unless advised by PPRSD	IPM techniques with emphasis on cultural and biological forms of pest control	Compliance with national IPM policy and AfDB policy on Pest/ pesticide management	• Number of farmers trained in IPM techniques; • Number of farmers implementing IPM on their farms • Frequency of chemical pesticides usage	MoFA-DAES/ MoFA Regional Officers
	Provide PPEs to farmers/ farm assistants for pesticide use in the fields	Health and safety policy for farm work	Farmers and accompanying dependants (children) protected against pesticide exposure in the fields	• Quantities and types of PPEs supplied or made available under the project	MoFA
	Educate farmers/ farm assistants in the proper use of pesticides	Pesticide hazards and use guide manual or leaflet for the project (include simple pictorial presentations)	Farmers know and use pesticides properly; pesticide hazards and use guide leaflet or flyers produced	• Number of farmers trained in pesticide use; • Number of farmers having copies of the pesticide hazard and use guide flyers;	MoFA/EPA
	Properly dispose obsolete and unused pesticides	Obsolete and unused pesticide disposal plan	obsolete and unused pesticide disposal plan prepared and implemented	• Relationship between pesticide supply and usage	PPRSD-MoFA/CCMC-EPA
	Educate farmers to obtain or purchase quantities of pesticides	Pesticide use policy/plan	Only pesticides needed are purchased; long term storage of	• Relationship between pesticide supply and usage	PPRSD-MoFA/CCMC-EPA

Impact issue / Pest & pesticide threat/ risk	Mitigation Measures	Implementation tool	Expected result	Monitoring indicators	Responsibility/ Key implementing actors
	required at a given time and to avoid long term storage of pesticides		pesticides by farmers avoided		
	Provide emergency response to pesticide accidents and poisoning	Emergency response plan	Pesticide accidents and emergencies managed under the project	• Number of pesticide accidents and emergencies	PPRSD/GHS/National Poisoning Control Centre
	Educate farmers/ farm assistants in the proper use of pesticides	Pesticide hazards and use guide manual or leaflet for the project (include simple pictorial presentations)	Farmers know and use pesticides properly; pesticide hazards and use guide leaflet or flyers produced	• Number of farmers trained in pesticide use; • Number of farmers having copies of the pesticide hazard and use guide flyers;	MoFA/EPA

8.0 PROGRAMME TO MEET PMP REQUIREMENTS

8.1 Rationale

The rationale behind the plan is illustrated in the matrix below **(Table 8.1)** which confirms the results expected from the development and implementation of the Integrated Pest Management Plan (IPMP).

Table 8-1: Planning Matrix for the REWARD Project

Narrative summary	Expected results	Performance indicators	Assumptions/risks
Goal: Attract investors into commercial farming and empower small holder crop farmers to contribute significantly to household, local and national economies through environmentally friendly pest management practices.	• Food security enhanced • Environmental quality improved, • Crop productivity and farmers' income increased • Crop export improved • National foreign exchange improved	• Evidence of improvements in food availability, level of poverty, and environmental protection in project targeted areas • Evidence of crop export increased • Evidence of area under irrigation in the project targeted areas increased	• Government policies continue to support food security and irrigation programme • Nation continues to pursue stable democratic governance
Purpose 1. To prevent losses caused by pests in order to increase profitability of agriculture. 2. In the longer term, strengthen national and local capacity to reduce environmental and health risks associated with pest management practices.	**Medium-term results/outcomes** • Farmers in the project targeted areas and other project areas prioritize their pest problems and identify IPM opportunities to mitigate negative environmental and social impacts associated with pesticides. • Farmers in project areas adopt ecologically sound options to reduce crop losses with minimal personal and environmental health risks. • REWARD decision makers and actors provided with clearer guidelines enabling then to promote IPM approaches and options in agriculture	• Availability of sufficient food. • Perception of state agencies regarding the value of IPM in agriculture. • Level of compliance with AfDB safeguards policies etc. • Level of chemical control practices • Types and level of use of alternatives to synthetic chemical pesticides	

Narrative summary	Expected results	Performance indicators	Assumptions/risks
	• National IPM policy supported and promoted in compliance with international conventions and guidelines on pesticide use		
Purpose (i) improvement in efficiency of specimen transport and disposal system; ii) increase awareness on use and safety of application of chemicals for pest/vector control; (iii) document and disseminate key lessons to users and stakeholders; iv) reduction in the use of harmful or banned chemicals/pesticides in growing foods for human and animal consumptions.	**Medium-term results/outcomes** • Health institutions and those that control/use pesticides can prioritize pest problems, specifically with the REWARD and identify IPM opportunities to mitigate negative environmental and social impacts associated with pesticides.; • Health institutions and those that control/use pesticides can adopt ecologically sound options to reduce crop losses with minimal personal and environmental health risks; • Policy makers in health institutions and agric. Organizations and associations are strengthened and provided with guidelines enabling them to promote IPM approaches and options in animal health management; • Collaborate linkages established to develop a national IPM policy to promote compliance with international conventions and guidelines on safe pesticide use.	• Commitment of government to implement IPM across the national health and agricultural sectors. • Level of compliance with AfDB safeguards, and compliance parameters of other donors etc. • Level of chemical control practices • Types and level of use of alternatives to synthetic pesticides.	

8.2 IPM Implementation Strategies

REWARD will build on the existing structures and processes available from earlier projects including the following specific strategies to achieve an effective pest and pesticide management process:

- Registration and training of all interested pesticide distributors/resellers
- PMP Communication and Orientation Workshop
- Education and Awareness Creation
- Participatory Pests Inventory and Monitoring Measures
- Stakeholder Consultation and Involvement
- Prevention of new Pest Infestations
- Management of established Pests
- IPM Capacity Building
- Institutional Arrangements and Training Responsibilities
- Participatory Monitoring and Evaluation
- Sustainability Issues
- Monitoring
- Management Reviews
- Institutional arrangements for the implementation and monitoring of the PMP

8.2.1 Formation of a Safeguards Team

The Project Coordinator of the Project Coordination Unit (PCU), together with Environmental and Social Safeguards Specialists will oversee and ensure that the REWARD complies with relevant safeguard policy documents prepared for the Project including this IPMP.

8.2.2 Registration and training of all interested pesticide distributors/resellers

Under the project, REWARD will notify pesticide distributors or publish in the national dailies that all interested pesticide distributors or resellers interested in providing services or products for the Project are to register with REWARD by providing specific requested information which will include but not limited to the following:

- Certificate of registration or incorporation with the Register General's Department of Ghana;
- License or permit to operate from EPA or PPRSD;
- Locations of company; and
- Types of activities or services or products to be provided.

The Project will organize an orientation workshop for all registered pesticide distributors/resellers under the Project on the following but not limited to these:

- EPA registered and banned pesticides; and
- EPA/PPRSD requirements on purchase, supply and safe distribution of pesticides.

8.2.3 PMP Communication and Orientation Workshop

The PCU, represented by the Environmental Specialist (ES) will communicate the content of the Integrated Pest Management Plan to all upstream project actors or participants such as the EPA, PPRSD, MoFA at the national and relevant regional levels (i.e., within project beneficiary regions in the seven targeted Districts). It will establish on-going communication with both the national and relevant regional level pest and pesticide management representatives.

The PCU will also organize an orientation workshop on IPM techniques as well as the IPMP for relevant primary anchor farmers and their outgrowers, which will in fact be at the forefront in terms of use of pesticides and are likely to be exposed to its various and gradual risks.

8.2.4 Education and Awareness Creation

REWARD/PCU will create awareness among downstream project actors / participants (pesticide distributors /resellers, farmers, farm assistants) of the importance of pest and pesticide management in the framework of this IPMP and the national IPM strategy; avenues created or available for obtaining appropriate pesticides among other things.

Availability of Information: REWARD will ensure that all downstream actors or participants have access to information on relevant crop pests/diseases, MoFA-PPRSD IPM strategies regarding pest control, declared pest plants, current EPA list of registered and banned pesticides, USAID/USEPA list of registered and approved pesticides. Key information on crop pests/diseases, IPM strategies regarding pest control as well as pesticide use toolkits will be provided in easy to read and understand format/pictorial presentations and translated into at least two local languages for easy understanding and use by illiterate beneficiary communities. The awareness creation programme will be regular, every 3 or 6 months to enable Farmer groups become used to the schedule.

Education and Training: The REWARD Environment Specialist and implementers will incorporate pest management awareness issues into environmental training programs.

8.2.5 Participatory Pests Inventory and Monitoring Measures

The project will track and document all pest cases, be it minor or major in a pest inventory register through PPRSD. It will identify the types, abundance, location of pest plants, date of first spotted or seen and date reported. This information will be gathered from surveillance or monitoring system to be put in place, periodic surveys to be conducted and feedback from farmers and farm assistants. The data will be managed in a standardized way so that trends can be established.

8.2.6 Stakeholder Consultation and Involvement

The IPMP implementers will coordinate the pest management process with all relevant water resource regulators/users (WRC, VRA, Fisheries Commission) and other major land users in the project areas (such as traditional authorities/landowners, cattle rearers/herdsmen in the project targeted areas). Any activities that may have an impact on pest management will be identified and included in the pest management planning process. Contacts will be established with significant neighboring land managers and consult with them when appropriate and co-ordinate management activities with representatives of the identified government agencies and other land users when appropriate.

8.2.7 Prevention of new Pest Infestations

The REWARD will endeavour to treat and manage new pest infestations among anchor farmers as soon as they are identified, and this will be done through:

Table 8-2: Patterns of Functional Surveillance

Activities	Expected results	Milestones	Performance indicators	Assumptions/risks
(i). Record stakeholders' overviews on pests. (ii). Conduct field diagnosis to specify pests that undermine rice production. (iii). Identify rice farmers' coping mechanisms and research recommended IPM options against the pests. (iv). Develop and explain historical profile of pesticide use and other pest control practices in the project districts. (v). Specify partnership opportunities at local, national and international levels to assist in the implementation of the PMP	**Result 1:** Rice farmers and other relevant stakeholder groups develop common understanding of key pest problems and agree on corrective action.	• Pest problems diagnosed and related IPM opportunities identified. • Potential constraints rice farmers may face in the use of the technologies specified. • Pest lists including quarantine pests and alien invasive species developed. • Potential for improving existing pest control practices assessed. • Pest monitoring schemes for early warning on alien invasive species and migratory pests are organized and functional. • Action plan for location-specific IPM activities developed. • PMP implementation mechanism developed by all REWARD project districts.	• Type and nature of participatory methods for problem analysis • Documented information on the status of pests and natural enemies of pest and pollinators in the REWARD project districts. • Inventory of alien invasive species and quarantine pests • Types and availability of natural enemies for use in biological control of named pest • Types and availability of microbial pesticides and botanical pesticides to replace chemical pesticides • List of principal actors and partners	Social, economic and political situation remain stable
(i). Develop participatory learning modules (PLM) in line with identified training needs (ii). Conduct short to medium term training of beneficiaries, potential REWARD staff and support	**Result 2**: Human resource capacity for IPM delivery and implementation developed.	• PLM for rice pests • Management practices developed and adapted to suit local needs • Training of trainers' programs is completed	• Type and number of PLMs developed • Type of IPM skills covered in study visits by REWARD staff • Number of farmers' learning groups implemented	PIUs of REWARD adopts and apply new improved technologies. Farmers, beneficiary communities and its

Activities	Expected results	Milestones	Performance indicators	Assumptions/risks
groups on skills relevant to the PLMs (iii). Organize international study visits on specialized IPM skills of relevance to the PLMs (iv). Intensify training of men and women poultry farmers in IPM knowledge and skills. (v). Promote farmer-led extension to increase secondary adoption of proven IPM options (vi). Strengthen researcher-farmer extension linkages through participatory research on issues emerging from training (vii). Develop/disseminate IPM decision-support information resources for field agents, farmers, policy makers, and the public		• At least 3 sets of study visits organized for technical support staff • Personnel of REWARD accurately relate pests to respective damage symptoms; • Recognize natural enemies/biological control agents against the pests; test a range of IPM options and select "best-bet" options to implement and adopt. • Trained farmers undertake participatory extension; and adopt new IPM options • At least 80% of information materials developed is disseminated and used by extension agents and farmers. • Significant reduction in pest damage	• Gender and number of extension agents and of farmers trained. • Gender and number of trained farmers engaged in participatory extension • Extent to which new knowledge/skills are used by extension agents & farmers to promote adoption of IPM options • Number & type of IPM information • Materials developed/disseminated • Number and type of new IPM options introduced and adopted. • Gender and number of beneficiaries adopting IPM technologies. • Incremental benefits due to pest control • Type and number of user-friendly taxonomic keys for pest and natural enemy recognition by farmers and extension workers	counterparts comply with international conventions guiding pesticide use and MRLs in trade, critical mass of staff trained remain within the communities
(i). Test and promote botanical alternatives to synthetic pesticides. (ii). Test and promote microbial alternatives to synthetic pesticides	**Result 3**: Harmful pesticide regimes replaced by environmentally	• Local commercial enterprises initiated and/or strengthened to produce and/or market botanical pesticides	• Level of reduction in chemical pesticide use; type and number of pesticides replaced by botanical or microbial pesticides • Number of commercial enterprises engaged in the production of	Government and development partners remain committed to international conventions and guidelines on safe

Activities	Expected results	Milestones	Performance indicators	Assumptions/risks
(iii). Develop/update a national IPM policy including legislation to govern the manufacture, importation, distribution and use of pesticides (iv). Establish district IPM advisory and oversight committee to guide national and local compliance with AfDB safeguard Policies, OS 4 and other international conventions concerning pesticide use (v). Sensitize the population on IPM issues and activities through formal and informal educational channels and public awareness campaigns	friendly alternatives .	• At least one botanical pesticide widely used in place of chemical pesticides • At least one microbial pesticide registered and widely used in place of chemical pesticides • Surveillance systems to protect the beneficiary districts from banned/harmful pesticide regimes is fully operational • Existing pesticide regulations are fully enforced • A multi-stakeholder district/national IPM advisory and oversight committee established to guide compliance with international conventions and guidelines on pesticide use, and promote the IPM development • Radio and other public campaigns on impact of pesticides in agriculture, environment and health conducted through radio and TV spots, mass field days, rural market days, information workshops, and focus groups discussions	botanical pesticides; and quality of the products • Volume of sale of microbial and botanical pesticides • Level of compliance with AfDB safeguard policies by PIU of the REWARD project and pesticide dealers /service providers • Effectiveness of the IPM advisory and oversight committee • Number of pest surveillance groups and pesticide law enforcement mechanisms • Effectiveness of public awareness of campaign	pesticide use critical mass of staff trained remain within the REWARD communities

Surveillance, Early Detection and Eradication: A process for the reporting and identification of unusual plants, animals and pests will be established. Pest surveys will be conducted by PPRSD on a regular basis to detect new infestations and a rapid response process for the management of new infestations will be established. **Table 8.2** provides a pattern of the functional surveillance for early warning on alien invasive species and migratory pests for the REWARD IPM.

Prevention of Spread: This IPMP will establish protocols for appropriately managing risks of all human assisted transport of declared pests.

8.2.8 Management of established Pests

The IPMP will ensure that established pest infestations are effectively managed. Priorities for pest management will be regularly reviewed. These will include the reduction of Class 3 pests (environmental weeds) where appropriate. The impact on non-target species, particularly those of environmental significance, will be minimized.

8.2.9 IPM Capacity Building

The purpose of the capacity building of farmers is to help farmers develop their IPM approaches to the management of pests and diseases under the Project. The success of IPM depends largely on developing and sustaining institutional and human capacity to facilitate informed decision making by farmers and farm assistants and empowering them to integrate scientific and traditional knowledge to solve location-specific problems and respond to market opportunities. Poor communication between farmers / farm assistants, extension agents and researchers has often led to poorly targeted research or to poor adoption of promising options generated by research. The full benefits of investments in agricultural research thereby remain untapped under these circumstances.

Farmer Field Schools (FFS), Farmer participatory research (FPR) and participatory learning (PL) approaches in capacity building efforts help to bridge this gap and make research results more understandable and useful to farmers and farm assistants. This is particularly the case in knowledge intensive disciplines such as IPM.

Farmers will have the capacity to accurately identify and diagnose pests and pest problems, understand trophic relationships that underpin biological control opportunities, and use such knowledge to guide pesticide and other kinds of interventions. Through the participatory approaches, the Project will build local capacity to ensure rapid spread and adoption of ecologically sound and environmentally friendly management practices especially among anchor farmers and smallholder farmers in the seven districts in the four regions. The farmers will learn cultural, biological and ecological processes underpinning IPM options, and use the newly acquired knowledge to choose compatible methods to reduce losses in production and post-harvest storage.

A foundation element of the capacity building exercise is the accurate diagnosis of the pest problem and to provide baseline information that will enable stakeholder groups to develop a shared vision on felt needs and IPM strategies. Through informal interviews, field visits, and planning meetings, stakeholder groups will develop joint understanding of the key issues affecting production and develop a common IPM plan based on agreed concerns.

The IPMP implementation will be anchored at the MoFA regional level with field action by anchor farmers and their out-growers' groups which will receive training and advisory services from MoFA and appropriate NGOs, who would have graduated from Training of Trainers (ToT) sessions. Training at all levels will be based on participatory learning modules for capacity building in IPM information delivery. The participants will be equipped with skills in facilitation, group dynamics, and non-formal education methods to encourage adult learning. Farmer training will focus on farmers' group learning for informed decision making on IPM issues. Group learning will be experimental through farmer-led field trials and discussions on practical aspects of crop production and pest management including indigenous and traditional knowledge/technologies. Farmer group learning will be facilitated by ToT trained men and women extension agents.

Group decision making will be achieved through Agro-Ecosystem Analysis (AESA) involving a comparison of IPM practices with normal farmer practices. At each AESA, farmers observe, record and monitor changes in soil, crop and trophic relationships affecting crop growth. Farmers analyse and discuss their findings and recommend corrective action based on the results of their own analyses. Group learning helps to increase scientific literacy, ownership of biological and ecological information and knowledge, and informed decisions making habits in the communities. Also trained farmers and leaders of farmers' associations will be expected to promote secondary adoption of proven options. For example, leaders of farmers' associations trained will be expected to assist in training new farmers through demonstrations and farm visits. Additionally, the trained farmers will organize field days to train other farmers and explain new/improved IPM practices they have learnt. Field day participants will include representatives of the PCU, local community leaders, NGOs, local community FM stations, researcher institutes, and national extension services. Currently the EPA office in Bolga carried out radio programmes to train farmers on the safe use of pesticide three time quarterly in English which is translated to various local languages.

8.2.10 Institutional Arrangements and Training Responsibilities

Annual work plans will be developed in consultation with participating anchor farmers and their out-growers and in line with their respective farm work plans to indicate institutions and networks that will be required to provide research and development support. The principal actors will include a number of local institutions directly involved in the implementation of the IPMP while other agencies/partners will include national institutions to provide technical and other support for implementation of the plan. These are explained in Table 8.3 below:

Table 8-3: Principal Actors and Partners Matrix for PMP Implementation

Actors	**Partners**
The actors will collaborate with the project: • Contribute field staff to be trained as IPM Trainers. • Schedule anchor farmer groups and out-growers for training, learning experiences among farmers and promotion of IPM practices. • Facilitate extension and farmer training • Prepare and produce field guides and other relevant IPM information materials • Provide policy guidance/oversight for implementation of the IPMP	The partners will be IPM experts who: • Serve as technical reviewers for IPM activities. • Provide technical support in pest and natural enemy identification • Assist to organize study tours and networking with international IPM groups. • Provide expertise in planning, training and field implementation of IPM

Actors	Partners
• Monitor, supervise and coordinate IPM activities • Document user compliance on pesticide use Examples of actors: 1. MoFA/PCU 2. EPA (national and regional officers) 3. PPRSD (national and regional officers) 4. Customs Division of the GRA (CD) 5. Ministry of Health/Ghana Health Service (for disease vector control) 6. Farmers and Farmers Associations (e.g. GFAP, GAABIC, SEEDPAG, VEPEAG, APFOG, GNAPF) 8. Agric-input dealers (e.g. GAIDA)	Examples of partners: 1. The CGIAR System-wide Program on Integrated Pest Management (SP-IPM) which is dedicated to breaking isolation barriers to the full realization of IPM research results 2. The Global IPM Facility which assists interested Governments and NGOs to initiate, develop and expand IPM programmes mostly through farmer field school training. 3. Research Institutes (Council for Scientific and Industrial Research, CSIR), and Universities. 4. NGOs

Training Responsibilities

The PCU/MoFA with input from PPRSD/EPA are to standardize training needs assessment across sites; and organize appropriate workshops to develop participatory learning modules. The PPRSD with input from the EPA, will liaise with appropriate farmers' associations to plan training implementation; provide technical support such as in preparing and delivering specific training materials, and evaluating resource materials; identify and select suitable local training resource persons and materials; and prepare training progress reports.

The MoFA (Regional/District Officers) will collaborate with farmers'/agriculture associations to identify and schedule the farmers for training (i.e. use of farmer field school to teach farmers on the efficient and responsible use of pesticides and chemical fertilizers and sound agricultural practices); prepare, organize and supervise training implementation plan; verify reports of persisting pest problems and farmers training needs; monitor performance of farmer trainers and post-training assignments; and prepare training progress reports.

Farmers/local communities will be organized into groups for training and adoption of IPM practices. The farmers will be facilitated to set up Community IPM Action Committees to coordinate IPM activities in their areas.

8.2.11 Participatory Monitoring and Evaluation

There will be regular monitoring and evaluation of control programs to determine the level of progress being made with regard to pest and pesticide management and control issues identified in the PMP. Monitoring indicators are provided in the action plan under the previous section. The following performance indicators will be incorporated into a participatory monitoring and evaluation plan.

Table 8-4: Performance Indicators for Participatory Monitoring and Evaluation

No	Area	Indicators
1	Training and awareness creation	• Types and number of participatory learning modules (PLM) delivered; • Category and number of extension agents and farmers trained and reached with each PLM; • Category and number of participants reached beyond baseline figures; • Practical skills/techniques most frequently demanded by extension agents and farmers; and • Crop management practices preferred by farmers.
2	Technology acceptance/ field application	• Category and number of farmers who correctly apply the skills they had learnt; • New management practices adopted most by farmers; • Category and number of other farmers trained by project; • Types of farmer-innovations implemented; • Level of pest damage and losses; • Rate of adoption of IPM practices; and • Impact of the adoption of IPM on production performance of farmers
3	Project direct benefits	• Increase in crop production; • Increase in farm revenue; • Low incidence of pests and diseases; • Safe use of agrochemicals; • Social benefits: e.g., improvement in the health status of farmers; • Level of reduction of pesticide purchase and use; and • Number of projects co-families using preventive mechanisms against diseases.

8.2.12 Sustainability Issues

Scientific information, adapted into user-friendly format will strengthen training and extension delivery, and increase IPM literacy in project sites/communities.

Strategic alliances with international IPM groups will strengthen national capacities to integrate new IPM options in crop production. Farmer-educational activities will be central to the exit strategy which will feature increased roles and responsibilities of committed national and local farmers' associations and communities to take primary responsibilities in the development of action plans and expertise exchange for IPM development and promotion.

Short-term technical study visits (to other farmers within and outside target area) for hands-on laboratory and field training, and farmer participatory learning will help to create favourable conditions for continuity of IPM processes and results. The tour will involve representatives from PCU, PPRSD, and selected beneficiary farmers.

8.2.13 Reporting

Annual report on the progress of pest and pesticide management at the project sites will be prepared by the Program Coordinating Unit of REWARD. The reports will indicate the pest cases identified and treated using IPM approaches, location of pests, level of success of treatment, the amount and type of

herbicide/pesticide used, level of corporation from farmers and other relevant information (e.g., training programmes organized, farmer field schools held etc).

8.2.14 Management Reviews

The PCU will undertake annual pest and pesticide control and management reviews to confirm the implementation of the various control measures or programmes or actions outlined in the IPMP. Recommendations from the reviews will help the PCU to refocus and plan effectively towards achieving planned targets. The management review team will include:

- Project coordinating Unit/Project Coordinators;
- Representative of the Minister of Food and Agriculture (MoFA);
- Representatives of the EPA; and
- Representative of PPRSD.

8.2.15 Institutional arrangements for the implementation and monitoring of the PMP

The PMP will be implemented under the coordination of the REWARD environmental and social safeguards unit with the institutions in the table below playing different supporting roles.

Table 8-5: Institutional arrangements for the implementation of the PMP

Name of institution	**Function**
PPRSD	It will ensure the internal monitoring of the implementation of the environment and health component of the IPMP and will regularly report to the PCU. It will intervene in the training of the regional agents of the Ministry in charge of Agriculture
EPA	It is responsible for the external monitoring of the "environment" component of the implementation of the IPMP as well as approved/registered agrochemicals.
Health Services	They will provide external monitoring of the implementation of the health component of the IPMP and will regularly report to the PCU.
Research and Analysis Laboratories	They will assist in the analysis of environmental components (analyzes of pesticide residues in water, soil, plants, agricultural harvest, fish, food, etc.) for determine the various parameters of pollution, contamination and toxicity related to pesticides
Farmers' Organizations	They must have and apply the procedures and good environmental practices concerning the use and the ecological and safe management of pesticides
Local communities (town halls)	They will participate in the sensitization of populations, social mobilization activities. They will also participate in the supervision and external monitoring of the implementation of the measures recommended under the IPMP.
NGOs and civil society	NGOs and other environmental organizations of civil society can also participate in informing, educating and raising awareness among agricultural producers and the population on the environmental and social aspects related to the implementation of the IPMP, but also to monitoring of the implementation and monitoring of the environment.

9.0 PMP IMPLEMENTATION BUDGET

A breakdown of the costing for activities identified in the PMP implementation over a tentative 5-year period is provided in **Table 9.1** as a guide. It is estimated that an amount of about USD297,500.00 will be required to implement the IPMP over the 5-yr period, with an average yearly investment requirement of about USD59,500.00.

Table 9-1: Budget Estimates for PMP Implementation

S/N	Activity/Programme	Budget (USD)					
		Year 1	Year 2	Year 3	Year 4	Year 5	Total
1.0	**Capacity Building**						
1.1	Orientation workshops (on IPM, and for project registered agro-input dealers)	3,000	2,500	2,000	-	-	7,500
1.2	Training of trainers	1,500	1,500	1,000	1,000	-	5,000
1.3	Farmer groups training	3,000	2,000	2,000	1,000	1,000	9,000
1.4	Study visits	2,000	2,000	2,000	2,000	2,000	10,000
	Sub total	**9,500**	**8,000**	**7,000**	**4,000**	**3,000**	**31,500**
2.0	**Support / Advisory services**						
2.1	Registration of pesticide suppliers	200	200	200	200	200	1,000
2.2	IPM problem diagnosis	1,500	1,500	1,500	1,500	1,500	7,500
2.3	Field guides/ IPM materials	2,000	-	-	-	-	2,000
2.4	Public awareness/ sensitization campaigns	2,000	-	2,000	-	-	4,000
2.5	Pest / vector surveillance	2,500	_-	2,500	-	2,000	7,000
2.6	Laboratory analysis support-MRLs	10,000	-	-	-	-	10,000
2.7	Emergency response support	2,000	2,000	2,000	2,000	2,000	10,000
	Sub total	**20,200**	**3,700**	**8,200**	**3,700**	**5,700**	**41,500**
3.0	**Environmental management**						
3.1	Pesticide monitoring in surface water bodies in or around project areas	3,000	5,000	5,000	5,000	3,000-	21,000
3.2	Equipment, bed nets, chemicals	10,000	5,000	5,000	3,000	3,000	26,000
3.3	Support to IPM R&D	2,500	2,500	2,500	2,500	2,500	12,500
	Sub total	**15,500**	**12,500**	**12,500**	**10,500**	**8,500**	**59,500**
4.0	**Project management**						
4.1	PMP coordination	30,000	30,000	30,000	30,000	30,000	150,000
4.2	Monitoring and evaluation	2,000	2,000	2,000	2,000	2,000	10,000

S/N	Activity/Programme	Budget (USD)					
		Year 1	Year 2	Year 3	Year 4	Year 5	Total
4.3	Reviews and reporting	1,000	1,000	1,000	1,000	1,000	5,000
	Sub total	**33,000**	**33,000**	**33,000**	**33,000**	**33,000**	**165,000**
	GRAND TOTAL (USD)	**78,200**	**57,200**	**60,700**	**51,200**	**50,200**	**297,500**

Assumptions

This tentative budget has been prepared based on a number of assumptions and expectations as captured in **Table 9.2**.

Table 9-2: Assumptions underlining Budget Estimates for IPMP Implementation

	Activity/Programme	Assumptions / Comments
1.0	**Capacity Building**	
1.1	Orientation workshops (on IPM, and for project registered agro-input dealers)	Orientation will be organised on a yearly basis during the lean seasons for an estimated number of 15 persons (at an average cost of US$100 per person) from the various agro-input dealers groupings
1.2	Training of trainers	10 selected persons from the project areas will be identified as trainers and given training annually at an estimated cost of US$100 per person
1.3	Farmer groups training	In collaboration with the Trainers, about 50 farmers participating in the programme will receive training on the IPMP in the 1st year at an average cost of US$100 per person. It is anticipated that the number of participating farmers requiring training will reduce over the 5-year implementation period. The Budget therefore makes provision for 40, 30, 20 and 10 more farmers in the 2nd, 3rd, 4th and 5th years respectively
1.4	Study visits	The PIU's Safeguards Team, with the support of a Pesticides/Pest Management Specialist will conduct periodic study visits of selected projects to evaluate the success of capacity building activities undertaken
2.0	**Support / Advisory services**	
2.1	Registration of pesticide suppliers	This will be an annual administrative activity that seeks to ensure that all suppliers on the project are conversant and compliant with the regulatory requirements in the sector.
2.2	IPM problem diagnosis	Diagnostic activities will be undertaken on an annual basis to identify and document pest management challenges on the project to enable the timely institution of remedial measures. A total budget of about US$7,500 has been devoted to this.
2.3	Field guides/ IPM materials	This item will cover production of materials and simple manuals with illustrations that would be relevant for onsite training of farmers and other farmhands. This would be a one-time expenditure
2.4	Public awareness/ sensitization campaigns	Public sensitisation will be an ongoing activity with major campaigns being organised in Years 1 and 3 with an average budget of about US$ 2,000 each.

	Activity/Programme	Assumptions / Comments
2.5	Pest / vector surveillance	This will serve to provide a constant watch on the population dynamics of pests, its incidence and damage on rice at fixed intervals to forewarn the farmers to take up timely crop protection measures. While this activity will continue throughout the 5-year period by the farmers themselves, the Agric Extension Agents will be charged with undertaking major surveillance exercises in the 1st, 3rd and 5th years at a total cost of US$ 7,000.00
2.6	Laboratory analysis support-MRLs	This would be a one-time expenditure of US$10,000 in the 1st year to procure the additional machinery required for conducting MRLs on this project. It is anticipated that internally generated funds would be raised to procure the consumables in order to enhance sustainability
2.7	Emergency response support	In addition to the provision where credit proceeds will be reallocated from other components to provide immediate emergency recovery support following an eligible crisis or emergency, a budget of about US$10,000 has been considered under this component over the full program period.
3.0	**Environmental management**	
3.1	Pesticide monitoring in surface water bodies in or around project areas	This significant activity will be conducted on an annual basis with an average annual cost of about US$4,200
3.2	Equipment, bed nets, chemicals	A chunk of these items are expected to be procured before the commencement of the program, with a budget of about US$26,000. For subsequent years under REWARD, a budget of about US$ 5,000 per year has been provisioned for maintenance and part replacement activities.
3.3	Support to IPM R&D	Research and development activities will be supported with a budget of US12,500 during the implementation period. The relevant unit of the EPA or MoFA may receive this support.
4.0	**Project management**	
4.1	IPMP coordination	Implementing the IPMP will involve lots of administrative and project management activities, and anticipates the engagement of a Pest Management Specialist, hence the budgeted figure of US$150,000
4.2	Monitoring and evaluation	This item will form a major component of the work and will be useful for quantifying and reporting on the successes of the programme and an amount of US$10,000 has been devoted to this activity
4.3	Reviews and reporting	IPMP will require constant reviews and reporting and an amount of US$5,000 has been devoted to this activity

10.0 CONCLUSION

The implementation of REWARD activities in Ghana will have positive environmental and social impacts as well as some economic benefits for the rural farming populations cultivating rice in valleys as well as research and development institutions.

With regards to agricultural productivity, these impacts will be manifested in terms of improving the quality and availability of seeds and planting material; use of sustainable agricultural technologies for the environment; maintaining fertility levels on agricultural land; extension of credible alternatives to chemical control and amendment.

However, there will be equally potential negative impacts on the biological and social environments. This will include mainly health risks related to pesticide use and a poor management of obsolete packaging and products; pollution of water resources and the irrational use of fertilizers and pesticides. The IPMP has been prepared as a tool to minimize and manage the environmental and health risks associated with the use of pesticides during REWARD implementation.

The consultations with relevant stakeholders were key which made it possible to note that farmers in general, systematically resort to chemical pesticides to control pests and the use of chemicals is very rampant in the target regions (especially weedicides, herbicides and insecticides). Famers do not master the techniques of identifying phytosanitary problems and pesticide use patterns well enough. Most farmers use unregistered pesticides due to the proximity of some of these districts to borders. A significant number of chemical retailers are uneducated in the project target areas. Also, a good number of farmers are illiterates making it difficult for them to read Material and Safety Data Sheet (MSDS) of chemicals. The farmers therefore resort to recommendations from friends, families and in some cases the illiterate chemical retailers. From discussions with EPA and MoFA, it is common practice for farmers in the target areas to use chemicals and immediately harvest crops (especially vegetable) before the chemical re-drawal periods. Farmers also resort to “cocktail mixture “of chemicals to handle pests and diseases considered difficult to handle.

Consequently, this IPMP pays special attention to issues such as information, awareness-raising, capacity building for the various actors in the target crops sector on methods of responsible and effective use of plant protection products in general, and integrated pest management approaches (IPM) in particular, appropriate equipment and infrastructural support and support/enforcement of certain regulatory provisions.

The implementation of the IPMP is expected to minimize impacts on the biophysical and human environment in the program area already affected by increased use of chemicals. The monitoring and evaluation of the activities planned in the IPMP will be carried out by the Project's Environmental Unit in collaboration with the PPRSD with strong backing from the key directorates or entities in charge of Agriculture, Environment (EPA), Health, Research, and other actors such as CEPS and Ghana Police Service.

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12.0 LIST OF ANNEXES

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- (A2) Fungicides
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- (A4) Plant Growth Regulators
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- (A8) Adjuvants
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(B) Provisionally Cleared Pesticides (PCL)
- (B1) Insecticides
- (B1a) Insecticides for Public Health Purposes
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ANNEX 1: Revised Register of Pesticides – January 2020

(A) Fully Registered Pesticides (FRE)
(A1a) Insecticides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Abalone 18EC	FRE/2006/1583G January 2020	Abamectin (18g/l)	II	Insecticide for the control of red spider mite,two-spotted spider mite and tomatoes russet mite in tomatoes	Calli Ghana Limited, Accra
2.	Abamet	FRE/2099/1577G January 2020	Abamectin (92%)	II	Insecticide forthe control of two-spotted mite in cottonand tomatoes	Rainbow AgroSciencesCo. Ltd., Tema
3.	Aceta Star 46EC	FRE/21100/1770G April 2021	Bifenthrin (30g/l) + Acetamiprid (16g/l)	II	Insecticide forthe control of capsids in cocoa	Adama West Africa Ltd., Accra
4.	Actara 240SC	FRE/21227/1846G July 2021	Thiamethoxam (240g/kg)	III	Insecticide forthe control of mirids in cocoa	Overseas Warehouse Ghana Ltd.,Accra
5.	Adepa Agro Organic Pesticide	FRE/20193/1666G September 2020	Ethyl palmitate	III	Insecticide for the control of mite, ticks, caterpillars, mealybugs and bacteria blight in vegetables, cashew, mango and citrus	Kwadutsa and Joam Co. Ltd., Kumasi
6.	Afford 50WG	FRE/2099/1657G August 2020	Pymetrozine (500g/kg)	II	Insecticide forthe control of aphids and whiteflies in cucumber, tomato, sweet potatoesand vegetables	Rainbow AgrosciencesCo. Ltd., Tema
7.	Agricombi 40EC	FRE/1902/1519G September 2019	Fenvalerate (10%) + Fenithrothion (30%)	III	Insecticide for the control of aphids, mites and weevils in cocoa, fruits and vegetables	Agrimat Ltd., Madina, Accra
8.	Agro-thoate 40 EC	FRE/2010/1711G February 2021	Dimethoate (400g/l)	II	Insecticide forthe control of insect pests invegetables	Reiss & Co. Ghana Ltd.,Accra
9.	Akape 20SC	FRE/1902/1517G October 2019	Imidacloprid (20%)	III	Insecticide for the control of insect pests in vegetables	Agrimat Ltd., Madina, Accra
10.	Akate Master	FRE/2005/1602G May 2020	Bifenthrin (27g/l)	II	Insecticide forthe control of capsids in cocoa	Chemico Limited, Tema
11.	Alphacep 10EC	FRE/1902/1488G June 2019	Alpha-cypermethrin (100g/l)	III	Insecticide forthe control of insect pests in vegetables and fruits	Agrimat Ltd., Madina, Accra
12.	Ataka Super 19.2 EC	FRE/1957/1559G October 2019	Emamectin benzoate (19.2g/l)	III	Insecticide forthe control of diamondback moth and cotton bollworm in cabbage and cotton	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra
13.	Attack 1.9 EC	FRE/2102/1734G	Emamectin-benzoate	II	Insecticide for the	Agrimat Limited,

		February 2021	(1.9%)		control of insect pests invegetables	Madina, Accra
14.	Bastion Extra	FRE/19202/1482G March 2019	Imidacloprid (3%)	II	Insecticide for the control of rice hoppers, aphids, thrips, whiteflies, termites, beetlesand soil borne insects in cereals, vegetables, fruits and cotton	Louis DreyfusCo. Ltd., Tema
15.	Belt Expert 480SC	FRE/21183/1772G April 2021	Flubendiamide (240g/l) + Thiacloprid(240g/l)	II	Insecticide for the control of insect pests and fall armyworm (FAW) in cottonand maize	Bayer West-Central Africa S.A, Accra
16.	Betallic Super	FRE/2125/1862G September 2021	Pirimiphos methyl (400g/l) + Permethrin (75g/l)	II	Insecticide forthe control of insect pests inmaize and cowpea	Bentronic Productions, Kumasi
17.	Blast 60EC	FRE/2108/1779G April 2021	Acetamiprid (3%) + Lambda-cyhalothrin (3%)	IV	Insecticide forthe control of insect pests in vegetables andfruit crops	Dizengoff Ghana Ltd,Accra
18.	Bomec EC	FRE/19202/1455G February 2019	Abamectin (18g/l)	II	Insecticide forthe control of aphids, caterpillars, whiteflies, grasshoppers and bollwormsin vegetables and fruits	Louis DreyfusCo. Ltd., Tema
19.	Bonlambda 2.5 EC	FRE/19149/1458G February 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests in vegetables	Bon Agro Co. Ltd., Kumasi
20.	Bossmate 2.5EC	FRE/2135/1872G September 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests invegetables, cowpea and soybean	K. Badu Agrochemicals, Kumasi
21.	Box 18 EC	FRE/20145/1598G May 2020	Abamectin (1.8%)	II	Insecticide for the control of bollworms, red spider mites, cabbage worm, psyllas in soybean, cotton, and tangerine	Jubaili Agrotec Ltd.,Kumasi
22.	Buffalo Supa 40EW	FRE/2123/1807G October 2021	Acetamiprid (400g/l)	III	Insecticide forthe control of insect pests in vegetables andfruit crops	Thomhcof Enterprise, Kumasi
23.	Bypel 1	FRE/19133/1576G November 2019	*Perisrapae Granulosis* virus + *Bacillus thuringiensis*(5%)	II	Bio-insecticidefor the control of whiteflies and worms in vegetables andfruits	Abbnak Agro Services, Kumasi
24.	Callifan Super 200 EC	FRE/1906/1451G February 2019	Acetamiprid (100g/l) + Bifenthrin (100g/l)	II	Insecticide for the control of mirids in cocoa	Calli GhanaCo. Ltd., Accra
25.	Calthio Mix 485WS	FRE/1906/1445G February 2019	Imidacloprid (350g/kg) + Thiram (100g/kg) + Metalaxyl (35g/kg)	II	Insecticide/fungicide for the control of insect pests and fungal diseases in maize	Calli GhanaCo. Ltd., Accra
26.	Cisthrin	FRE/2199/1745G February 2021	Deltamethrin (12.5g/l)	II	Insecticide for the control of borers, aphids, bollworm,	Rainbow AgroSciences Co. Ltd., Tema

					cutworm, mango weevil and strainers in maize, cassava, yam, sorghum, groundnuts and vegetables	
27.	Colam 247 ZC	FRE/2199/1782G April 2021	Thiamethoxam (141g/l) + Lambda-cyhalothrin (106g/l)	II	Insecticide forthe control of insect pests in rice, tomatoes, cotton, beans, cabbage and watermelon	Rainbow Agrosciences Co. Ltd., Tema
28.	Condor SL	FRE/2125/1863G September 2021	Imidacloprid (20%)	II	Insecticide forthe control of insect pests invegetables	Bentronic Productions, Kumasi
29.	Condifor Super	FRE/2143/1837G June 2021	Imidacloprid (20%)	II	Insecticide forthe control of insect pests invegetables	KumarkCo. Ltd, Kumasi
30.	Confidor 200 SL	FRE/20185/1518G January 2020	Imidacloprid (200g/l)	III	Insecticide for the control of mirids in cocoa	RMG Ghana Limited, Accra
31.	Consider 200SL	FRE/2123/1806G May 2021	Imidacloprid (200g/l)	II	Insecticide forthe control of insect pests invegetables	Thomhcof Enterprise, Kumasi
32.	Conti-halothrin 2.5EC	FRE/1978/1573G October 2019	Lambda-cyhalothrin (60%)	II	Insecticide forthe control of insect pests in vegetables and pulses	Five Continents Imp. & Exp.Ltd., Accra
33.	Conti-zol	FRE/1978/1572G October 2019	Diazinon (50%)	II	Insecticide forthe control of insect pests invegetables	Five Continents Imp. & Exp.Ltd., Accra
34.	Control 5WDG	FRE/2102/1735G February 2021	Emamectin-benzoate (5%)	II	Insecticide forthe control of aphids, wormsand borers in vegetables	Agrimat Limited, Madina, Accra
35.	Cydim Super EC	FRE/2102/1738G February 2021	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide for the control of aphids, caterpillars, whiteflies, grasshoppers and bollworms in vegetables	Agrimat Limited, Madina, Accra
36.	Cymethoate Super EC	FRE/2005/1641G July 2020	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide for control of aphids,caterpillars, whiteflies, grasshoppers, bollworms in vegetables andcotton	Chemico Ltd., Tema
37.	Cypadem 43.6EC	FRE/1957/1554G October 2019	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide forthe control of insect pests in vegetables andfield crops	Wynca Sunshine Agric Prod & Trading Co. Ltd., Accra
38.	Cypercal 50 EC	FRE/2006/1580G January 2020	Cypermethrin (50g/l)	II	Insecticide forthe control of insect pests incotton	Calli Ghana Company Ltd., Accra
39.	Cypersect Super EC	FRE/2125/1864G September 2021	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide forthe control of aphids, caterpillars, whiteflies, grasshoppers and bollwormsin vegetables	Bentronic Productions, Kumasi

40.	D-Ban Super 48 EC	FRE/2143/1875G September 2021	Chlorpyrifos (48%)	II	Insecticide forthe control of insect pests invegetables	Kumark Co. Ltd., Kumasi
41.	Dean 62 EC	FRE/19202/1462G March 2019	Imidacloprid (50g/l) + Emamectin benzoate (12g/l)	II	Insecticide forthe control of moth, caterpillars, whiteflies, aphids and ants in cereals, vegetables andsugarcane	Louis Dreyfus Co.Ltd., Tema
42.	Decis Forte 100 EC	FRE/20183/1636G June 2020	Deltamethrin (100g/l)	II	Insecticide forthe control of insect pests in fruits and vegetables	Bayer West-Central Africa S.A., Accra/ OmniFert Ltd., Labone
43.	Deltacal 12.5 EC	FRE/2106/1874G October 2021	Deltamethrin (12.5g/l)	II	Insecticide for the control bollworm and whiteflies in green beans andtomatoes	Calli Ghana Company Ltd., Accra
44.	Devaxam 25 WG	FRE/2110/1740G February 2021	Thiamethoxam (15%)	II	Insecticide forthe control of insect pests invegetables	Reiss & Co. Ghana Ltd., Accra
45.	Diazol 50 EW	FRE/20100/1623G May 2020	Diazinon (500g/l)	II	Insecticide forthe control of insect pests invegetables	Adama West Africa Ltd., Accra
46.	Dimiprid 20 SL	FRE/2010/1708G February 2021	Imidacloprid (200g/l)	II	Insecticide forthe control of insect pests invegetables	Reiss & Co. Ghana Ltd., Accra
47.	Dusfos 480 EC	FRE/2125/1799G April 2021	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests in field crops and for public healthpurposes	Bentronic Productions, Kumasi
48.	Ema 19.2 EC	FRE/19100/1544G October 2019	Emamectin benzoate (19.2g/l)	II	Insecticide forthe control of insect pests in vegetables and pulses	Adama West Africa Ltd., Accra
49.	EmaCare	FRE/20145/1684G November 2020	Emamectin benzoate (1.92%)	II	Insecticide forthe control of fall armyworm(FAW) in maize	Jubaili Agrotec Limited,Kumasi
50.	Ema Star 112 EC	FRE/19100/1542G October 2019	Emamectin benzoate (48g/l) + Acetamiprid (64g/l)	II	Insecticide forthe control of whiteflies, diamondback moth, aphids and fall armyworm in okra, eggplantand maize	Adama West Africa Ltd., Accra
51.	Eradicoat T GH	FRE/19125/1535G October 2019	Maltodextrin (282g/l)	III	Insecticide forthe control of insect pests in fruits, vegetables andfall armyworm (FAW) in maize	Positiveware Trading Co. Ltd, Accra
52.	Evict EC	FRE/1953/1476G March 2019	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of insect pests invegetables and pulses	L'espoir Co.Ltd., Accra
53.	Evisect S50 SP	FRE/1906/1446G February 2019	Thiocyclam oxalate (500g/kg)	II	Insecticide forthe control of leafminers in oil palm	Calli GhanaCo. Ltd., Accra
54.	Evite Super 60EC	FRE/21139/1892G November 2021	Tebufenozide (50g/l) + Emamectin-benzoate	II	Insecticide for the control of cotton bollworm,corn borer,	Jingbo Agro. Tech. Gh. Co. Ltd.,Accra

			(10g/l)		caterpillars and plutella in beans, maize, rice, cotton and vegetables	
55.	Farin 200 EC	FRE/19250/1509G August 2019	Chlorpyrifos-ethyl (200g/l)	II	Insecticide for the control of fruit borers, whiteflies, thrips, caterpillars and stem borers in pepper, tomato soybean and oil palm	PT. Dalzon Chemicals,Accra
56.	Fastrack 10 SC	FRE/1902/1487G June 2019	Alpha-cypermethrin (100g/l)	III	Insecticide for the control of insect pests invegetables and fruits	Agrimat Ltd., Madina, Accra
57.	Fenitrothion 50 EC	FRE/1902/1515G September 2019	Fenitrothion (50%)	III	Insecticide for the control of chewing, boring and sucking insectsin fruits, vegetables and cereals	Agrimat Ltd., Madina, Accra
58.	Fipro 50 EC	FRE/1908/1532G October 2019	Fipronil (500g/l)	II	Insecticide for the control of insect pests invegetables and cereals	Dizengoff (Ghana) Limited, Accra
59.	Flash Akate	FRE/2005/1603G May 2020	Sulfoxaflor (240g/l)	II	Insecticidefor the control of mirids in cocoa	Chemico Limited, Tema
60.	Frankofen 20 EC	FRE/1939/1490G June 2019	Fenvalerate (200g/l)	II	Insecticide for the control of insect pests in vegetables	FrankatsonLtd., Accra
61.	Furadan 3G	FRE/2105/1821R May 2021	Carbofuran (3%)	II	Insecticide for the control of insect pests in rice, vegetablesand oil palm	Chemico Ltd., Tema
62.	Galil 300SC	FRE/19100/1543G October 2019	Imidacloprid (250g/l) + Bifenthrin (50g/l)	II	Insecticide forthe control of mirids in cocoa	Adama West Africa Ltd, Accra
63.	Golan 20SL	FRE/1908/1531G October 2019	Acetamiprid (200g/l)	II	Insecticide for the control of insect pests in vegetables, citrus, cotton, coffee andmaize	Dizengoff (Ghana) Limited, Accra
64.	Hitcel	FRE/2110/1743G February 2021	Profenofos (40%) + Cypermethrin (4%)	III	Insecticide for the control of insect pests in field crops	Reiss & Co (Ghana) Ltd., Accra
65.	Hoprole 30 WG	FRE/2199/1850G August 2021	Indoxacarb (95%)	II	Insecticide for the control of diamondback moth, beetles, caterpillars andcabbage moth in cabbage, tomatoes and cowpea	Rainbow AgrosciencesCo. Ltd., Tema
66.	Impact 25 EC	FRE/19250/1508G August 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of armyworm inpepper and soybean	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra

67.	Insector T 45	FRE/19202/1467G March 2019	Imidacloprid (350g/kg) + Thiram (100g/kg)	III	Insecticide/fun gicide for the control of aphids, leafhoppers, insect pests and fungal diseases in cereals	Louis Dreyfus Co.Ltd., Tema
68.	Inspire 30 EC	FRE/2106/1880G October 2021	Etofenprox (303.68g/l)	III	Insecticidefor the control of mirids in cocoa	Calli GhanaCo. Ltd., Accra
69.	Karto 2.5 EC	FRE/2010/1712G February 2021	Lambda- cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests invegetables	Reiss & Co. Ghana Ltd., Accra
70.	KD 215 EC	FRE/2005/1642G July 2020	Chlorpyrifos (200g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide forthe control of insect pests incotton	Chemico Ltd, Tema
71.	Kilsect 2.5 EC	FRE/2125/1865G September 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide forcontrol of insect pests in vegetables	Bentronic Productions, Kumasi
72.	K-Optimal EC	FRE/21202/1721G February 2021	Acetamiprid (20g/l) + Lambda-cyhalothrin (16g/l)	II	Insecticide forthe control of insect pests invegetables	Louis DreyfusCo. Gh. Ltd., Tema
73.	Lagano 2.5 EC	FRE/20184/1691G December 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide forthe control of aphids, beetles, thrips and larvae of lepidoptera in cotton and vegetables	Ganorma Agrochemicals, Tamale
74.	Lambdacot EC	FRE/2158/1774G April 2021	Lambda- cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests in vegetables and pulses	Afcott GhanaLtd., Accra
75.	Lambda-M 2.5 EC	FRE/1927/1526G October 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide forcontrol of insect pests in vegetables and flowers	MultivetGhana Limited,Accra
76.	Lambad 2.5 EC	FRE/2181/1889G October 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests in cereals and vegetables	B. Kaakyire AgrochemicalCo. Ltd., Kumasi
77.	Lambda Plus	FRE/1930/1477G March 2019	Lambda-cyhalothrin (2.5%)	II	Insecticide forthe control of insect pests in vegetables and pulses	Natosh Enterprise, Kumasi
78.	Lambda Super 2.5 EC	FRE/2143/1836G June 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pests incereals, cowpea andsoybean	KumarkCo. Ltd, Kumasi
79.	Lamsate EC	FRE/20145/1600G May 2020	Dimethoate (300g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide forthe control of aphids, thrips,planthoppers, whiteflies in cowpea, soybean, cotton, maize,sorghum, millet, melonsand yams	Jubaili Agrotec Ltd.,Kumasi
80.	Leadrole 80 WG	FRE/2099/1645G August 2020	Ethiprole (40%) + Imidacloprid (40%)	II	Insecticide forthe control of aphids, brown plant hopper and whiteflies in	Rainbow AgroSciencesCo. Ltd., Tema

					cotton, vegetables andrice	
81.	Levo 2.4SL	FRE/1908/1529G October 2019	Oxymatrin (2.4%)	III	Insecticide forthe control of insect pest in vegetables andfruit crops	Dizengoff Ghana Ltd.,Accra
82.	Lionguard EC	FRE/21145/1773G April 2021	Dimethoate (25%) + Cypermethrin (3%)	II	Insecticide forthe control of aphids, mealybugs and whiteflies in vegetables	Jubaili Agrotec Ltd., Kumasi
83.	Lufu 150SC	FRE/20272/1589G November 2020	Thiamethoxam(100g/l) + Deltamethrin (50g/l)	II	Insecticide forthe control of capsids in cocoa	Oak Momentum Co. Ltd., Tema
84.	Magicforce Gold	FRE/20145/1683G November 2020	Acetamiprid (20g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticicide forthe control of insect pests in cabbage, cucumber, okra, pepper, maize, sorghum, rice, legumes, mangoand citrus	Jubaili Agrotec Ltd.,Kumasi
85.	Marshal 480 EC	FRE/2105/1819R May 2021	Carbosulfan (480g/l)	II	Insecticide for the control of scale, nematodesand symphilids in pineapple	Chemico Ltd, Tema
86.	Mektin 1.8 EC	FRE/1908/1530G October 2019	Abamectin (18g/l)	II	Insecticide for the control of leafminers, spidermites, caterpillars andthrips in citrus,cotton, vegetables andmaize	Dizengoff Ghana Ltd.,Accra
87.	Methoate 40EC	FRE/2125/1866G September 2021	Dimethoate (400g/l)	III	Insecticide forthe control of insect pests in vegetables andfruit crops	Bentronic Productions, Kumasi
88.	M-Fos 48 EC	FRE/1927/1481G March 2019	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests in vegetables and outdoor public health purposes	Multivet (Gh)Ltd., Accra
89.	Miricon EC	FRE/2014/1608G June 2020	Pyrethrum (12g/l) + Deltamethrin (6g/l)	II	Insecticide forthe control of mirids in cocoa	Afropa (Ghana) Ltd.,Accra
90.	Movento 100 SC	FRE/20183/1635G June 2020	Spirotetramat (100g/l)	III	Insecticide forthe control of mealybugs in pineapple and pawpaw	Bayer West-Central Africa S.A., Accra/ Miqdadi Gh. Ltd., Spintex
91.	Nemaran 3GR	FRE/2199/1784G April 2021	Carbofuran (3%)	II	Insecticide for the control of insect pests in vegetables, sugarcane, cotton, rice andgroundnut	Rainbow AgrosciencesCo. Ltd., Tema
92.	Nomax 150SC	FRE/19206/1527G September 2019	Alpha-cypermethrin (75g/l) + Teflubenzuron (75g/l)	II	Insecticide forthe control of mirids in cocoa	Josann Agro Consult (J.A.C) Ltd., Accra
93.	Okumakate SC	FRE/2035/1594G February 2020	Thiamethoxam (200g/l)	II	Insecticide forthe control of capsid bugs	K. Badu Agrochemicals,

					in cocoa	Kumasi
94.	Pawa 2.5 EC	FRE/2105/1816G May 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests invegetables	Chemico Ltd, Tema
95.	Perfecto 175 SC	FRE/1910/1485G June 2019	Imidacloprid (125g/l) + Lambda-cyhalothrin (50g/l)	II	Insecticide forthe control of insect pests in vegetables and cereals	Reiss & Co(Gh) Ltd., Accra
96.	Polytrin 50 EC	FRE/2125/1791G April 2021	Cypermethrin (50%)	II	Insecticide for the control of insect pests in vegetables	Bentronic Productions, Kumasi
97.	Porselen 5 SG	FRE/2199/1886G October 2021	Emamectin-benzoate (5%)	III	Insecticide for the control of worms and other insect pests in cabbage	Rainbow AgrosciencesCo. Ltd., Tema
98.	Protect 1.9 EC	FRE/1908/1528G October 2019	Emamectin benzoate (1.9%)	III	Insecticide forthe control of insect pests in cotton, vegetables and maize	Dizengoff (Ghana) Limited, Accra
99.	Pyrical 5G	FRE/1906/1447G February 2019	Chlorpyrifos-ethyl (50g/kg)	II	Insecticide forthe control of insect pests invegetables	Calli GhanaCo. Ltd., Accra
100.	Pyrical 480 EC	FRE/2106/1758G March 2021	Chlorpyrifos-ethyl (480g/l)	II	Insecticide forthe control of insect pests inpineapples	Calli GhanaCo. Ltd., Accra
101.	Pyrinex 48 EC	FRE/20100/1620G May 2020	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for wood treatment and the control of insect pests incrops	Adama West Africa Ltd., Accra
102.	Pyrinex Quick 256 EC	FRE/19100/1547G October 2019	Chlorpyrifos-ethyl (250g/l) + Deltamethrin (6g/l)	II	Insecticide for the control of insect pests in vegetables and for public healthpurposes	Adama West Africa Ltd., Accra
103.	Rainlambda 2.5 EC	FRE/2099/1651G August 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests invegetables	Rainbow AgrosciencesCo. Ltd., Tema
104.	Raintham 350SC	FRE/2099/1676G September 2020	Thiamethoxam (350g/l)	III	Insecticide forthe control of insect pests intomatoes	Rainbow AgrosciencesCo. Ltd., Tema
105.	Rimon 10 EC	FRE/20100/1619G May 2020	Novaluron (100g/l)	III	Insecticide forthe control of insect pests incabbage, tomatoes and pepper	Adama West Africa Ltd., Accra
106.	Rocky Super 2.5 EC	FRE/20242/1614G May 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests in vegetables and pulses	Syntapak Co. Ltd., Kumasi
107.	Rockot Extra 75 WG	FRE/2199/1744G February 2021	Thiamethoxam (750g/kg)	III	Insecticide forthe control of insect pests in rice, cotton, vegetables and sugarcane	Rainbow AgroSciences Co. Ltd., Tema
108.	Ronfos 550 EC	FRE/2099/1646G August 2020	Profenofos (500g/l) + Lufenuron (50g/l)	III	Insecticide for the control of podborers, bollworm, beet armyworm, leafmoths in kidney bean, tomatoes and cabbage	Rainbow AgroSciencesCo. Ltd., Tema

109.	Rugby 10 G	FRE/2005/1687G November 2020	Cadusafos (100g/kg)	II	Insecticide/nem aticide for the control of insectpests and nematodes in pineapple, banana, citrus and sugarcane	Chemico Ltd, Tema
110.	Savahaler WP	FRE/2155/1891G October 2021	Methomyl (250g/kg)	II	Insecticide forthe control of insect pests invegetables, fruits, cotton and soybean	Louis Dreyfus Co. Ltd.,Tema
111.	Seed Care	FRE/20145/1664G September 2020	Imidacloprid (10%) + Thiram (10%)	II	Insecticide/fung icide for the control of rice blast, rice planthopper inrice, maize, sorghum and millet	Jubaili Agrotec Ltd.,Kumasi
112.	Seed Power 44 WS	FRE/2008/1702G December 2020	Imidacloprid (200g/kg) + Metalaxyl (200g/kg) + Anthraquinone (40g/kg)	III	Insecticide/fung icide for the control of downy mildew, damping off, Rhizoctonia spp., Fusarium spp. and insect pests in cereals, sorghum, soybean and for seed treatment	Dizengoff (Ghana) Ltd, Accra
113.	Seed Shield	FRE/1957/1552G October 2019	Imidacloprid (350g/l)	III	Insecticide forthe control of insect pests infield crops	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra
114.	Select Plus 315EC	FRE/2010/1713G February 2021	Profenofos (300g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide forthe control of aphids, bollworms, leafworms andarmyworms in cotton, vegetables and cereals	Reiss & Co. Ghana Ltd., Accra
115.	Sivanto Energy 085 EC	FRE/21183/1310G May 2021	Flupyradifurone (75g/l) + Deltamethrin (10 g/l)	II	Insecticide forthe control of mirids in cocoa	Bayer West-Central Africa S.A, Accra
116.	Spartan 300 OD	FRE/2099/1650G August 2020	Imidacloprid (210g/l) + Beta-cyfluthrin (90g/l)	II	Insecticide for the control of armyworm, stemborer and bollworms in rice and maize	Rainbow AgroSciencesCo. Ltd., Tema
117.	Starpyrifos 48 EC	FRE/2082/1700G December 2020	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of insect pests in field crops	Cropstar Enterprise, Kumasi
118.	Stink EC	FRE/2181/1731G February 2021	Dimethoate (30%) + Lambda-cyhalothrin (1.5%)	II	Insecticide for the control of aphids, leafhoppers, borers and weevils in vegetables, cotton and sweet potato	B. Kaakyire Agrochemicals, Kumasi
119.	Striker 2.5 EC	FRE/19202/1462G March 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of aphids, bollworms and diamondback moth in cerealsand vegetables	Louis Dreyfus Co.Ltd., Tema
120.	Success Appat	FRE/2005/1643G	Spinosad	U	Insecticide forthe	Chemico Ltd.,

		July 2020	(0.24g/l)		control of fruitfly in citrus, mango and vegetables	Tema
121.	Sumeco 20 EC	FRE/2096/1698G December 2020	Fenvalerate (20%)	II	Insecticide forthe control of diamondback moth, bollworm and caterpillar in cereals	Enepa Ventures, Kumasi
122.	Sumico 20 EC	FRE/2143/1835G June 2021	Fenvalerate (200g/l)	II	Insecticide forthe control of insect pests invegetables	KumarkCo. Ltd, Kumasi
123.	Sumitex 40 EC	FRE/2143/1834G June 2021	Dimethoate (400g/l)	II	Insecticide forthe control of mealybugs, mites, thrips, greenflies and borer larvae invegetables andpineapples	KumarkCo. Ltd, Kumasi
124.	Sun Docarb SC	FRE/1957/1556G October 2019	Indoxacarb (150g/l)	III	Insecticide for the control of bollworms, diamondback moth and caterpillars in cotton, cabbageand rice	Wynca Sunshine Agric Products & Trading Co.,Ltd, Accra
125.	Sunhalothrin 2.5EC	FRE/2057/1586G January 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests in vegetables and pulses	Wynca Sunshine Agric Products & Trading Co.,Ltd, Accra
126.	Sun-Lambda EC	FRE/1957/1557G October 2019	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of diamondback moth and cottonbollworms in cabbage and cotton	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
127.	Sunpyram 20WG	FRE/2057/1584G January 2020	Nitenpyram (20%)	II	Insecticide forthe control of chewing and sucking insect pests in tree crops	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra
128.	Sunpyrifos 48 EC	FRE/1957/1555G October 2019	Chlorpyrifos-ethyl (480g/l)	II	Insecticide forthe control of insect pests incrops	Wynca Sunshine Agric Prod & Trading Co.,Ltd., Accra
129.	Sun-Thiame WDG	FRE/1957/1558G October 2019	Thiamethoxam (25%)	II	Insecticide forthe control of planthoppers and aphids in rice and cotton	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
130.	Super Tiger 2.5 EC	FRE/2067/1613G May 2020	Lambda-cyhalothrin (25g/l)	II	Insecticide forthe control of insect pests invegetables	Jakess AgrochemicalCo. Ltd., Kumasi
131.	Supertop EC	FRE/2143/1769G March 2021	Acetamiprid (20g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide forthe control of insect pests intomatoes	Kumark Co.Ltd. Kumasi
132.	Termidor SC	FRE/21206/1845G July 2021	Fipronil (25g/l)	II	Insecticide for the control of termites in cabbage, onion, eggplant and maize	Josann Agro Consult Ltd., Accra
133.	Thodan Super 35SC	FRE/2110/1741G February 2021	Acetamiprid (2%) + Lambda-cyhalothrin (1.5%)	IV	Insecticide forthe control of mirids in cocoa	Reiss & Co (Ghana),Accra
134.	Tornado EC	FRE/20145/1596G	Dimethoate	II	Insecticide forthe	Jubaili Agrotec

		May 2020	(40%)		control of insect pest in rice, cotton, citrus and vegetables	Ltd., Kumasi
135.	Tricel 48 EC	FRE/1910/1483G June 2019	Chlorpyrifos-ethyl (480g/l)	II	Insecticide for the control of cutworms and aphids in cereals and cotton	Reiss & Co(Gh) Ltd., Accra
136.	Verate 200 EC	FRE/1999/1501G June 2019	Fenvalerate (200g/l)	II	Insecticide for the control of stalkborer, bollworms, cotton stainers in cotton, maizeand sorghum	Rainbow AgroSciences Co. Ltd., Tema
137.	Vertigo 100 EC	FRE/19250/1512G August 2019	Cypermethrin (100g/l)	II	Insecticide forthe control of armyworm, thrips, whiteflies and fruit sucking bugs in onionand soybean	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
138.	Vigilant 25 EC	FRE/1910/1484G June 2019	Bifenthrin (25g/l)	II	Insecticide for the control of aphids, bollworm, jassids, whiteflies, mitesand hoppers in cotton and mango	Reiss & Co(Gh) Ltd., Accra
139.	Viper 46EC	FRE/1906/1441G February 2019	Acetamiprid (16g/l) + Indoxacarb (30g/l)	II	Insecticide forthe control of lepidoptera, sucking and biting insects	Calli GhanaCo. Ltd., Accra
140.	Viper Super 80EC	FRE/2106/1831G October 2021	Indoxacarb (60g/l) + Acetamiprid (20g/l)	II	Insecticide forcontrol of cocoa mirids	Calli GhanaCo. Ltd., Accra
141.	Warrior Super 26EC	FRE/2181/1732G February 2021	Sophora flavescen plant extract (25%) + Emamectin-benzoate (1%)	III	Insecticide for the control of fall armyworm (FAW) in maize	B. Kaakyire Agrochemicals, Kumasi
142.	Wonder 2.5 EC	FRE/19147/1294G January 2019	Lambda-cyhalothrin (2.5%)	II	Insecticide forthe control of insect pests ofvegetables	Errands4u, C4 - 68, DTD, Madina, Accra
143.	Wreko 2.5EC	FRE/2123/1718G March 2021	Lambda-cyhalothrin(25g/l)	II	Insecticide forthe control of insect pests invegetables	Thomhcof Enterprise, Kumasi

(A) Fully Registered Pesticides (FRE)
(A1b) Insecticides for Public Health Purposes

No.	Trade Name	Registration No. / Date of Issue	Concentration ofActive Ingredient	Hazard Class	Uses	Local Distributor
1.	Fendona 6SC	FRE/21206/1826G June 2021	Alpha-cypermethrin(60g/l)	III	Insecticide forpublic health purposes	Josann AgroConsult (J.A.C) Ltd., Accra
2.	Ficam VC 80WP	FRE/19183/1569G October 2019	Bendiocarb(80%)	II	Insecticide forpublic health purposes	Bayer West- Central AfricaS.A, Accra
3.	Goliath Gel	FRE/19206/1454G February 2019	Fipronil(0.05%)	III	Insecticide forthe control mosquitoes, housefly and cockroaches	Josann Agro Consult Ltd.,Accra
4.	Hercules 50 SC	FRE/2102/1733G February 2021	Fipronil(50g/l)	II	Insecticide forpublic health purposes	Agrimat Ltd.,Madina
5.	Kakalika Gel	FRE/2008/1610G May 2020	Fipronil(0.05%)	III	Insecticide forthe control of cockroaches	Dizengoff Ghana Ltd.,Accra

6.	K-Othrine 250WG	FRE/19183/1568G October 2019	Deltamethrin(250g/kg)	II	Insecticide forpublic health purposes	Bayer West- Central AfricaS.A, Accra
7.	Pyriforce 480 EC	FRE/21202/1728G February 2021	Chlorpyrifos-ethyl(480g/l)	II	Insecticide for outdoor public health purposes	Louis DreyfusCo. Gh. Ltd., Tema
8.	Suncombi 30EC	FRE/1957/1553G October 2019	Fenitrothion (25%) + Fenvalerate (5%)	II	Insecticide forpublic health purposes	Wynca Sunshine AgricProducts & Trading Co., Limited, Accra
9.	Terminus 480 EC	FRE/2116/1802G May 2021	Chlorpyrifos-ethyl(480g/l)	II	Insecticide for outdoor public health pest control	Kurama Co.Ltd, Accra
10.	Trigger 10 CS	FRE/2008/1704G December 2020	Lambda-cyhalothrin (100g/kg)	II	Insecticide forthe control of flies and mosquitoes	Dizengoff (Ghana) Ltd., Accra
11.	Vectobac G	FRE/2102/1739G February 2021	*Bacillus thuringiensis*, serotype H-14, 3000 *Units/mg*	IV	Insecticide for the control of mosquito larvae	AgrimatLimited, Madina
12.	VectoBac 12AS	FRE/2102/1737G February 2021	*Bacillus thuringiensis, serotype H-14, 3000 Units/mg*	IV	Insecticide for the control of mosquito larvae	AgrimatLimited, Madina
13.	Vectolex WDG	FRE/2102/1736G February 2021	*Bacillus sphaericus(3000 ITU/mg)*	IV	Insecticide for the control of mosquito larvae	AgrimatLimited, Madina

(A) Fully Registered Pesticides (FRE)
(A1c) Insecticides for Stored Produce

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Actellic Gold Dust	FRE/1906/1439G February 2019	Pirimiphos-methyl (16g/kg) + Thiamethoxam (3.6g/kg)	III	Insecticide for the control of *Sitophilus zeamais* and *Sitophilus granalius L*. in stored produce	Calli Ghana Co. Ltd., Accra
2.	Ateco Super 25 EC	FRE/2143/1838G June 2021	Pirimiphos-methyl (250g/l)	II	Insecticide for the control of insect pests in stored cereals, cowpea and soybean	KumarkCo. Ltd, Kumasi
3.	Degesch Plate	FRE/20185/1637R July 2020	Magnesium phosphide (56%)	Ib	Insecticide for the control of insect pests in stored produce	RMG Ghana Ltd., Accra
4.	Phostoxin Bag	FRE/20185/1638R July 2020	Aluminium phosphide (57%)	Ib	Insecticide for the control of insect pests in stored produce	RMG Ghana Ltd., Accra
5.	Temaphos	FRE/2005/1631R May 2020	Aluminium phosphide (56%)	Ib	Insecticide for the control of insect pests in stored produce	Chemico Ltd., Tema

6.	ULV 900IC	FRE/2114/1609G July 2021	Pyrethrum (50%) + Deltamethrin (0.674%)	II	Insecticide for the control of flying and crawling insects in cocoa and stored produce	Afropa (Ghana) Ltd.,Accra
7.	Zerofly Storage Bag	FRE/2073/1680G November 2020	Deltamethrin (3g/kg)	III	Insecticide for the control of insect pests of stored grains	Vestergaard Frandsen West Africa, Accra

(A) Fully Registered Pesticides (FRE)

(A2) Fungicides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredients	Hazard Class	Uses	Local Distributor
1.	Acticide EPW	FRE/1920/1493G June 2019	Diuron (20%) + Carbendazim (9%) + 2-octyl- 2H-isothiazol-3-one (2.8%)	II	Fungal and algal paint preservative	BBC Industrials Company Ltd., Accra
2.	Aflasafe GH01	FRE/20217/1632G June 2020	Four atoxigenic *Aspergiluss flavus* strain (0.0005%)	IV	Fungicide for the control of aflatoxins in maize, groundnutsand sorghum	International Institute of Tropical Agriculture (IITA), Accra
3.	Aflasafe GH02	FRE/20217/1633G June 2020	Four atoxigenic *Aspergiluss flavus* strain (0.0005%)	IV	Fungicide for the control of aflatoxins in maize, groundnutsand sorghum	International Institute of Tropical Agriculture (IITA), Accra
4.	Agro Comet 72 WP	FRE/2110/1742G February 2021	Copper (I) oxide (60%) + Metalaxyl (12%)	III	Fungicide for the control of *Phytophthora spp.*in cocoa	Reiss & Co (Ghana) Ltd.,Accra
5.	Amistar Top 325 SC	FRE/20185/1607G May 2020	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for the control of leaf spots, mildew, leaf blight, scab, anthracnose and rust in beans, pea, tomatoes and pepper	RMG (Ghana)Ltd., Accra
6.	Athlete 80WP	FRE/19202/1464G March 2019	Fosetyl- aluminium (800g/kg)	III	Fungicide for the control of mildewand *Phytophtora sp., Pythium plasmopara* and *Bremia sp.* in pineapples and fruit trees	Louis DreyfusCo. Ltd., Tema
7.	Banjo Forte 400SC	FRE/19100/1541G October 2019	Fluazinam (200g/l) + Dimethorph(200g/l)	III	Fungicide for thecontrol of *Phytophthora megakarya* in cocoa	Adama WestAfrica Ltd., Accra
8.	Benco 80 WP	FRE/2125/1861G September 2021	Mancozeb(800g/kg)	III	Fungicide for control of leaf spots, mildew, leaf blight and invegetables, fruitsand ornamentals	Bentronic Productions,Kumasi
9.	Cabrio Duo	FRE/21206/1843G July 2021	Dimethomorph(72g/l) + Pyraclostrobin (100g/l)	II	Fungicide for thecontrol of blackpod disease in cocoa	Josann AgroConsult Ltd.,Accra
10.	Callet 50 WP	FRE/20145/1599G May 2020	Carbendazim(50%)	III	Fungicide for thecontrol of *Pyricularia oryzae* in paddy rice	Jubaili AgrotecLtd., Kumasi

11.	Callis 400 OL	FRE/2106/1759G March 2021	Thiophanate- methyl (400g/l)	III	Fungicide for the control of yellow and black sigatokain bananas	Calli Ghana Co. Ltd., Accra
12.	Calliete 80 WP	FRE/2106/1760G March 2021	Fosetyl-aluminium (800g/kg)	III	Systemic fungicide for thecontrol of *phytophtor*a in pineapple	Calli Ghana Co. Ltd., Accra
13.	Carinho WP	FRE/2155/1890G October 2021	Carbendazim (500g/kg)	II	Fungicide for thecontrol of leafspot, leaf mould and stem rot in vegetables	Louis Dreyfus Co. Ltd., Tema
14.	Champion WP	FRE/2005/1606G May 2020	Copper Hydroxide (77%)	III	Fungicide for thecontrol of *Phytophtora megakarya* and *Phytophtora palmivora* in cocoa and coffee	Chemico Limited, Tema
15.	Chemoliette 80 WP	FRE/2005/1627G May 2020	Fosetyl- aluminium (800g/kg)	III	Systemic fungicidefor the control of *phytophtora* disease in pineapple	Chemico Ltd.,Tema
16.	Conti-Zeb	FRE/1978/1571G October 2019	Mancozeb(800g/kg)	III	Fungicide for the control of leafspots, mildew,leafblight and scab in vegetables and fruits	Five Continents Imports & Exports Ltd., Accra
17.	Cumora	FRE/20206/1658G September 2020	Boscalid(500g/l)	U	Fungicide for thecontrol of yellowand black sigatoka in banana	Josann Agro Consult Limited, Accra
18.	Cuprofix 30 Disperss	FRE/2005/1630G May 2020	Mancozeb (30%) + Metallic copper (12%)	II	Fungicide for thecontrol of powdery mildew, anthracnose, leafand fruit spots in vegetables	Chemico Ltd.,Tema
19.	Cuprozin 35WP	FRE/2008/1587G January 2020	Copper oxychloride (35%)	II	Fungicide for thecontrol of diseases in vegetables	Dizengoff Ghana Ltd.,Accra
20.	Damazeb 80WP	FRE/19250/1510G August 2019	Mancozeb(800g/kg)	III	Fungicide for the control of diseasesin soybean, groundnut, coffee,pepper, banana, melon, tomato and tuber crops	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
21.	Dizcozeb 80 WP	FRE/1908/1524G September 2019	Mancozeb(800g/kg)	III	Fungicide for the control of leaf spot, mildew, leafblight and scab invegetables, fruits, ornamentals and field crops	Dizengoff Ghana Ltd.,Accra
22.	Dizole 250 EC	FRE/2199/1883G October 2021	Difenoconazole (250g/l)	III	Fungicide for thecontrol of leaf blight and leaf spot in banana, carrots andtomatoes	Rainbow AgroSciences Co. Ltd., Tema
23.	Delco 75WP	FRE/2143/1841G June 2021	Copper Hydroxide (75%)	III	Fungicide for thecontrol of blackpod diseasein cocoa	Kumark Co. Ltd, Kumasi
24.	Fantic Plus 69WP	FRE/1906/1448G February 2019	Cuprous oxide(60%) + Benalaxyl-M(9%)	III	Fungicide for thecontrol of *Phytophtora megakarya* in cocoa	Calli Ghana Co.Ltd., Accra

25.	Five Star 325 SC	FRE/2199/1849G August 2021	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for the control of brown spot, blackspot, rust and white mould in cabbage, cowpea, soybean,bulb vegetables, groundnut and sweet potatoes	Rainbow AgroosciencesCo. Ltd., Tema
26.	Foko 80WP	FRE/2123/1716G March 2021	Mancozeb(800g/kg)	III	Fungicide for the control of diseasesin vegetables	Thomhcof Enterprise, Kumasi
27.	Folicur 250 EW	FRE/19185/1473G March 2019	Tebuconazole (250g/l)	II	Fungicide for thecontrol of black and yellow sigatoka in plantain and banana	RMG Ghana Limited, Accra
28.	Fungikill 50 WP	FRE/1905/1438G January 2019	Copper (35%) + Metalaxyl (15%)	III	Fungicide for thecontrol of *P. palmivora and P. megakarya* in cocoa	Chemico Ltd.,Tema
29.	Funguran-OH 50WP	FRE/2008/1703G December 2020	Copper hydroxide (77%)	III	Fungicide for the control of *Phytophtora sp.* incocoa	Dizengoff Ghana Limited,Accra
30.	Goldazim WP	FRE/2116/1804G May 2021	Carbendazim(500g/l)	III	Systemic fungicide for thecontrol of diseases in fruitsand vegetables	Kurama Co.Ltd, Accra
31.	Guardian Xtra WP	FRE/2199/1748G February 2021	Carbendazim(80%)	II	Fungicide for control of *Botrytis, sclerotinia* and blue mould inbeans, onions, tomatoes and citrus	Rainbow AgroSciences Co. Ltd., Tema
32.	Impulse 800 EC	FRE/19185/1471G March 2019	Spiroxamine(800g/l)	II	Fungicide for thecontrol of black and yellow sigatoka in plantain and banana	RMG Ghana Limited, Accra
33.	Ivory 80WP	FRE/1906/1440G February 2019	Mancozeb(800g/kg)	III	Fungicide for thecontrol of diseases in vegetables andFruits	Calli Ghana Co.Ltd., Accra
34.	Kabazeb 80 WP	FRE/2081/1654G August 2020	Mancozeb(800g/kg)	III	Fungicide for the control of leafspots, mildew,leaf blight and scab in vegetables, fruitsand ornamentals	B. Kaakyire AgrochemicalsCo. Ltd., Kumasi
35.	Kentan 40WG	FRE/2006/1581G January 2020	Copper Hydroxide (400g/kg)	III	Fungicide for thecontrol of blackpod diseasein cocoa	Calli Ghana Co. Ltd, Accra
36.	Kilazeb 80 WP	FRE/2143/1839G June 2021	Mancozeb(800g/kg)	III	Fungicide for the control of leaf spots, mildew, leaf blight and scab in vegetablesand fruits	Kumark Co. Ltd., Kumasi
37.	Kocide 2000 WP	FRE/2006/1694G December 2020	Cupric hydroxide (53.8%)	III	Fungicide for thecontrol of *Phytophthora megakarya* and *Phytophthora palmivora* inCocoa	Calli Ghana Co. Ltd., Accra
38.	Manco-care	FRE/20145/1665G Septmber 2020	Mancozeb(80%)	III	Fungicide for thecontrol of early and late blight, buck eye rot, leafspot, blast, sigatoka and tip rot in vegetables, tomato and plantain	Jubaili AgrotecLtd., Kumasi
39.	Mancozan	FRE/19202/1465G	Mancozeb (640g/kg)	II	Fungicide for thecontrol	Louis Dreyfus Co.

	Super WP	March 2019	+Metalaxyl (80g/kg)		of blight,leafspot and scab in fruits and vegetables	Ltd., Tema
40.	Mandazim WP	FRE/20145/1595G May 2020	Mancozeb (63%) + Carbendazim (12.5%)	III	Fungicide for the control of late leaf spot and peanut rust in groundnuts	Jubaili AgrotecLtd., Kumasi
41.	Metalm 72WP	FRE/2116/1805G May 2021	Cuprous oxide(60%) + Metalaxyl (12%)	III	Fungicide for the control of blackpod disease in cocoa	Kurama Co.Ltd., Accra
42.	Nativo 300 SC	FRE/19185/1472G March 2019	Tebuconazole (200g/l) + Trifloxystrobin(100g/l)	III	Fungicide for thecontrol of fungaldiseases and rust/leafspot in vegetables and irrigated rice fields	Bayer West-Central Africa S.A.,Accra
43.	Ortiva Top 325 SC	FRE/2006/1582G January 2020	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for control of leaf spot and *anthracnose* oftomatoes	Calli GhanaCo. Ltd., Accra
44.	Prozole 250 EC	FRE/1999/1494G June 2019	Propiconazole (250g/l)	III	Fungicide for thecontrol of ndiseases in rice and pineapple	Rainbow AgrosciencesCo. Ltd, Tema
45.	Qualico 46WP	FRE/20272/1686G November 2020	Copper oxychloride (400g/kg) + Dimethomorph (60g/kg)	II	Fungicide for thecontrol of blackpod diseasein cocoa	Oak MomentumCo. Ltd, Tema
46.	Rainmancoz 80WP	FRE/1999/1537G September 2019	Mancozeb(800g/kg)	III	Fungicide for the control of downy mildew, anthracnose and rust in vegetables, rice, citrus and mango	Rainbow AgroSciencesCo. Ltd., Tema
47.	Raintop-M 70 WP	FRE/2099/1615G May 2020	Thiophanate- methyl (700g/kg)	III	Fungicide for thecontrol of diseases in vegetables, fruits and ornamentals	Rainbow AgroSciencesCo. Ltd., Tema
48.	Raintebzol 75 WG	FRE/2099/1677G September 2020	Tebuconazole (750g/kg)	III	Fungicide for the control of leafspot, mildew, leaf blight and scab in vegetables and fruits	Rainbow AgroSciences Co. Ltd., Tema
49.	Raintebzol 430 SC	FRE/2099/1678G September 2020	Tebuconazole (430g/l)	III	Fungicide for the control of leafspot, mildew, leaf blight and scab in vegetables and fruits	Rainbow AgroSciences Co. Ltd., Tema
50.	Royal Cop 77 WP	FRE/2143/1840G June 2021	Copper Hydroxide (77%)	III	Fungicide for thecontrol of blackpod diseasein cocoa	Kumark Co. Ltd., Kumasi
51.	Shavit F 715 WP	FRE/20100/1616G May 2020	Folpet (700g/kg) + Triadimenol (15g/kg)	III	Fungicide for the control of *Altenaria solani*, *Phytophtora spp*.,*Septoria lycopesici* in vegetables, field crops and ornamentals	Adama WestAfrica Ltd., Accra
52.	Shaolin 62.5WG	FRE/2199/1749G February 2021	Cyprodinil(37.5%) + Fludioxonil (25%)	II	Fungicide for the control of fungal diseases in tomato, mango, green pepper, carrot and pawpaw	Rainbow AgroSciences Co. Ltd., Tema

53.	Skyrobin 50WG	FRE/2099/1675G September 2020	Azoxystrobin (500g/kg)	III	Fungicide for the control of mildew,leaf blight, scab and anthracnose in vegetables	Rainbow AgroSciences Co. Ltd., Tema
54.	Sphinx Star 480WDG	FRE/21100/1771G April 2021	Chlorothalonil (400g/l) + Dimethomorph(80g/l)	III	Fungicide for the control of diseases in vegetables	Adama WestAfrica Ltd, Accra
55.	Sulphur 80 WP	FRE/1902/1522G September 2019	Sulphur(80%)	III	Fungicide for thecontrol of blight,leafspot, rust, downy mildew and scab invegetables	Agrimat Ltd.,Madina
56.	Sun-Anil SC	FRE/1957/1549G October 2019	Pyrimethanil(50g/l)	III	Contact fungicidefor the control of downy mildew oftomatoes and cucumber	Wynca Sunshine Agric.Products & Trading Co. Ltd., Accra.
57.	Suncozeb 80WP	FRE/1957/1550G October 2019	Mancozeb (800kg/kg)	III	Fungicide for the control of leaf spots, mildew, leaf blight and scab in vegetables	Wynca Sunshine Agric Products & Trading Co Ltd,Accra
58.	Supreme 325 SC	FRE/2010/1661G September 2020	Difenoconazole (125g/l) + Azoxystrobin (200g/l)	U	Fungicide for the control of leaf blight, powdery mildew, early andlate blight, blast, downy mildew in vegetables andcereals	Reiss & Co. (Ghana) Ltd,Accra
59.	Sun-Vege	FRE/2057/1579G January 2020	Dimethorph(50%)	III	Fungicide for thecontrol of downymildew and earlyblight in cucumber	Wynca Sunshine Agric Products & Trading Co Ltd,Accra
60.	Thiopsin 70 WP	FRE/2081/1652G August 2020	Thiophanate- methyl (700g/kg)	III	Fungicide for thecontrol of diseases in vegetables, fruits, ornamentals andfield crops	B. Kaakyire AgrochemicalCo. Ltd., Kumasi
61.	Top Cop	FRE/2105/1822G May 2021	Sulphur (50%) + Copper (8%)	III	Fungicide/ miticide for thecontrol of diseases in vegetables	Chemico Limited, Tema
62.	Topsect 70WP	FRE/2125/1798G April 2021	Thiophanate-methyl (70%)	III	Fungicide for thecontrol of fungaldiseases in crops	Bentronic Productions,Kumasi
63.	Trimangol 80WP	FRE/2105/1815G May 2021	Maneb (80%)	III	Fungicide for thecontrol of leaf spots, downy mildew, fruit rot in cereals andvegetables	Chemico Ltd.,Tema
64.	Trustar 85WG	FRE/2199/1853G August 2021	Azoxystrobin(49%) + Tebuconazole(36%)	IV	Fungicide for thecontrol of diseases in rice, soybean, tomato and banana	Rainbow Agrosciences Co. Ltd., Tema
65.	Vamos 500SC	FRE/19100/1540G October 2019	Fluazinam(500g/l)	III	Fungicide for thecontrol of *Phytophthora megakarya* in cocoa	Adama WestAfrica Ltd., Accra
66.	Victory 72 WP	FRE/2008/1701G December 2020	Mancozeb (640g/kg) +Metalaxyl (80g/kg)	III	Fungicide for thecontrol of diseases in fruitsand vegetables	Dizengoff (Ghana) Ltd,Accra
67.	Volley 88 OL	FRE/19206/1453G February 2019	Fenpropimorph (880g/l)	II	Fungicide for thecontrol of *Mycosphaerella musicola and Mycosphaerella fijiensis* in banana	Josann Agro Consult Ltd.,Accra
68.	Zeb-care 80	FRE/20145/1597G	Mancozeb(80%)	III	Fungicide for thecontrol	Jubaili AgrotecLtd.,

	WP	May 2020			of diseases in fruitsand vegetables	Kumasi

(A) Fully Registered Pesticides (FRE)

(A3) Herbicides

No.	Trade Name	Registration No. /Date of Issue	Concentrationof Active Ingredient	Hazard Class	Uses	Local Distributor
1.	2, 4-D Super Herb	FRE/2067/1612G May 2020	2, 4-D Amine Salt (720g/l)	II	Herbicide for the control of broadleaf weeds in cereals, sugarcane and tree crops	Jakess Agrochemical Co. Ltd., Kumasi
2.	Adom 48 SL	FRE/2167/1778G April 2021	Glyphosate(410g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals and vegetables	Jakess AgrochemicalCo. Ltd, Kumasi
3.	Adupa Wura SL	FRE/2125/1796G April 2021	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in arable crops	Bentronic Productions, Kumasi
4.	Adwumamu Hene 41SL	FRE/1930/1478G March 2019	Glyphosate (41%)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals and Vegetables	Natosh Enterprise, Kumasi
5.	Adwuma Super48 SL	FRE/2143/1766G March 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in arable crops	Kumark Co. Ltd., Kumasi
6.	Adwuma Wura 480 SL	FRE/2143/1829G June 2021	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Kumark Co. Ltd, Kumasi
7.	Adwuma Wura 75.7 WSG	FRE/2143/1830G June 2021	Glyphosate (757g/kg)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Kumark Co. Ltd, Kumasi
8.	Afuo Wura 48 SL	FRE/19108/1533G October 2019	Glyphosate (480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals and vegetables	WAAF Agro Ltd., Techiman
9.	Agil 100 EC	FRE/20100/1622G May 2020	Propaquizafop (100g/l)	III	Herbicide for the control of grasses in pineapple, cotton, groundnut, soy bean, vegetables and yam	Adama West Africa Ltd., Accra
10.	Agriforce	FRE/20145/1663G September 2020	Bispyribac- sodium (100g/l)	III	Herbicide for the control of broadleafweeds in direct-seeded rice	Jubaili AgrotecLtd., Kumasi
11.	Agristomp 500EC	FRE/1902/1521G October 2019	Pendimethalin (500g/l)	III	Herbicide for the control of weeds inmaize, rice, cotton and soybean	AgrimatLtd., Madina
12.	Agro 2,4-D Amine720 SL	FRE/2010/1709G February 2021	2, 4-D Amine salt (720g/l)	II	Herbicide for thecontrol of broadleaf weeds and sedges in cereals and sugarcane	Reiss & Co.Ghana Ltd.,Accra
13.	Agro-Ametryn500SC	FRE/2010/1710G February 2021	Ametryn(500g/l)	II	Herbicide for the control of annual broadleaf weeds andgrasses in fruits and sugarcane	Reiss & Co.Ghana Ltd.,Accra

14.	Agronil 36 EC	FRE/2010/1659G September 2020	Propanil(360g/l)	III	Herbicide for thecontrol of annualgrasses in rice	Reiss & Co. (Ghana) Limited, Accra
15.	Alligator 400 EC	FRE/21202/1723G February 2021	Pendimethalin (400g/l)	III	Herbicide for the control of grasses in rice	Louis DreyfusCo. Gh. Ltd., Tema
16.	Amazone 10 WP	FRE/1906/1452G February 2019	Pyrazosulfuron-ethyl (100g/kg)	U	Herbicide for the control of grasses and broadleaf weeds in rice	Calli GhanaCo. Ltd., Accra
17.	Amega 360SL	FRE/2143/1765G March 2021	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in maize	Kumark Co. Ltd., Kumasi
18.	Amino 72 SL	FRE/2105/1820GMay 2021	2, 4-D Amine(720g/l)	III	Herbicide for the control of broad- leaved weeds and sedges in cereals and sugarcane	ChemicoLimited, Tema
19.	Aminoforce 72SL	FRE/21145/1764G March 2021	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleaf weeds and sedges in cereals and tree crops	Jubaili AgrotecLtd., Kumasi
20.	Arsenal Gen 2SL	FRE/21206/1825G June 2021	Imazapyr(250g/l)	II	Selective post emergence herbicide for the control of grasses in cereals	Josann Agro Consult (J.A.C) Ltd., Accra
21.	Baccara 435 EC	FRE/1906/1444G February 2019	Propanil (260g/l) + 2,4 D Amine (175g/l)	II	Herbicide for the control of broadleaf weeds and grasses inrice	Calli Ghana Co. Ltd., Accra
22.	Ballistic 700SC	FRE/2108/1780G April 2021	Acetachlor (250g/l) + Atrazine (225g/l) + Terbutylaxine(225g/l)	IV	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Dizengoff Ghana Ltd., Accra
23.	Barizaa 360 SL	FRE/20184/1688G December 2020	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals and vegetables	Ganorma Agrochemicals, Tamale
24.	Basagran 480 SL	FRE/21206/1824G June 2021	Bentazon(480g/l)	II	Herbicide for the control of broadleaf weeds in beans, groundnut and maize	Josann Agro Consult (J.A.C) Ltd., Accra
25.	Bastnate 200 SL	FRE/1999/1500G June 2019	Glufosinate-ammonium (200g/l)	II	Herbicide for the control of annual andperennial broadleaf weeds in banana, plantain, mango andpineapple	Rainbow AgroSciences Co. Ltd, Tema
26.	Benapa 460 SL	FRE/2199/1848G August 2021	Bentazone (400g/l) + MCPA (60g/l)	II	Contact and selectivepost-emergence herbicide for the control of grasses in rice, maize, sorghum and sugarcane	Rainbow Agrosciences Co. Ltd., Tema
27.	Benaxone	FRE/2125/1860R September 2021	Paraquat(276g/l)	II	Herbicide for the control of annual, perennial grasses andbroadleaf weeds	Bentronic Productions, Kumasi
28.	Bencinate 53 WP	FRE/2010/1662G September 2020	Mefenacet (500g/kg) + Bensulfuron-methyl (30g/kg)	U	Herbicide for the control of grasses, sedges and broadleafweeds in paddy rice	Reiss & Co. (Ghana) Ltd,Accra
29.	Best Up 480 SL	FRE/19250/1511G August 2019	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inmaize, rubber,	PT. Dalzon Chemicals Indonesia Ghana External Office,

					oil palm, coffee and rice	Accra
30.	Bextra 72SL	FRE/2125/1792G April 2021	2,4-D Amine(720g/l)	II	Selective herbicidefor the control of broadleaf weeds inmaize, rice and sorghum	Bentronic Productions, Kumasi
31.	Bisonrice 400SC	FRE/2199/1882G October 2021	Bispyribac sodium (400g/l)	III	Selective herbicide for the control of grasses and broadleafweeds in rice	Rainbow AgroSciencesCo. Ltd., Tema
32.	Bonamine 720 SL	FRE/19149/1460G February 2019	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleaf weeds and grasses inrice and maize	Bon AgroCo. Ltd., Kumasi
33.	Bonsate 480 SL	FRE/19149/1459G February 2019	Glyphosate(480g/l)	III	Herbicide for the control of annual andperennial weeds on non-crop lands	Bon AgroCo. Ltd., Kumasi
34.	ButaClear 50 EC	FRE/20184/1689G December 2020	Butachlor(50%)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in paddy rice, soybean, cotton, groundnut andvegetables	Ganorma Agrochemicals, Tamale
35.	Butaforce EC	FRE/21145/1763G March 2021	Butachlor(500g/l)	III	Pre-emergent herbicide for the control of grasses and broadleaf weeds in rice, soybean, cotton and vegetables	Jubaili Agrotec Ltd., Kumasi
36.	Butaplus EC	FRE/2143/1878G September 2021	Butachlor(50%)	III	Pre-emergence herbicide for soyabean, cotton, rice, groundnuts andVegetables	Kumark Co. Ltd., Kumasi
37.	Bylor 500 EC	FRE/2099/1647G August 2020	Butachlor(500g/l)	III	Herbicide for the control of annual grasses and broadleaf weeds in groundnutand rice	Rainbow AgroSciencesCo. Ltd., Tema
38.	Calliherbe 720 SL	FRE/1906/1443G February 2019	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleaf weeds in cereals andtree crops	Calli GhanaCo. Ltd, Accra
39.	Capizad EC	FRE/21202/1722G February 2021	Haloxyfop-R- methyl (104g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Louis DreyfusCo. Gh. Ltd., Tema
40.	Caritek 80 WP	FRE/1999/1536G October 2019	Diuron (800g/kg)	II	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in pineapple	Rainbow AgroSciencesCo. Ltd., Tema
41.	Chemopax500 SC	FRE/2005/1605GMay 2020	Ametryn(500g/l)	II	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in pineapple, sugarcane, banana and cassava	ChemicoLimited, Tema
42.	Chemosate 480SL	FRE/2005/1626GMay 2020	Glyphosate(360g/l)	III	Herbicide for the control of annual andperennial weeds in various crops	Chemico Ltd., Tema
43.	Chemostom 550EC	FRE/2005/1604GMay 2020	Pendimethalin (500g/l)	III	Pre-emergent herbicide for the control of annual grasses and broadleaf weeds in cereals, cotton and soybean	ChemicoLimited, Tema
44.	Chemovar 80 WP	FRE/2105/1817GMay 2021	Bromacil(800g/kg)	III	Herbicide for the control of grasses andbroadleaf weeds in pineapple	ChemicoLimited, Tema

45.	Chemoxone SL	FRE/2105/1814RMay 2021	Paraquat dichloride (200g/l)	II	Herbicide for the control of broadleafweeds and grasses	ChemicoLimited, Tema
46.	Chemuron 80 WP	FRE/2105/1811GMay 2021	Diuron (800g/kg)	III	Herbicide for the control of grasses inpineapple, citrus andmango	ChemicoLimited, Tema
47.	Cleanspray 80 SG	FRE/1999/1499G June 2019	2,4-D Amine (800g/kg)	II	Herbicide for the control of annual broadleaf weeds andgrasses in millet	Rainbow AgroSciences Co. Ltd., Tema
48.	Condax WP	FRE/1978/1570G October 2019	Bensulfuron- methyl (30%)	III	Systemic herbicide for the control of annual and perennialbroadleaf weeds in rice	Five Continents Imp. & Exp.Ltd., Accra
49.	Conti-quat	FRE/1978/1574R October 2019	Paraquat dichloride (276g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses infield crops	Five Continents Imp. & Exp.Ltd., Accra
50.	Corta 480 EC	FRE/19202/1468G March 2019	Triclopyr(480g/l)	III	Herbicide for the control of broadleaf weeds in oil palm,rice and sugarcane	Louis Dreyfus Co. Ltd., Tema
51.	Cut Out 100 SC	FRE/19100/1545G October 2019	Bispyribac- sodium (100g/l)	II	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in upland and lowlandrice	Adama WestAfrica Ltd., Accra
52.	Degan SC	FRE/20184/1690G December 2020	Bispyribac- sodium (455g/l)	III	Herbicide for the control of annual, perennial broadleafweeds in paddy rice	Ganorma Agrochemicals, Tamale
53.	Dekel 170 EC	FRE/19100/1548G October 2019	Propaquizafop(50g/l) + Oxyfluorfen (120g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in onion, legume andcotton	Adama WestAfrica Ltd., Accra
54.	Dinamic Plus500EC	FRE/1906/1524G October 2019	Amicarbazone (100g/l) + Propisochlor(400g/l)	III	Herbicide for the control of grasses, broadleaf weeds and sedges in arable crops	Calli GhanaLtd., Accra
55.	Diurex 80 WDG	FRE/19100/1546G October 2019	Diuron (800g/kg)	II	Herbicide for the control of grasses and broadleaf weeds in sugarcane and cotton	Adama WestAfrica Ltd., Accra
56.	Diuron Plus	FRE/2143/1878G September 2021	Diuron(80%)	III	Herbicide for the control of annual andperennial grasses andbroadleaf weeds in pineapples, citrus andmangoes	Kumark Co. Ltd., Kumasi
57.	Diuron 80WP	FRE/1902/1516G October 2019	Diuron(80%)	III	Herbicide for the control of grasses in cotton and sugarcane	Agrimat Ltd., Madina
58.	Eduodzi 480 SL	FRE/1999/1505G June 2019	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in vegetables and cereals	Rainbow AgroSciencesCo. Ltd., Tema
59.	Eduodzi 757 SG	FRE/1999/1506G June 2019	Glyphosate(757g/kg)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds	Rainbow AgroSciencesCo. Ltd., Tema
60.	Eliminator Plus150SL	FRE/2199/1847R July 2021	Diquat dibromide (150g/l)	II	Herbicide for the control of broadleafweeds and grasses	Rainbow AgroSciences Co. Ltd., Tema
61.	Erase 480 SL	FRE/20213/1655G August 2020	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in	Crop Doctor, Kumasi

					arable crops	
62.	Ervextra 720 SL	FRE/19202//1469G March 2019	2,4-D Amine(720g/l)	II	Selective herbicide for the control of broadleaf weeds in rice, maize, oil palm, coconut, rubber and sugarcane	Louis Dreyfus Co. Ltd.,Tema
63.	Faaba Soja 10SL	FRE/2143/1767G March 2021	Imazethapyr(10g/l)	II	Herbicide for the control of annual, perennial and broadleaf weeds and grasses in maize	Kumark Co. Ltd., Kumasi
64.	Farmsate 360 SL	FRE/1957/1562G October 2019	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial grasses inonion, garlic, tulipsand cotton	Wynca Sunshine Agric Prdt & Trad. Co. Ltd,Accra
65.	Fenfen 240 EC	FRE/1999/1498G June 2019	Oxyfluorfen(240g/l)	IV	Herbicide for the control of annual, perennial broadleaf weeds and grasses in groundnut, fruit trees,onion and cotton	Rainbow AgroSciences Co. Ltd, Tema
66.	ForceUp SL	FRE/21145/1762G March 2021	Glyphosate(41%)	III	Herbicide for thecontrol of weeds	Jubaili AgrotecLtd., Kumasi
67.	Forpine 80 WP	FRE/2199/1884G October 2021	Bromacil(80%)	III	Herbicide for the control of weeds in pineapples and citrus	Rainbow Agro Sciences Co. Ltd., Tema
68.	Frankosate 41 SL	FRE/2139/1786G April 2021	Glyphosate(410g/l)	III	Herbicide for the control of broadleafweeds, sedges and grasses in orchards	Frankatson Limited, Accra
69.	Frankosulfuron	FRE/1939/1489G June 2019	Nicosulfuron(40g/l)	III	Herbicide for the control of grasses inmaize	FrankatsonLimited, Accra
70.	Gallant Super	FRE/2105/1813GMay 2021	Haloxyfop(108g/l)	III	Post emergence herbicide for the control of broadleaf weeds in vegetables	ChemicoLimited, Tema
71.	Ganico 40 SC	FRE/20184/1693G December 2020	Nicosulfuron(40g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds in maize, sorghum and millet	Ganorma Agrochemicals, Tamale
72.	Ganico Plus	FRE/21184/2115R June 2021	Atrazine (200g/l) + Nicosulfuron(40g/l)	II	Herbicide for the control of annual, perennial broadleafweeds in maize	Ganorma Agrochemicals, Tamale
73.	Ganorsate 360 SL	FRE/20184/1692G December 2020	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inarable crops	Ganorma Agrochemicals, Tamale
74.	Garlon 4E	FRE/2105/1812GMay 2021	Triclopyr(480g/l)	III	Herbicide for use astree killer and the control of broadleafweeds	ChemicoLimited, Tema
75.	Glycel 41SL	FRE/1910/1515G July 2019	Glyphosate(410g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals and vegetables	Reiss & Co. (Ghana) Ltd., Accra
76.	Glycot 41 SL	FRE/2158/1775G April 2021	Glyphosate(410g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in cereals	Afcott GhanaLtd, Accra
77.	Glygold 41 SL	FRE/1953/1475G March 2019	Glyphosate(410g/l)	III	Herbicide for the control of perennialgrasses, broadleaf weeds, sedges and aquatic weeds in arable crops	L'espoirCo. Ltd., Accra
78.	Glyking 480 SL	FRE/1999/1502G	Glyphosate(480g/l)	III	Herbicide for the control	Rainbow

		June 2019			annual, perennial grasses andbroadleaf weeds on non-crop and farmlands	AgroSciencesCo. Ltd., Tema
79.	Glyphader 75 SG	FRE/21202/1726G February 2021	Glyphosate(757g/kg)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals and vegetables	Louis DreyfusCo. Gh. Ltd., Tema
80.	Glyphader480 SC	FRE/21202/1720G February 2021	Glyphosate(480g/l)	III	Herbicide for the control of broadleaf weeds and grasses in cereals and vegetables	Louis DreyfusCo. Gh. Ltd., Tema
81.	Glyphogan 480SL	FRE/20100/1617GMay 2020	Glyphosate IPA (480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals andvegetables	Adama West AfricaLtd., Accra
82.	Glyphonet SL	FRE/2096/1697G December 2020	Glyphosate(410g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals and vegetables	Enepa Ventures Limited,Kumasi
83.	Glyphosate 95% Technical	FRE/2157/1856G August 2021	Glyphosate Ammonium Salt(95 % Min)	III	Technical active ingredient for theformulation of glyphosate	Wynca Sunshine Agric Products& Trading, Accra
84.	Glyphosate 88% Technical	FRE/2157/1855G August 2021	Glyphosate Ammonium Salt(88 % Min)	III	Technical active ingredient for theformulation of glyphosate	Wynca Sunshine Agric Products & Trading, Accra
85.	GrammosharpSuper 20SL	FRE/2182/1870R September 2021	Paraquat dichloride (20%)	II	Non-selective broad-spectrum herbicide for the control of broadleafweeds and grasses in beans, groundnuts and maize	Cropstar Enterprise,Kumasi
86.	Gramokal SL	FRE/2081/1653R August 2020	Paraquat dichloride (200g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses inarable crops	B. Kaakyire AgrochemicalCo. Ltd., Kumasi
87.	Gramoquat Super	FRE/2043/1601RMay 2020	Paraquat(200g/l)	II	Herbicide for the control of grasses andbroadleaf weeds in cereals and vegetables	Kumark Co. Ltd., Kumasi
88.	Halaxy 108 EC	FRE/2199/1785G April 2021	Haloxyfop-P- Methyl (108g/l)	IV	Herbicide for the control of annual andperennial weeds in cereals, leafy vegetables, pineapple, soybean and cowpea	Rainbow AgroSciences Co. Ltd., Tema
89.	Herbacut 72 SL	FRE/2082/1699G December 2020	2,4-D Aminesalt (720g/l)	II	Herbicide for the control of broadleaf weeds and sedges in sugarcane and tree crops	Cropstar Enterprise,Kumasi
90.	Herbafor SL	FRE/2096/1696G December 2020	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleafweeds and grasses in cereals and sugarcane	Enepa Ventures Limited,Kumasi
91.	Herbaking 720 SL	FRE/1999/1497G June 2019	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleaf weeds and grasses insorghum, maize, coffee and citrus	Rainbow AgroSciencesCo. Ltd., Tema
92.	Herbapat Super	FRE/21166/1730G February 2021	2, 4-D Amine(720g/)	II	Herbicide for the control of annual, perennial broad-leaf weeds in cereals and	Dasimah Enterprise, Adum-Kumasi

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93.	Herbazol	FRE/1945/1507G June 2019	2,4-D Amine(760g/l)	II	Herbicide for the control of broadleaf weeds and sedges in cereals and tree crops	J.K. Duku Enterprise,Kumasi
94.	Herbextra 72 SL	FRE/2143/1832G June 2021	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleaf weeds in rice, maize,sorghum, millet and sugarcane	Kumark Co. Ltd., Kumasi
95.	Herbimais WG	FRE/21202/1724G February 2021	Atrazine (750g/kg) + Nicosulfuron(40g/kg)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in maize	Louis DreyfusCo. Gh. Ltd., Tema
96.	Herbtryn SC	FRE/2199/1747G February 2021	Ametryn(500g/l)	II	Herbicide for the control of grasses and broadleaf weeds in banana, pineapple, plantain and sugarcane	Rainbow AgroSciences Co. Ltd., Tema
97.	Herb Fly	FRE/20145/1685G November 2020	2,4-D AmineSalt (720g/l)	III	Herbicide for the control of broadleafweeds in maize	Jubaili Agrotec Ltd., Kumasi
98.	Hero Super 108EC	FRE/2143/1831G June 2021	Haloxyfop methyl (108g/l)	III	Herbicide for thecontrol of annualgrasses in vegetables and pulses	Kumark Co. Ltd., Kumasi
99.	Jubaili Legumeforce	FRE/20145/1682G November 2020	Imazethapyr(70%)	II	Herbicide for the control of broadleaf weeds and grasses in mungbeans, peanutand soybean	Jubaili Agrotec Co. Ltd., Kumasi
100.	Kabaherb SL	FRE/2181/1887G October 2021	2,4-D AmineSalt (720g/l)	II	Herbicide for the control of annual, perennial grasses and broadleaf weeds inrice	B. Kaakyire AgrochemicalCo. Ltd., Kumasi
101.	Kabasate 41SL	FRE/2181/1888G October 2021	Glyphosate(410g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	B. Kaakyire AgrochemicalCo. Ltd., Kumasi
102.	Kalach 360 SL	FRE/2106/1756G March 2021	Glyphosate(360g/l)	III	Herbicide for the control of broadleaf weeds and grasses in cereals and vegetables	Calli Ghana Co. Ltd., Accra
103.	Kalach Extra70SG	FRE/2106/1757G March 2021	Glyphosate(700g/kg)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals and vegetables	Calli Ghana Co. Ltd., Accra
104.	Kamazone	FRE/2135/1873R October 2021	Paraquat dichloride (200g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds	K. Badu Agrochemicals, Kumasi
105.	Komanda	FRE/1927/1480G March 2019	Glyphosate(410g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in maize, sugarcane andfruit trees	Multivet (Gh) Ltd., Accra
106.	Kondem 41SL	FRE/2135/1871G September 2021	Glyphosate(410g/l)	III	Herbicide for the control of broadleaf weeds and grasses inarable crops	K. Badu Agro Chemicals Kumasi
107.	Kumnwura SL	FRE/2125/1793G April 2021	Glyphosate(410g/l)	III	Herbicide for the control of annual andperennial broadleaf weeds and grasses	Bentronic Productions, Kumasi
108.	Kurasate 360 SL	FRE/2116/1803GMay 2021	Glyphosate(360g/l)	III	Herbicide for the control of grasses andbroadleaf weeds	Kurama Co.Ltd, Accra

109.	Kurazone Super	FRE/2116/1869R September 2021	Paraquat dichloride (200g/l)	II	Herbicide for the control of broadleafweeds nd grasses inarable crops	Kurama Co.Ltd, Accra
110.	Lagon 575SC	FRE/19185/1474G March 2019	Aclonifen (500g/l) + Isoxaflutole(75g/l)	III	Pre-emergent herbicide for the control of grasses and broadleaf weeds in maize	RMG Ghana Limited, Accra
111.	Landlord 360 SL	FRE/21185/1800GMay 2021	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in crops	RMG GhanaLtd., Accra
112.	Laudis 630 SC	FRE/20183/1634G June 2020	Tembotrione (420g/l) + Isoxadifen-ethyl (210g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in maize	Bayer West-Central AfricaS.A, Accra/ Omnifert Ltd., Labone
113.	Maestro 960 EC	FRE/1999/1496G June 2019	Metolachlor(960g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inmaize	Rainbow Agro Sciences Co. Ltd., Tema
114.	Maxitol 865 SL	FRE/19250/1514G August 2019	2,4-D AmineSalt (865g/l)	II	Herbicide for the control of broadleafweeds and sedges incereals, sugarcane and tree crops	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
115.	Mega Super	FRE/2143/1833G June 2021	Bispyribac- sodium (400g/l)	III	Herbicide for the control of annualgrasses in rice	Kumark Co.Ltd., Kumasi
116.	Multi 2, 4-D SL	FRE/1927/1479G March 2019	2,4-D AmineSalt (720g/l)	II	Herbicide for the control of annual broadleaf weeds in maize and rice	Multivet (Gh.) Ltd., Accra
117.	Nicobak	FRE/2181/1808G June 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in maize	B. Kaakyire AgrochemicalsLtd., Kumasi
118.	Nico 40OD	FRE/21139/1893G November 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals	Jingbo Agrochemicals Tech. Gh. Co. Ltd., Accra
119.	Nico Plus OD	FRE/2143/1876G September 2021	Nicosulfuron(4%)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals and vegetables	Kumark Co.Ltd, Kumasi
120.	Nicocal 40 OD	FRE/2125/1867G September 2021	Nicosulfuron(400g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in cereals andvegetables	Bentronic Productions, Kumasi
121.	Nicogan 40 OD	FRE/20100/1624GMay 2020	Nicosulfuron(40g/l)	III	Herbicide for the control of annual andperennial broadleaf weeds and grasses inmaize	Adama WestAfrica Ltd., Accra
122.	Nicoherb 40 OD	FRE/1945/1461G February 2019	Nicosulfuron(40g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in cereals andvegetables	J.K Duku Enterprise,Kumasi
123.	Nicoking 40 OD	FRE/1999/1537G October 2019	Nicosulfuron(400g/l)	II	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in maize, rice andsoybean	Rainbow AgroSciencesCo. Ltd., Tema
124.	Nicoking 75WG	FRE/2199/1885G October 2021	Nicosulfuron (750g/kg)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in maize	Rainbow AgroSciences Co. Ltd., Tema

125.	Nicoking Super230 OD	FRE/2099/1644R August 2020	Atrazine (200g/l) + Nicosulfuron(30g/l)	III	Herbicide for the control of broadleaf weeds and grasses inmaize	Rainbow Agrosciences Co. Ltd.,Tema
126.	Nicotop 4% OD	FRE/20213/1656G August 2020	Nicosulfuron(40g/l)	II	Herbicide for the control of annual grasses and broadleafweeds in maize	Crop Doctor, Kumasi
127.	Nnoboa 41 SL	FRE/1945/1457G February 2019	Glyphosate(41%)	III	Herbicide for the control of annual, perennial grasses and broadleaf in cereals and vegetables	J. K Duku Enterprise,Kumasi
128.	Nominee 400 SC	FRE/2005/1629GMay 2020	Bispyribac- sodium (400g/l)	III	Herbicide for the control of annual grasses, broadleaf weeds and sedges inrice	Chemico Ltd., Tema
129.	Nwura Wura360SL	FRE//2057/1670G September 2020	Glyphosate(360g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in fruits and vegetables	Wynca Sunshine Agric Prod & Trading Co.Ltd., Accra
130.	Oboafo 480 SL	FRE/21202/1719G February 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Louis DreyfusCo. Gh. Ltd., Tema
131.	Orizo Plus SL	FRE/2026/1705G February 2021	Propanil (360g/l) + 2,4-D Aminesalts (200g/l)	II	Herbicide for the control of annual, perennial weeds in rice	The CandelCo. Ltd, Achimota
132.	Oyeadieyie 41 SL	FRE/2139/1787G April 2021	Glyphosate(410g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals and vegetables	Frankatson Limited, Accra
133.	Paracot SL	FRE/2158/1776R April 2021	Paraquat dichloride (200g/l)	II	Non-selective herbicidefor the control of grasses and broadleaf weeds in maize, sorghum, yam, cassava and sugarcane	Afcott GhanaLtd., Accra
134.	Pencal 500 EC	FRE/1906/1449G February 2019	Pendimethalin (500g/l)	II	Herbicide for the control of grasses andbroadleaf weeds in rice and maize	Calli GhanaCo. Ltd., Accra
135.	Pendico 50 EC	FRE/1910/1486G June 2019	Pendimethalin (500g/l)	III	Herbicide for the control of broadleafweeds in cereals, cotton and soybean	Reiss &Co (Gh) Ltd., Accra
136.	Pendipax	FRE/2099/1588G January 2020	Pendimethalin (500g/l)	II	Herbicide for the control of annual grasses and broadleafweeds in maize and sugarcane plantation	Rainbow AgroSciencesCo. Ltd., Tema
137.	Pendi Plus 400EC	FRE/2043/1590G January 2020	Pendimethalin(40%)	III	Herbicide for the control of annual grasses and broadleafweeds in maize, onion, cotton and rice	Kumark Co. Ltd., Kumasi
138.	Pointer 276 SL	FRE/19250/1513R August 2019	Paraquat dichloride (276g/l)	II	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in soybean, corn, oil palm, rubber and rice	PT. Dalzon Chemicals Indonesia Ghana External Office, Accra
139.	Power 41 SL	FRE/1945/1456G February 2019	Glyphosate(41%)	III	Herbicide for the control of annual, perennial grasses andbroadleaf in cereals and vegetables	J.K Duku Enterprise,Kumasi
140.	Pronil Plus SL	FRE/2125/1868G September 2021	Propanil (360g/l) + 2, 4- D Amine Salt(200g/l)	III	Selective herbicide for the control of annual and perennial grasses and broadleafweeds in rice	Bentronic Productions, Kumasi

141.	Propacal- Plus480EC	FRE/2143/1877G September 2021	Propanil (240g/l) + 2, 4- D isobutylate(240g/l)	II	Selective herbicide for the control of annual and perennial grasses and broadleafweeds in rice	Kumark Co. Ltd., Kumasi
142.	Propaforce PlusEC	FRE/21145/1761G March 2021	Propanil (36%) + 2, 4-D Isobutyl Ester(20%)	III	Herbicide for the control of weeds inrice	Jubaili Agrotec Ltd., Kumasi
143.	Raptor	FRE/21206/1844G July 2021	Imazamox(40g/l)	U	Herbicide for the control of annual broadleaf weeds andgrasses in groundnut and soybean	Josann Agro Consult Ltd.,Accra
144.	Ricecare 240 SC	FRE/2199/1851G August 2021	Penoxsulam(240g/l)	IV	Herbicide for the control of broadleafweeds and sedges infield crops	Rainbow AgrosciencesCo. Ltd., Tema
145.	Ricenice 360 EC	FRE/1999/1495G June 2019	Propanil(360g/l)	III	Herbicide for the control of *Amaranthus retroflexus, Digitaria spp.,* and *Echinochloa spp*.inrice	Rainbow AgroSciencesCo. Ltd., Tema
146.	Ricestar 300 WP	FRE/2005/1628GMay 2020	Bispyribac- sodium (180g/kg) + Bensulfuron-methyl (120g/kg)	III	Herbicide for the control of annual grasses, broadleaf weeds and sedges inrice	ChemicoLimited, Tema
147.	Ricestar 320 EC	FRE/2099/1649G August 2020	Pretilachlor (300g/l) + Pyribenzoxim (20g/l)	II	Herbicide for the control of annual weeds in paddy rice and transplanting rice fields	Rainbow AgroSciencesCo. Ltd., Tema
148.	Ridmax 75SG	FRE/2099/1648G August 2020	Glyphosate(750g/kg)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses innon-crop lands	Rainbow AgroSciencesCo. Ltd., Tema
149.	Ridmax 510 SL	FRE/2199/1852G August 2021	Glyphosate IPA (300g/l) + 2,4-D (210g/l)	III	Herbicide for thecontrol of annual, perennial weeds in field crops	Rainbow AgrosciencesCo. Ltd., Tema
150.	Rid Out480 SL	FRE/1999/1503G June 2019	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds on non-crop and farmlands	Rainbow AgroSciencesCo. Ltd., Tema
151.	Rid Over757 SG	FRE/1999/1504G June 2019	Glyphosate ammonium(75.7%)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in arable and plantationcrops	Rainbow AgroSciencesCo. Ltd., Tema
152.	Rigold 432 EC	FRE/21202/1725G February 2021	Propanil (360g/l) + Triclopyr(72g/l)	III	Herbicide for the control of grasses and broadleaf weeds in rice	Louis DreyfusCo. Gh. Ltd., Tema
153.	Rondo 48SL	FRE/2010/1706G February 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Reiss & Co.Ghana Ltd.,Accra
154.	Rondo 75 SG	FRE/2010/1707G February 2021	Glyphosate(757g/kg)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in vegetables and cereals	Reiss & Co.Ghana Ltd.,Accra
155.	Roundup Biosec72SG	FRE/21183/1788G April 2021	Glyphosate(720g/kg)	III	Herbicide for the control of annual, perennial, grasses, sedges and broadleaf weeds in tree plantations and arable crops	Bayer West-Central AfricaS.A, Accra

156.	Roundup 360 SL	FRE/21183/1790G April 2021	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cocoa, rice, maize, pineapple, soybean and sorghum	Bayer West-Central AfricaS.A, Accra
157.	Sasa 48% SL	FRE/2143/1768G March 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in cereals and vegetables	Kumark Co. Ltd., Kumasi
158.	Sharp 480 SL	FRE/2143/1828G June 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual andperennial grasses andbroadleaf weeds in cereals	Kumark Co. Ltd., Kumasi
159.	Shye Nwura SL	FRE/2125/1797G April 2021	Glyphosate(41%)	III	Herbicide for the control of annual andperennial broadleaf weeds and grasses	Bentronic Productions, Kumasi
160.	Sikosto 480 SL	FRE/2116/1801GMay 2021	Glyphosate(360g/l)	III	Non-selective herbicide for the control of annual, perennial grasses and broadleaf weeds	Kurama Co.Ltd, Accra
161.	Squad	FRE/1906/1450G February 2019	Pendimethalin (300g/l) + Clomazone (150g/l)	II	Herbicide for the control of grasses andbroadleaf weeds in rice	Calli GhanaCo. Ltd., Accra
162.	Starm Plus 36EC	FRE/1902/1520G October 2019	Propanil(36%)	III	Herbicide for the control of grasses incotton and rice	Agrimat Ltd., Madina
163.	Stellar Star	FRE/19206/1522G October 2019	Topramezone(50g/l) + Dicamba (160g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inmaize	Josann Agro Consult (J.A.C) Ltd.,Accra
164.	Stomp 455 CS	FRE/21206/1823G June 2021	Pendimethalin (455g/l)	II	Herbicide for the control of broadleaf weeds and grasses in maize, cotton andtomatoes	Josann Agro Consult (J.A.C) Ltd., Accra
165.	Sun Agogo33EC	FRE/1957/1561G October 2019	Pendimethalin(33%)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals and vegetables	Wynca Sunshine Agric Prdt & Trad. Co. Ltd,Accra.
166.	Sun-Anico OF	FRE/1957/1551R October 2019	Atrazine (20%) + Nicosulfuron(3%)	III	Herbicide for the control of broadleaf weeds and grasses inmaize	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
167.	Sun 2,4-D Amine72SL	FRE/2057/1578G January 2020	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleaf weeds, grasses and sedges in cereals and sugarcane	Wynca Sunshine Agric Products & Trading Co.Ltd., Accra
168.	Sun 2,4-D PRO560 EC	FRE/2057/1669G September 2020	2,4-D Amine(360g/l) + Propanil (200g/l)	II	Herbicide for the control of broadleaf weeds and grasses inmaize, rubber and other tree crops	Wynca Sunshine Agric Products & Trading Co., Ltd., Accra
169.	Sun-Bromacil80WP	FRE/2157/1857G August 2021	Bromacil(800g/kg)	III	Herbicide for the control of broadleaf weeds and grasses inpineapples	Wynca Sunshine Agric Products & Trading Co., Limited, Accra
170.	Sunbuzin 70WP	FRE/1957/1566G October 2019	Metribuzin(700g/kg)	III	Herbicide for the control of broadleafweeds in soybean	Wynca Sunshine Agric Prdt & Trad. Co. Ltd, Accra

171.	Sun-Diuron80WP	FRE/2157/1858G August 2021	Diuron (800g/kg)	III	Herbicide for the control of weeds in pineapples, mangoesand cashew	Wynca Sunshine Agric Products & Trading Co., Limited, Accra
172.	Sunfuron 40OD	FRE/1957/1565G October 2019	Nicosulfuron(40g/l)	III	Herbicide for the control of broadleafweeds in maize	Wynca Sunshine Agric Prdts & Trading Co.Ltd, Accra
173.	Sunfuron 75WDG	FRE/2057/1672G September 2020	Nicosulfuron (750g/kg)	III	Herbicide for the control of broadleaf weeds in cereals andvegetables	Wynca Sunshine Agric Products & Trading Co. (Ghana), Ltd., Accra
174.	Sunfuron 80WP	FRE/2057/1667G September 2020	Nicosulfuron (800g/kg)	III	Herbicide for the control of broadleaf weeds in cereals andvegetables	Wynca Sunshine Agric Products & TradingCo., Ltd., Accra
175.	Sun-Paraquat 200SL	FRE/2157/1859R August 2021	Paraquat dichloride (200g/l)	II	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in beans, groundnuts and maize	Wynca Sunshine Agric Products & Trading Co.,Ltd., Accra
176.	Sun-Gallop	FRE/1957/1564G October 2019	Haloxyfop-P- methyl (108g/l)	III	Pre-emergence herbicide for the control of annual broadleaf weeds incereals and beans	Wynca Sunshine Agric Prdts & Trading Co. Ltd, Accra
177.	Sunphosate 360SL	FRE/2057/1673G September 2020	Glyphosate(360g/l)	III	Herbicide for the control of broadleaf weeds and grasses incereals and vegetables	Wynca Sunshine Agric Products & Trading Co.(Ghana),Ltd., Accra
178.	Sunphosate 757G	FRE/2057/1668G September 2020	Glyphosate(757g/kg)	III	Herbicide for the control of broadleaf weeds and grasses incereals and vegetables	Wynca Sunshine Agric Products & Trading Co. (Ghana), Ltd., Accra
179.	Sunphosate Plus430 SL	FRE/1957/1560G October 2019	Glyphosate (30%) + MCPA (6%)	III	Herbicide for the control of broadleaf weeds and grasses inrubber and citrus plantations	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
180.	Sunphosate UltraSL	FRE/1957/1563G October 2019	Glufosinate Ammonium(200g/l)	III	Non-selective systemic herbicide for the control of weeds in rubber andcitrus plantations	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra.
181.	Supraxone SC	FRE/21202/1727G February 2021	Paraquat dichloride (200g/l)	II	Non-selective herbicide for the control of broadleaf weeds and grasses	Louis Deyfus Co. Ltd., Tema
182.	Tackle 360 SL	FRE/2026/1695G December 2020	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial broadleafweeds, sedges and grasses in arable crops	The CandelCo. Ltd, Achimota
183.	Target 240 SL	FRE/2199/1783G April 2021	Imazethapyr(240g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in soybean and cowpea	Rainbow AgrosciencesCo. Ltd., Tema
184.	Thomabest Super 200SL	FRE/2123/1717R March 2021	Paraquat dichloride (200g/l)	II	Herbicide for the control of broadleaf weeds and grasses incereals	Thomhcof Enterprise,Kumasi

185.	Topstar 400SC	FRE/19183/1567G October 2019	Oxadiargyl(400g/l)	III	Pre-emergent herbicide for the control of annual, perennial grasses and broadleaf weeds in rice	Bayer West-Central Africa S.A, Accra
186.	Traceforce	FRE/20145/1681G November 2020	Acetochlor(250g/l) + Prometryn (150g/l)	III	Herbicide for the control of annual weeds in groundnuts,maize and soyabean	Jubaili Agrotec Ltd.Kumasi
187.	Tropica EC	FRE/2199/1746G February 2021	Acetochlor(900g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in maize, cotton, groundnut and sugarcane	Rainbow AgroSciences Co. Ltd., Tema
188.	Vezir 240 SL	FRE/20100/1618GMay 2020	Imazethapyr(240g/l)	III	Herbicide for the control of annual andperennial broadleaf weeds in cereals and vegetables	Adama WestAfrica Ltd., Accra
189.	Weedcot SL	FRE/2158/1777G April 2021	2, 4-D Amine(720g/l)	II	Selective herbicide for the control of broadleafweeds in cereals	Afcott GhanaLtd., Accra
190.	Weed Magic 41SL	FRE/2125/1295G April 2021	Glyphosate(41%)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in cereals and vegetables	Bentronic Productions, Kumasi
191.	Weed Out SL	FRE/2125/1794G April 2021	Glyphosate(410g/l)	III	Herbicide for the control of annual andperennial broadleaf weeds and grasses	Bentronic Productions, Kumasi
192.	Weedwell SL	FRE/2143/1827G June 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in cereals and vegetables	Kumark Co.Ltd, Kumasi
193.	Winner 41SL	FRE/2123/1754G March 2021	Glyphosate(410g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses incereals	Thomhcof Enterprise,Kumasi
194.	Wiper 720 SL	FRE/20100/1625GMay 2020	2, 4-D AmineSalt (720g/l)	II	Herbicide for the control of broadleafweeds in maize, riceand sugarcane	Adama WestAfrica Ltd., Accra
195.	Wynna 360 SL	FRE/2157/1809G October 2021	Glyphosate(360g/l)	III	Herbicide for the control of grasses andbroadleaf weeds and grasses	Wynca Sunshine Agric Products & Trading, Accra
196.	Wynsate 360 SL	FRE/2057/1671G September 2020	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds in cereals andvegetables	Wynca Sunshine Agric Products & Trading Co. (Ghana) Ltd.,Accra
197.	Xtrariz 100 SC	FRE/2010/1660G September 2020	Bispyribac- sodium (100g/l)	III	Herbicide for the control of post- emergent weeds in rice	Reiss & Co. (Ghana) Limited, Accra
198.	XTRA-D	FRE/19108/1533G October 2019	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleaf weeds in cereals andtree crops	WAAF AgroLtd., Techiman

(A) Fully Registered Pesticides (FRE)
(A4) Plant Growth Regulators

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Callel 480 SL	FRE/2106/1755G March 2021	Ethephon(280g/l)	III	Plant GrowthRegulator for degreening ofpineapple	Calli GhanaCo. Ltd., Accra

2.	Callel 5% PA	FRE/1906/1442G February 2019	Ethephon(5%)	III	Plant GrowthRegulator for degreening of pineapple	Calli GhanaCo. Ltd., Accra
3.	Chemophon 480 SL	FRE/2105/1818G May 2021	Ethephon(480g/l)	III	Plant growthregulator for degreening of pineapples	Chemico Ltd,Tema
4.	Ethemax 480SL	FRE/2199/1781G April 2021	Ethephon(480g/l)	III	Plant GrowthRegulator for degreening ofvegetables	Rainbow AgroSciences Co. Ltd., Tema
5.	Flower Up 40SL	FRE/2157/1854G August 2021	Ethephon(40%)	III	For the acceleration of maturation in tomatoes and banana	Wynca Sunshine AgricProducts & Trading Co. Ltd., Accra
6.	Hevetex	FRE/19202/1466G March 2019	Ethephon(5%)	III	Ethylene generatorfor stimulation of latex production	Louis Dreyfus Co. Ltd., Tema
7.	Mat 480 SL	FRE/21202/1729G February 2021	Ethephon(480g/l)	III	Plant growth regulatorfor de-greening of pineapples	Louis DreyfusCo. Gh. Ltd., Tema

(A) Fully Registered Pesticides (FRE)
(A5) Molluscicide

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Carakol	FRE/21100/1750G February 2021	Acetic metaldehyde (50g/kg) + Denatonium benzoate (0.3g/kg)	III	Molluscicide for the control of snails, slugs and other gastropods	Adama WestAfrica Ltd., Accra

(A) Fully Registered Pesticides (FRE)
(A6) Rodenticides

No.	Trade Name	Registration No. /Date of Issue	Concentration ofActive Ingredient	Hazard Class	Uses	Local Distributor
1	Brody Fresh Bait	FRE/21100/1751R February 2021	Brodifacoum (0.005g/kg) + Denatonium Benzoate (0.001g/kg)	II	Rodenticide for the control of rodents and mites	Adama West Africa Ltd., Accra

(A) Fully Registered Pesticides (FRE)
(A7) Nematicides

No.	Trade Name	Registration No. /Date of Issue	Concentration ofActive Ingredient	Hazard Class	Uses	Local Distributor
1.	AgrocelhoneNE	FRE/20136/1679R September 2020	1, 3-Dichloropropene (60.8%) + Chloropicrin (33.3%)	II	Nematicide forthe control of nematodes in vegetables andfruit crops	SPICA Ghana Limited, Accra
2.	Carbodan3G	FRE/2143/1842R June 2021	Carbofuran(3%)	II	Nematicide/ Insecticide for the control of nematodes in vegetables	Kumark Co. Ltd, Kumasi
3.	Velum Prime400 SC	FRE/19185/1470G March 2019	Fluopyram(400g/l)	III	Nematicide for the control of nematodes in pepper, tomatoes and okro	Bayer West-Central AfricaS.A, Accra/ Miqdadi Co. Ltd., Accra

(A) Fully Registered Pesticides (FRE)
(A8) Adjuvants

No.	Trade Name	Registration No. / Date of Issue	Concentration ofActive Ingredient	Hazard Class	Uses	Local Distributor
1.	Break-thru S240	FRE/21157/1752G March 2021	Polyether-polymethylsiloxane-copolymer (1000g/l)	U	Surfactant to improve the spreading, wetting and penetration of water based pesticide formulations on leaves of vegetables, fruits and arable crops	Evonik Africa (PTY) Limited, Accra
2.	EOS	FRE/20100/1621GMay 2020	White summer sprayOil (800g/l)	U	Adjuvant for the control of purple scale, wax scale, soft scale, powdery mildew and sooty mould in citrus and public health purposes	Adama WestAfrica Ltd., Accra
3.	Stockosorb 660G	FRE/21157/1752G March 2021	Micro/Menum/ XL(Potassium Polyacrylate)	U	To improve water retention in soil	Evonik Africa (PTY) Limited, Accra

(A) Fully Registered Pesticides (FRE)

(A9) Biocides

No.	Trade Name	Registration No. /Date of Issue	Concentration ofActive Ingredient	Hazard Class	Uses	Local Distributor
1.	Nalco 303MC	FRE/20200/1591G January 2020	1-(2-hydroxyethyl)-2-alkyl (C-18)-2- imidazoline	U	Diesel biocide	Champion X, Accra
2.	PermaCleanPC-11	FRE/20200/1593G January 2020	2,2 Dibromo-3-nitrilopropionamide	U	Control bacteria fouling of ultrafiltration units, non potable reverse osmosis membranes and peripheral systems	Champion X, Accra
3.	PermaCleanPC-56	FRE/20200/1592G January 2020	5-Chloro-2-methyl-4-isothiazoline-3-one +2-Methyl-4- isothiazoline-3-one	U	For controlling bacteria fouling of ultrafiltration units, non potable reverse osmosis membranesand peripheral systems	Champion X Accra
4.	Promex CHS-3	FRE/1920/1491G June 2019	Dihydroxy-2, 5-dioxahexane 20% + 5- chloro-2-methyl-4-isothiazolin-3-one (1%)	II	For controllingbacteria and fungi in aqueous solution	BBC Industrials Company Ltd., Accra
5.	Promex DB-20	FRE/1920/1492G June 2019	2, 2-Dibromo-3-nitrilopropionamide(20%)	II	For controllingbacteria and fungi in aqueous solution	BBC Industrials Company Ltd., Accra

(B) Provisionally Cleared Pesticides (PCL)

(B1) Insecticides

No.	Trade Name	Registration No. /Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Abafos Super	PCL/21249/2091G May 2021	Abamectin (5g/l) + Chlorpyrifos (495g/l)	II	Insecticide for the control of cotton bollworm, rice stem borer, leaf roller and leafminer in cotton, rice and vegetables	Karida Agro Trading Co. Ltd., Kumasi
2.	Abacrown	PCL/21229/1894G February 2021	Abamectin(18g/l)	II	Insecticide forthe control of aphids, whiteflies in okro	Agro CrownWest AfricaCo. Ltd., Accra

3.	Acati PowerSL	PCL/21228/2275G October 2021	Thiamethoxam(200g/l)	II	Insecticide for the control of miridsin cocoa	Alive Industries Ltd., Accra
4.	Aceta Force	PCL/21145/2005G May 2021	Acetamiprid (20%)	II	Insecticide for the control of whiteflies, aphids, fruit borers, leaf miner, thrips in vegetables, orchards, legumes and cotton	Jubaili Agrotec Limited, Kumasi
5.	Aceta Powder	PCL/21260/1979G May 2021	Cypermethrin (100g/l) + Acetamiprid (20g/l)	II	Insecticide for the control of aphids, damsel bugs, beetles and thrips in vegetables and cotton	August Prosperity Company Ltd., Kumasi
6.	Acetaplus 70 EC	PCL/21261/2031G May 2021	Acetamiprid (50g/l) + Emamectin-benzoate (20g/l)	II	Insecticide for the control aphids, bollworms, diamondback moth cereals and vegetables	Zapware Ventures, Accra
7.	Acetazap 46 EC	PCL/21261/2141G June 2021	Bifenthrin (30g/l) + Acetamiprid (16g/l)	II	Insecticide for the control of aphids, bollworms, diamond black moth mosquitoes in cereals, vegetables and sugarcane	Zapware Ventures, Accra
8.	Actaladiz240SC	PCL/2108/2129G June 2021	Thiamethoxam(200g/l)	II	Insecticide for the control of mirids incocoa	Dizengoff Ghana Ltd.,Accra
9.	AF Confidence	PCL/21245/2289G November 2021	Capsaicin(200g/l)	II	Insecticide for the control of mirids incocoa	New Okaff Industries Ltd., Kumasi
10.	Agro Oil	PCL/21173/2239G October 2021	White Mineral Oil (100%)	III	Insecticide for the control of aphids, red spider mites and purple mites in cereals and vegetables	Agromonti Co. Ltd., Accra
11.	Agropy 5 EW	PCL/21197/1937G March 2021	Pyrethrum(50g/l)	II	Insecticide for the control of mirids incocoa	Yayra GloverLtd., Suhum
12.	Akate Aduro 27 EC	PCL/2108/1949G March 2021	Bifenthrin (27g/l)	II	Insecticide for the control of capsid bugsin cocoa	Dizengoff Ghana Ltd., Accra
13.	Akate Brafo 40 EC	PCL/2106/2076G May 2021	Acetamiprid (20g/l) + Bifenthrin (20g/l)	II	Insecticide for the control of mirids incocoa	Calli Ghana Co. Ltd, Accra
14.	Akate Ewu 200 EC	PCL/2143/2106G June 2021	Cypermethrin (50g/l) + Acetamiprid (150g/l)	II	Insecticide for the control of mirids incocoa	Kumark Agrochem Co. Ltd., Kumasi
15.	Akate Kaptain	PCL/21207/1940G March 2021	Etofenprox (300g/l)	II	Insecticide for the control of mirids oncocoa	Soiless Ltd, Accra
16.	Akate King 46 EC	PCL/2199/1893G February 2021	Bifenthrin (16g/l) + Acetamiprid (30g/l)	II	Insecticide for the control of mirids in cocoa	Rainbow AgroSciences Co. Ltd., Tema
17.	Akate Kondem EC	PCL/2135/1993G May 2021	Acetamiprid (30g/l) + Bifenthrin (16g/l)	II	Insecticide for the control of aphids inwheat	K. Badu Agrochemical Co. Ltd., Kumasi
18.	Akate Star 3EC	PCL/21232/2231G October 2021	Bifenthrin (30g/l)	II	Insecticide for the control of mirids incocoa	Alu Africa Ltd., Accra
19.	Aktofit-Bio	PCL/21277/2040G May 2021	Aversectin C (0.2%)	III	Insecticide for the control of aphids andthrips, leaf beetles and armyworm in spring wheat	McGainel Ltd., Accra
20.	Altifura 3G	PCL/21121/1977R May, 2021	Carbofuran (3%)	II	Insecticide for the control insect pestsand nematodes in arable crops	Altimate Agrochemicals Co. Ltd., Somanya

21.	A-Lambda Super	PCL/21260/1984G May 2021	Lambda-cyhalothrin (50g/l) + Acetamiprid (20g/l)	II	Insecticide for the control of aphids, damsel bugs, beetles,thrips in vegetables and cotton	August Prosperity Company Ltd., Kumasi
22.	Armyprid EC	PCL/2196/2011G May 2021	Acetamiprid (25g/l) + Emamectin-benzoate (48g/l)	II	Insecticide for the control aphids, bollworms, diamondback moth in vegetables and cereals	Enepa Ventures Ltd., Kumasi
23.	Atea Power	PCL/21213/1961G April 2021	Bifenthrin (25g/l)	II	Insecticide for the control of tea mosquito bug and nutborer in cashew	Crop Doctor, Kumasi
24.	Away	PCL/21149/2084G May 2021	Emamectin-benzoate (1.9%)	II	Insecticide for thecontrol thrips, aphids, whiteflies and caterpillar in leafy vegetables, mango, citrus, pawpaw and Tomato	Bon Agro Co. Ltd., Kumasi
25.	Away 5 SG	PCL/21149/1835G February 2021	Emamectin-benzoate (5%)	II	Insecticide for the control of fall armyworm in maize	Bon Agro Co. Ltd., Kumasi
26.	Barak Super 1.9EC	PCL/21271/2220G September 2021	Emamectin-benzoate (19.2g/l)	II	Insecticide for the control of aphids, diamondback moth, bollworms in cerealsand vegetables	Boasiako Agro Services, Kumasi
27.	BB-Protec	PCL/21285/2315G December 2021	*Beauveria bassiana* strain R444 (≥ $2x10^9$ spores/g)	III	Insecticide for the control of whiteflies, mealybugs, aphids, mites and spidermitesin fruits and vegetables	Demeter Ghana Limited, Tema
28.	Best Ematin	PCL/21265/2173G July 2021	Emamectin benzoate (3g/l)	II	Insecticide for the control of insect pests in vegetables, cowpea, groundnut, maize and rice	YMDY Co. Ltd., Kumasi
29.	Biokill	PCL/21213/1925G March 2021	*Bacillus thuringiensis* (8000IU/mg) + Emamectin-benzoate(25g/l)	IV	Insecticide for the control of fall armyworm (FAW)in maize	Crop Doctor, Kumasi
30.	Biopest	PCL/21213/2206G September 2021	*Bacillus thuringiensis* (32000IU/mg)	III	Insecticide for the control of diamondback moth, beetles, maize borer, armyworm, tobacco budworm in cabbage and othervegetables	Crop Doctor, Kumasi
31.	Bio-T Plus WP	PCL/2181/1905G February 2021	*Bacillus thuringiensisvar Kurstaki* 36iu/mg (800g/kg)	III	Insecticide for thecontrol of cabbagelooper, cabbage worm, diamondback moth, leaf folders in cabbage and other vegetables and for fall armyworm in maize	B. Kaakyire Agrochemicals Kumasi
32.	Blaze	PCL/21173/1900G February 2021	Emamectin Benzoate (40g/l) + Lufenuron (50g/l)	II	Insecticide for the control of cabbage caterpillar in cabbage	Agromonti Co. Ltd. Accra
33.	Bon Optimal EC	PCL/21149/2082G May 2021	Acetamiprid (2%) + Lambda-cyhalothrin (1.5%)	II	Insecticide for the control of aphids, whiteflies and leaf miners in vegetables	Bon Agro Co. Ltd., Kumasi

34.	Bonpyrifos 48 EC	PCL/21149/2080G May 2021	Chlorpyrifos (480g/l)	II	Insecticide for the control of insect pests in vegetables	Bon Agro Co. Ltd., Kumasi
35.	Capito	PCL/21149/1866G May 2021	Imidacloprid (20%) + Metalaxyl–M (20%) + Tebuconazole (2%)	II	Insecticide for the control of aphids, ants, termites, leafhoppers, thrips, downy mildew, late blight and loose smut in groundnut, cowpea, soyabean, bean, maize, sorghum, millet and rice seeds	Bon Agro Co. Ltd, Kumasi
36.	Centrole 20SG	PCL/2199/2167G July 2021	Dinotefuran (200g/kg)	II	Insecticide for the control of brown planthopper and riceplanthopper in rice	Rainbow AgroSciences Co. Ltd., Tema
37.	Chemaprid Super 60EC	PCL/2105/2099G May 2021	Acetamiprid (30g/l) + Lambda-cyhalothrin (30g/l)	II	Insecticide for the control of insect pests in vegetables	Chemico Ltd., Tema
38.	Chemomectin 50SG	PCL/2105/2100G May 2021	Emamectin benzoate (50g/kg)	II	Insecticide for the control of fall armyworm in maize	Chemico Ltd., Tema
39.	Combat 2018 SL	PCL/21280/2183G July 2021	Azadirachtin + *Euphorbia tirucalli* (860g/l)	III	Insecticide for the control of fall armyworms, aphids,bollworms and diamond black mothin cereals and vegetables	Jabez Empire Co. Ltd., Kumasi
40.	Commander 20 SL	PCL/21213/1924G March 2021	Imidacloprid (200g/l)	II	Insecticide for the control of mirids incocoa	Crop Doctor Ltd., Kumasi
41.	Confiba 20 SL	PCL/2181/2042G May 2021	Imidacloprid (200g/l)	II	Insecticide for the control of aphids, ricehoppers, thrips, whiteflies and soil insects in cereals, vegetables and fruits	B. Kaakyire Agrochemical Ltd., Kumasi
42.	Copta 70 WP	PCL/21133/2128G June 2021	Acetamiprid (70g/kg)	II	Insecticide for the control of aphids incucumber	Abbnak Agro Services, Kumasi
43.	Crownil	PCL/21229/1896G February 2021	Imidacloprid (250g/l) + Bifenthrin (50g/l)	II	Insecticide for the control of fruit andstem borer, epilachna beetles, crickets and eggplant defoliatorin garden eggs	Agro Crown West Africa Co. Ltd., Accra
44.	Cyhlosect 2.5 EC	PCL/2196/1990G May 2021	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of aphids, bollworms, and diamondback moth incereals, vegetables and sugarcane	Enepa Ventures Ltd., Kumasi
45.	Cymectin 2.0 EC	PCL/2057/1850G March 2021	Abamectin (0.5%) + Beta-cypermethrin (1.5%)	II	Insecticide for the control of aphids, leafminers, thrips andborers in vegetables and cereals	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
46.	Cypecare	PCL/21145/2208G September 2021	Cypermethrin (10g/l)	II	Insecticide for the control of aphids, leafhoppers and cabbage butterflies incabbage and okra	Jubaili Agrotec Ltd., Kumasi
47.	Cypermethoate Super 280 EC	PCL/2181/2140G June 2021	Cypermethrin (30g/l) + Dimethoate (250g/l)	II	Insecticide for the control of aphids, bollworms and diamondback moth in cereals, vegetables and	B. Kaakyire Agrochemical Ltd., Kumasi

					sugarcane	
48.	Defiance 48 ME	PCL/2108/2323G December 2021	Beta-cyfluthrin (4.5%) + Emamectin benzoate (0.3%)	II	Insecticide for thecontrol of insect pests and spidermites in vegetables	Dizengoff Ghana Ltd., Accra
49.	DimeCrown 400 EC	PCL/21229/2204G September 2021	Dimethoate (400g/l)	II	Insecticide for the control of insect pestsin vegetables`	Agro CrownWest AfricaCo. Ltd., Kumasi
50.	Dimesky 40EC	PCL/21260/1994G May 2021	Dimethoate (40%)	II	Insecticide/Acaricidefor the control of insect pests in groundnut, cowpea, rice, maize, sorghum,citrus, banana, plantain andvegetables	Sky Agro Science & Solution, Accra
51.	Diz-Lambda 2.5EC	PCL/2108/1941G March 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pestsin vegetables	Dizengoff Ghana Ltd., Accra
52.	Diz-Pyrifos 480 EC	PCL/2108/1942G March 2021	Chlorpyrifos-ethyl(480g/l)	II	Insecticide for the control of insect pests in vegetables	Dizengoff Ghana Ltd., Accra
53.	Double Cide	PCL/21249/2088G May 2021	Chlorpyrifos (300g/l) + Cypermethrin (25g/l)	II	Insecticide for the control of leaf roller, stem borer, thrips andaphids in rice, maize and vegetables	Karida Agro Trading Co. Ltd., Kumasi
54.	Dymax 31.5 EC	PCL/21233/2225G September 2021	Lambda-cyhalothrin (15g/l) + Dimethoate (300g/l)	II	Insecticide for the control of aphids, bollworms, diamondback moth mosquitoes, grasshoppers and weevils in cereals, sugarcane and vegetables	AB Benaldo Trading Ent., Kumasi
55.	Eagrowclaw	PCL/21264/1931G March 2021	Lambda-cyhalothrin (2.5%)	II	Insecticide for thecontrol of aphids and other insect pests in okro and other vegetables	Kesai Eagrow Ghana Co. Ltd., Comm. 11, Tema
56.	Ecopticide-Agri	PCL/21282/2325G December 2021	Thyme essential oil (3%) + Tea Tree Oil (3%)	IV	Insecticide for the control of fall armyworm (FAW)in maize	American Products Co. Ltd., Accra
57.	Ecoterex 0.5% GR	PCL/21268/2185G July 2021	Pirimiphos-methyl (0.4%) + Deltamethrin (0.1%)	III	Insecticide for the control of fall armyworm (FAW) inmaize	Picador Agencies & Co.Ltd., Accra
58.	Emacare	PCL/21145/1902G February 2021	Emamectin-benzoate (5%)	II	Insecticide for the control of fall armyworm in maize	Jubaili Agrotec Ltd.,Kumasi
59.	Ema Plus	PCL/21260/1983G May 2021	Emamectin-benzoate (30g/l) + Acetamiprid (20g/l)	II	Insecticide for the control of aphids, stem-borers, leafhoppers, thrips in vegetables, rice and cotton	August Prosperity Company Ltd., Kumasi
60.	Esperos 500 SP	PCL/21275/2191G August 2021	Thiocyclam hydrogen oxalate (50%)	II	Insecticide for thecontrol of beetles, aphids, bugs and whiteflies in cowpea	Dizengoff Ghana Limited,Accra
61.	Expedite Akate PC	L/21278/2064Gy 2021	Isoclast (40g/l) + Deltamethrin (20g/l)	II	Insecticide for the control of mirids andother insect pests on cocoa	OJB Legal Consultancy, Accra
62.	Fawligen	PCL/2106/2316G December 2021	*Spodoptera frugiperda* multiple nucleopolyhedrovirus (SfMNPV)	III	Insecticide for the control of fall armyworm in maize	Calli Ghana Co. Ltd., Accra

63.	Furabak 3% G	PCL/2181/1911R March 2021	Carbofuran (3%)	II	Insecticide for thecontrol of cane beetles, aphids, rice stem borers and nematodes in rice, cotton andsugarcane	B. Kaakyire Agrochemicals, Kumasi
64.	Ganortex	PCL/21184/2110G June 2021	Dimethoate (400g/l)	II	Insecticide for the control of aphids, planthoppers and leafhoppers in cottonand rice	Ganorma Agrochemicals Ltd., Tamale
65.	Golden Bio T Plus	PCL/2181/1906G February 2021	*Bacillus thuringiensis varKurstaki*(36iu/mg) + *Sophoraflavescens*plant extract (25%) + Emamectin-benzoate (19.2%)	II	Insecticide for the control of fall armyworm in maize	B. Kaakyire Agrochemicals, Kumasi
66.	Gramda 2.5 EC	PCL/21271/2304G December 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of aphids, bollworm and diamondback mothin cereals and vegetables	Boasiako Agro Services, Kumasi
67.	Great® Fruit Fly Bait	PCL/21190/1991G May 2021	Abamectin (0.1%)	II	Insecticide for the control of fruitfly incitrus, mango and guava	Matrix Innovation Ltd.,Accra
68.	Greenline 88	PCL/21220/1927G March, 2021	Soybean Oil Extract	U	Insecticide for the control of flies, whiteflies, red spidermite, mosquito larvae and biting and sucking insects in cowpea	MET Organics, Accra
69.	Hunta	PCL/21213/2119G June 2021	Emamectin-benzoate (19.2g/l)	II	Insecticide for the control of heliothis,cabbage webworm and diamondback moth in vegetables and fruits	Crop Doctor Ghana Ltd., Kumasi
70.	Hye Akate 145 SC	PCL/2181/2328G December 2021	Imidacloprid (100g/l) + Beta-cyfluthrin (45g/l)	II	Insecticide for the control of mirids incocoa	B. Kaakyire Agrochemicals, Kumasi
71.	Imicare SL	PCL/2145/2136G June 2021	Imidacloprid (200g/l)	II	Insecticide for the control of plant hoppers, aphids andwhiteflies in rice and tomato	Jubaili Agrotec Ltd.,Kumasi
72.	Insect Suro 112 EC	PCL/2143/2037G May 2021	Acetamiprid 64g/l + Emamectin-benzoate 48g/l	II	Insecticide for the control of mirids incocoa	Kumark Agrochemical Co. Ltd., Kumasi
73.	J-Furan 3G	PCL/21145/2135R June 2021	Carbofuran (3%)	II	Insecticide for thecontrol of sugarcane shoot borer in sugarcane	Jubaili Agrotec Ltd.,Kumasi
74.	Kilambda 25EC	PCL/21249/2250G October 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of diamondback moth, cabbage, bollworm and leaf miner incabbage	NGC Karida Agro Trading Co. Ltd., Kumasi
75.	Kingnash	PCL/21258/2056G May 2021	Bifenthrin (30g/l) + Acetamiprid (16g/l)	II	Insecticide for the control of insect pestin tomato	Agrohao Ghana Co. Ltd., Kumasi
76.	KingOptimal	PCL/21258/2293G November 2021	Acetamiprid (2%) + Lambda-cyhalothrin (1.5%)	II	Insecticide for the control of aphids, whiteflies and leaf miners in vegetables	Agrohao Ghana Co. Ltd., Kumasi

77.	Kingpyrifos	PCL/21258/2125G June 2021	Chlorpyrifos (480g/l)	II	Insecticide for the control of insect pests in vegetables and wood treatment	Agrohao Ghana Co. Ltd., Kumasi
78.	Kingtak	PCL/21258/2126G June 2021	Emamectin-benzoate (1.9g/l)	II	Insecticide for thecontrol of aphids, worms and borers in tomato, maize and cabbage	Agrohao Ghana Co. Ltd., Kumasi
79.	Kinmida	PCL/21258/2057G May 2021	Imidacloprid (200g/l)	II	Insecticide for the control of planthopperin rice	Agrohao Ghana Co. Ltd., Kumasi
80.	Knock Out	PCL/21149/2078G May 2021	Bifenthrin (30g/l) + Acetamiprid (16g/l)	II	Insecticide for the control of insect pests in vegetables,mango, eggplant and citrus	Bon Agro Co. Ltd., Kumasi
81.	K-Othrine Super EC	PCL/2102/2319G December 2021	Lambda-cyhalothrin (30g/l) + Acetamiprid (30g/l)	II	Insecticide for the control of FAW andother insect pests inmaize and vegetables	Agrimat Limited, Madina
82.	Konmidor 200 SC	PCL/21249/2251G October 2021	Imidacloprid (200g/l)	II	Insecticide for the control of insect pestsin cereals and vegetables	NGC Karida Agro Trading Co. Ltd., Kumasi
83.	Lambda Nek	PCL/21265/2173G July 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of diamondback mothand bollworm in vegetables	YMDY Co. Ltd., Kumasi
84.	Lamdasef EC	PCL/21135/1975G May 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of insect pestsin vegetables	Sefa and Jane Agrochemicals
85.	Lamdasky Super 2.5 EC	PCL/21260/2019G May 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide for the control of aphids, caterpillars, moths,thrips, mites and fruitfly in cotton, cowpea, soybean, vegetables, maize, rice and fruits	Sky Agro Science & Solution, Accra
86.	Lambdex 50 EC	PCL/21158/2036G May 2021	Lambda-cyahalothrin (5%)	II	Insecticide for the control of aphids, bollworms and diamondback moth in cereals, sugarcane and vegetables	ETC Agro Ghana Limited,Accra
87.	Laracare	PCL/21145/2137G June 2021	Lambda-cyhalothrin (25g/l)	II	Insecticide for thecontrol of leaf miners, aphids and bollworm in citrus and cotton	Jubaili Agrotec Ltd.,Kumasi
88.	Last stop	PCL/21229/2014G May 2021	Emamectin-benzoate (1.9%)	II	Insecticide for the control of thrips, leafminer, aphids and whitefly in vegetables, fruit treesand ornamentals	Agro Crown West Africa Co.Ltd., Kumasi
89.	Leopard 20 SL	PCL/21137/2329G December 2021	Imidacloprid (200g/l)	II	Insecticide for the control of mango hopper, aphids, leafminers, jassids in mango, okra and groundnut	Miqdadi Co. Ltd., Accra
90.	Lion Power	PCL/21184/2111G June 2021	Lambda-cyhalothrin (15g/l) + Dimethoate (300g/l)	II	Insecticide for the control of aphids, planthoppers, leafhoppers and cotton bollworm incotton and rice	Ganorma Agrochemicals Ltd., Tamale

91.	Macho 43.6 EC	PCL/21213/2207G September 2021	Dimethoate (400g/l) + Cypermethrin (36g/l)	II	Insecticide for the control of aphids, jassids, mealybugs,thrips, whiteflies, mites and fruitfliesin tomato and okra	Crop Doctor, Kumasi
92.	Maxima Super 112EC	PCL/21271/2182G July 2021	Acetamiprid (64g/l) + Emamectin benzoate (48g/l)	II	Insecticide for the control of fall armyworm, legume pod borer and thrip in maize and cowpea	Vijuseph Company Ltd., Accra
93.	Mitecare EC	PCL/21145/2138G June 2021	Acetamiprid (15g/l) + Abamectin (3g/l)	II	Insecticide for the control of insect pestsand mites in cotton, citrus, vegetables, legumes and cereals	Jubaili Agrotec Ltd.,Kumasi
94.	Nako Protecta CCA	PCL/21283/2301R December 2021	Chromium trioxide (27.2%) + Copper oxide(11.4%) + Arsenic pentoxide (20.5%)	II	Insecticide/wood preservative for the control of insect pests in wood	Nakoyaw Farms Ltd., Tema
95.	Neemkaranja	PCL/21222/2145G June 2021	Neem Extract 59.80% + Karanja Extract 50.20%	III	Insecticide for the control of sucking pest and small stagelarva in vegetables and fruits	CIL- Intrakam Ghana Ltd., Accra
96.	Nova BT	PCL/2105/2101G May 2021	*Bacillus thuringiensis* (32000iu/mg)	III	Insecticide for the control of fall armyworm in maize	Chemico Ltd., Tema
97.	Omniprid	PCL/21239/2176G July 2021	Lambda-cyhalothrin (15g/l) + Acetamiprid (20g/l)	II	Insecticide for thecontrol of aphids in cabbage and cotton	OmniFert Ltd., Labone-Accra
98.	Organic JMS Stylet Oil	PCL/2108/1946G March 2021	White Mineral Oil (97.1%)	U	Insecticide/ fungicide for the control of aphids, mites, thrips, powdery mildew, botrytis and rust in vegetables and fruits	Dizengoff Ghana Ltd., Accra
99.	Orizon 120 SC	PCL/2108/1947G March 2021	Acetamiprid (100g/l) + Abamectin (20g/l)	II	Insecticide for the control of insect pestsand soil nematodes invegetables and citrus	Dizengoff Ghana Ltd., Accra
100.	Pilarclotrin Sky	PCL/21260/2023G May 2021	Clothianidin (145g/l) + Lambda-cyhalothrin (135g/l)	II	Insecticide for the control of mirids, aphids, thrips, whiteflies, stem borers, leaf rollers and plant hoppers inrice, mango and vegetables	Sky Agro Science & Solution, Accra
101.	Pilarando Sky	PCL/21260/2027G May 2021	Emamectin Benzoate (43g/l) + Indoxacarb (64g/l)	II	Insecticide for the control of leaf roller and fall armyworm inrice and maize	Sky Agro Science & Solution, Accra
102.	Pyrinex Quick 424 EC	PCL/21100/2157G July 2021	Chlorpyrifos (400g/l) + Deltamethrin (24g/l)	II	Insecticide for the control of termites inmaize, mango and wooden structures	Adama West Africa Ltd., Accra
103.	Rapax AS	PCL/20185/1840G February 2021	*Bacillus thuringiensis* subspecies kurstaki strain 18.8% w/w 24,000 IU T.ni/mg	III	Insecticide for the control of fall armyworm in maize	RMG Ghana Limited
104.	Rocket 20EC	PCL/21145/2133G June 2021	Chlorpyrifos-ethyl(20%)	II	Insecticide for the control of insect pestin cotton, citrus and vegetables	Jubaili Agrotec Ltd., Kumasi

105.	Sauveur 62EC	PCL/2106/1913G March 2021	Acetamiprid (32g/l) + Lambda-cyhalothrin (30g/l)	II	Insecticide for thecontrol of fall armyworm in maize	Calli Ghana Co. Ltd. Accra
106.	Sefpyrifos EC	PCL/21135/1976G May 2021	Chlorpyrifos (480g/l)	II	Insecticide for the control of cutwormsin vegetables	Sefa and Jane Agrochemicals, Kumasi
107.	Seizer EC	PCL/21100/1958G April 2021	Bifenthrin (100g/l)	II	Insecticide for the control of mirids in cocoa	Adama West Africa Ltd., Accra
108.	Spur 19.6EC	PCL/21249/2256G October 2021	Emamectin-benzoate (19.6g/l)	II	Insecticide for the control of caterpillarsand aphids in tomato,garden eggs and onion	NGC Karida Agro Trading Co. Ltd., Kumasi
109.	Spur Powder	PCL/21249/2089G May 2021	Emamectin benzoate (5%)	II	Insecticide for the control of bollworm,rice stem borer and plant hopper in cabbage, rice andmaize	NGC Karida Agro Trading Co. Ltd., Kumasi
110.	Strike 1.9EC	PCL/2181/1912G March 2021	Emamectin-benzoate (19.2g/l)	II	Insecticide for the control of leaf- eating beetle, spinybollworm and pink bollworm in okro	B. Kaakyire Agrochemicals, Kumasi
111.	Strike Super 70EC	PCL/2181/1910G March 2021	Acetamiprid (50g/l + Emamectin-benzoate (20g/l)	II	Insecticide for thecontrol of fall armyworm in maize	B. Kaakyire Agrochemicals, Kumasi
112.	Strongcare 50 WP	PCL/21145/1973G May 2021	Methomyl (50%)	II	Insecticide for the control of amyworm,aphids and whitefliesin cereals, vegetables and fruits	Jubaili Agrotec Ltd, Kumasi
113.	Sultan 400SL	PCL/2199/2169G July 2021	Bisultap (400g/l)	II	Insecticide for the control of armywormand stem borers in maize and rice	Rainbow AgroSciences Co. Ltd., Tema
114.	Sun- Abam	PCL/2157/2046G May 2021	Abamectin (1.8%)	II	Insecticide for the control of cabbage caterpillar, rust mitesand red spider in vegetables, fruit trees and cotton	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
115.	Sun- Belathon 20 EC	PCL/2157/2044G May 2021	Beta-Cypermethrin (1.5%) + Malathion (18.5%)	II	Insecticide for the control of fruit borerin fruits	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
116.	Sun-Diazinon 500 EW	PCL/2157/2218G September 2021	Diazinon (500g/l)	II	Insecticide for the control of planthoppers, beetles and aphids in rice, maize and soyabean	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
117.	Sun- Mazine SP	PCL/2157/2043G May 2021	Cyromazine (70%)	III	Insecticide for the control of Liriomyzain kidney bean	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
118.	Sun-Methofen	PCL/2157/2217G September 2021	Methomyl (200g/l) + Bifenthrin (25g/l)	II	Insecticide for the control of aphids, bollworms, caterpillars and beetles in cotton, vegetables, fruit crops and legumes	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
119.	Sun-Optimal	PCL/2157/2047G May 2021	Acetamiprid (20g/l) + Lambda-cyhalothrin (15g/l)	II	Insecticide for the control of aphids incotton and cabbage	Wynca Sunshine Agric. Prod & Trading Co. Ltd., Accra

120.	Sun-Prida	PCL/2157/2272G October 2021	Imidacloprid (200g/l)	III	Insecticide for the control of aphids incowpea and tomato	Wynca Sunshine Agric Pdts., Accra
121.	Sunpronil 50 EC	PCL/2157/2214G September 2021	Fipronil (50g/l)	II	Insecticide for the control of aphids, thrips, termites, leaf and planthoppers incereals, vegetables, soybean and public health	Wynca Sunshine Agric. Products & Trading Co. Ltd., Accra
122.	Supertop EC	PCL/2143/1880G February 2021	Acetamiprid (20g/l) + Lambda-cyhalothrin(15g/l)	II	Insecticide for the control of insect pests in tomatoes	Kumark Co. Ltd. Kumasi
123.	Superway 31.5 EC	PCL/21261/2030G May 2021	Lambda-cyhalothrin (1.5%) + Dimethoate (30%)	II	Insecticide for the control aphids, bollworms and diamondback moth in cereals, vegetables and sugarcane	Zapware Ventures, Accra
124.	Termichem 5SC	PCL/2105/2098G May 2021	Fipronil(50g/l)	II	Insecticide for thecontrol of termiteson wood	Chemico Ltd, Tema
125.	Termitec	PCL/21234/1970G May 2021	Imidacloprid(5%)	II	Insecticide for thecontrol of termitesin eucalyptus	Miro Forestry Ltd., Agogo
126.	Transform Akate	PCL/21270/2199G August 2021	Sulfoxaflor(240g/l)	U	Insecticide for thecontrol of mirids and shield bugs incocoa	Agri Plus Horizon Farms Ltd., Accra
127.	Trivor 310 DC	PCL/21100/1957G April 2021	Acetamiprid (186g/l) + Pyriproxyfen (124g/l)	II	Insecticide for the control of mirids incocoa	Adama West Africa Ltd., Accra
128.	Tutaforce	PCL/21145/2335G December 2021	Chlorfenapyr (24%)	III	Insecticide for the control of tomato leafminers, mites, thrips, aphids, leaf hoppers and fruit borers in tomato	Jubaili Agrotec Ltd., Kumasi
129.	Uphold 360SC	PCL/2105/2102G May 2021	Methoxyfenozide (300g/l) + Spinetoram (60g/l)	III	Insecticide forthe control of fall armywormin maize	Chemico Ltd, Tema
130.	Viju Bt	PCL/21271/2181G July 2021	*Bacillus thuriengensis. Kurstaki* (32000ifu/mg)	III	Insecticide for the control of fall armyworm in maize,cabbage and citrus	Vijuseph Company Ltd., Accra
131.	Waafda 2.5 EC	PCL/21108/2054G May 2021	Lambda-cyhalothrin (2.5%)	II	Insecticide for the control of caterpillarin vegetables	Waaf Agro Limited, Techiman
132.	Warrior Super 26EC	PCL/2181/1885G February 2021	Sophora Fiveseen plant extract (25%) + Emamectin-benzoate(1%)	III	Insecticide for the control of fall armyworm (FAW) in Maize	B. Kaakyire Agrochemicals, Kumasi
133.	Withoate 40EC	PCL/21137/2330G December 2021	Dimethoate(400g/l)	II	Insecticide for the control of aphids, jassids and beetles in sweet potato andvegetables	Miqdadi Co.Ltd., Accra
134.	WormAtak EC	PCL/2114/2205G September 2021	Teflubenzuron (50g/l) + Cypermethrin (20g/l)	III	Insecticide for the control of fall armyworm (FAW) in maize	Afropa Gh.Ltd., Accra
135.	Zinda 50 EC	PCL/21249/2259G October 2021	Diazinon(50%)	II	Insecticide for the control of insect pestsin cereals, groundnut and vegetables	NGC Karida Agro TradingCo. Ltd., Kumasi
136.	Zukadoc 46 EC	PCL/21213/2241G October 2021	Indoxacarb (30g/l) + Acetamiprid (16g/l)	III	Insecticide for the control of insect pestsin okro	Crop Doctor Ghana Ltd., Kumasi

(B) Provisionally Cleared Pesticides (PCL)

(B1a) Insecticides for public health purposes

No.	Trade Name	Registration No. / Date of Issue	Concentration ofActive Ingredient	HazardClass	Uses	Local Distributor
1.	Agrifog Maxi Smoke Generator	PCL/21173/2144G June 2021	Deltamethrin(14%)	III	Insecticide for the control of household insect pests	Agromonti Co. Ltd., Accra
2.	Combat Gel	PCL/21276/1966G April 2021	Fipronil(0.01%)	III	Insecticide for thecontrol of cockroaches	Sigma Safety Solutions Gh. Ltd., Accra
3.	Fludora Fusion	PCL/21183/2189G August 2021	Clothianidin (500g/kg) + Deltamethrin(62.5g/kg)	II	Insecticide for indoor residual spraying against mosquitoes	Bayer West-Central Africa S.A, Accra
4.	Fly Cip	PCL/21100/2071G May 2021	Cypermethrin (2.1g/l) +Tetramethrin (2.1g/l) + Piperonyl butoxide (5.3g/l)	II	Insecticide for the control of flies, blowflies, wasps, mosquitoes and gnats	Adama West Africa Ltd., Accra
5.	Foval CE	PCL/21100/2072G May 2021	Cypermethrin (92g/l) + Tetramethrin (23g/l) + Piperonyl butoxide (115g/l)	II	Insecticide for the control of flies and crawling insects	Adama West Africa Ltd., Accra
6.	Geotox	PCL/21100/2073G May 2021	Permethrin (0.6g) + Piperonyl butoxide (0.1g)	II	Insecticide for the control of cockroaches, ants, bugs, fleas, ticks andchicken mite	Adama West Africa Ltd., Accra
7.	Harris Famous Roach Powder	PCL/21276/1921G March 2021	Boric Acid (99%)	II	Insecticide for the control of ants, bugsand roaches	Sigma Safety Solutions (Gh) Ltd., Accra
8.	Inesfly 5A IGR	PCL/21143/2286R October 2021	Diazinon (1.5%) +Chlorpyrifos (1.5%) +Pyriproxyfen(0.063%)	II	Insecticide for the control of insect pests for public heslth purposes	Inesfly Africa Ltd., Accra
9.	Inesfly EM House IGR	PCL/21143/1967G April 2021	Alphacypermethrin (0.7%) + D-Allethrin (1%) + Pyriprofen (0.01%)	III	Insecticide for public health purposes for the control of insect pests	Inesfly Africa Limited, Accra
10.	Inesfly SP Coating	PCL/21143/2285G October 2021	Alpha-cypermethrin (0.7%) +D-Allethrin (1.0%) + Pyriproxyfen (0.063%)	II	Insecticide for the control of insect pests for public health and agricultural purposes	Inesfly Africa Ltd., Accra
11.	Laracare 50 WP	PCL/21145/1974G May 2021	Lambda-cyhalothrin(5%)	II	Insecticide for the control of mosquitoes, flies andcockroaches	Jubaili Agrotec Ltd., Kumasi
12.	Out Insecticide Spray	PCL/21231/2237G October 2021	Dimefluthrin (0.003%) + Cyphonothrin (0.004%) + Beta-cypermethrin (0.005%) + Tetramethrin (0.004%)	II	Insecticide spray forthe control of flying and crawling insects	Suncity Ltd., Accra
13.	Out Mosquito Coil	PCL/21231/2238G October 2021	Dimefluthrin (0.003%) + Cyphonothrin (0.004%) + Beta-cypermethrin (0.005%) + Tetramethrin (0.004%)	II	Insecticide for thecontrol of mosquitoes	Suncity Ltd., Accra
14.	Paradise Insecticide spray	PCL/21269/2210G September 2021	Permethrin (0.18%) + D-tetramethrin (0.175%) + Esbiothrin (0.115%)	II	Insecticide for public health purposes for the control of flying and	Arrow Global Company Ltd., Accra

					crawling insect pests	
15.	Pesticine	PCL/21236/2130G June 2021	Beta-cyfluthrin(25g/l)	II	Insecticide for public health purposes for the control of household insectpests	Treatol Ghana Ltd,Accra
16.	Victor Gel	PCL/21100/2074G May 2021	Imidacloprid (2.15%) + Denatonium Benzoate (0.004%)	III	Insecticide for thecontrol of cockroaches	Adama West Africa, Accra

(B) Provisionally Cleared Pesticides (PCL)

(B1b) Insecticides for stored produce

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Ecofog 100	PCL/21197/1891G February 2021	Pyrethrin (0.5%w/w)	II	Insecticide for the control of red grain beetle, rusty grain beetle and mediterranean moth in stored cocoa beans	Yayra Glover Organic Inputs, Suhum
2.	Enviroguard 3% ULV	PCL/2110/2322G December 2021	Bifenthrin (30g/l)	II	Insecticide for thecontrol of storage insect pests of cocoa	Reiss & Co. (Ghana) Ltd., Accra
3.	Devathrin 10 SC	PCL/2110/2127G June 2021	Alpha-cypermethrin (100g/l)	II	Insecticide for the control of storage insect pests in cocoa	Reiss & Co. (Gh) Ltd., Accra
4.	Shumba Plus Dust	PCL/21268/2186G July 2021	Pirimiphos methyl (18g/kg) + Thiamethoxam (4g/kg)	II	Insecticide for the control of insect pestsin stored grain, dried beans and cereals	Picador Agencies & Co.Ltd., Accra
5.	Storecare	PCL/21145/2291G November 2021	Malathion (2%)	II	Insecticide/acaricide for the control of *Sitophilus zeamais* instored rice and maize	Jubaili Agrotec Ltd., Kumasi

(B) Provisionally Cleared Pesticides (PCL)

(B2) Fungicides

No.	Trade Name	Registration No. /Date of Issue	Concentration ofActive Ingredient	Hazard Class	Uses	Local Distributor
1.	Actigard	PCL/21173/1899G February 2021	Acibenzolar-S-methyl (500g/kg)	III	Fungicide for thecontrol of citrus canker, downy mildew, powdery mildew, scab, angular leafspot in tomatoes,eggplant, pepper,cucumber and watermelon	AgromontiCo. Ltd., Accra
2.	AgroSar 70WP	PCL/21179/2230G October 2021	Copper hydroxide(70%)	III	Fungicide for the control of blackpoddisease in cocoa	Moor Co. Ltd., Accra
3.	Asokuo Master	PCL/2125/2202G September 2021	Copper (I) Oxide (60g/kg) + Metalaxyl(120g/kg)	III	Fungicide for the control of leafspot, downy mildew, damping off, rust, blight and anthracnose in pawpaw, cucumber,tomato and watermelon	Bentronic Productions, Kumasi
4.	BanEco 20 SL	PCL/21275/1886G February 2021	Water (40%) + Protein extracts from germinated	III	Fungicide for the control of crown rotin banana	Kaddy Ventures, Accra

			sweet *Lupinus albus seeds* (20%) + Inerts(40%)			
5.	Banko D 450SC	PCL/2106/1914G March 2021	Chlorothalonil (400g/l) + Difenoconazole (50g/l)	III	Fungicide for thecontrol of *Alternaria sp.* in vegetables	Calli GhanaCo. Ltd., Accra
6.	BBS Master WP	PCL/21263/1939G March 2021	Oxolinic Acid(20%)	III	Fungicide for the control of bacterialblackspot (BBS) disease in mango	Bomart Farms, Doboro
7.	Bonzeb	PCL/21149/2086GMay 2021	Mancozeb(800g/kg)	III	Fungicide for thecontrol of early blight in tomato	Bon AgroCo. Ltd., Kumasi
8.	Bon Victory WP	PCL/21149/2085GMay 2021	Mancozeb (640g/kg) + Metalaxyl (80g/kg)	III	Fungicide for the control of diseasesin vegetables	Bon AgroCo. Ltd., Kumasi
9.	C-Shield	PCL/21177/2320G December 2021	Copper hydroxide(53%)	III	Fungicide for thecontrol of blackpod diseasein cocoa	SpenshellCo. Ltd., Accra
10.	C-Shield Plus	PCL/21286/2321G December 2021	Copper hydroxide (60%) + Metalaxyl (12%)	II	Fungicide for thecontrol of blackpod diseasein cocoa	Gails Co. Ltd., Accra
11.	Comet Plus 475EC	PCL/21206/2158G July 2021	Fenpropimorph (375g/l) + Pyraclostrobin (100g/l)	III	Fungicide for the control of black andyellow sigatoka in banana	Josann Agro Consult Ltd.,Accra
12.	Cuprous Super	PCL/21173/1901G February 2021	Copper oxychloride(850g/kg)	II	Fungicide for the control of early andlate blight, downy mildew, anthracnose, brownspot in tomatoes, pepper, garden eggs, cucumber, mango and citrus	AgromontiCo. Ltd, Accra
13.	Defender	PCL/2166/2292G November 2021	Copper Oxychloride(435g/l)	III	Fungicide for thecontrol of fungaldiseases in cocoa	Sidalco Limited, Tema
14.	Forum R	PCL/21206/2151G July 2021	Copper oxychloride (67.2%w/w) + Dimethomorph(6.0%w/w)	II	Fungicide for thecontrol of *Phytophthora palmivora*, *Phytophthora megakarya* in cocoa	Josann Agro Consult(J.AC.) Ltd., Accra
15.	Frankozeb 80 WP	PCL/2139/2199G July 2021	Mancozeb(800g/kg)	III	Fungicide for the control of wide spectrum diseases including leafblight, leaf spot, scab and rust in cereals, vegetables, ornamentals and fruittrees	FrankatsonLtd., Accra
16.	Fungicare	PCL/21145/2007GMay 2021	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for the control of downy mildew, rust disease,rice blast, blight, leafspot in cereals, vegetables and legumes	Jubaili Agrotec Limited,Kumasi
17.	Fungitect	PCL/21149/1830R February 2021	Carbendazim(500g/kg)	III	Fungicide for the control of rice sheath blight in rice	Bon Agro Co. Ltd.,Kumasi
18.	Germ Kill 50 WP	PCL/21249/2247G October 2021	Copper oxychloride (350g/kg) + Metalaxyl(150g/kg)	III	Fungicide for the control of diseasesin fruits and vegetables	NGC Karida Agro TradingCo. Ltd., Kumasi
19.	Glofert-cure	PCL/21281/2311G December 2021	Mancozeb (64%) + Metalaxyl (8%)	III	Fungicide for the control of early blight, leaf spot in tomato	Glofert Co.Ltd., Accra
20.	Grancozeb 80WP	PCL/21271/2305G December 2021	Mancozeb(800g/kg)	III	Fungicide for the control of diseasesin cereals and vegetables	Boasiako Agro Services, Kumasi

21.	IC Bordeaux 66D	PCL/21177/2320G December 2021	Copper (II) sulfate(176g/l)	III	Fungicide for the control of *Xanthomonas sp., Collectotrichum sp*.,and *Rhizoctonia sp* in mango and citrus	Systems Environ-TechLtd., Accra
22.	Invess-cure	PCL/21276/2152G July 2021	Metalaxyl (8%) + Mancozeb (64%)	III	Fungicide for the control of downy mildew, blight and blank shank in cucumber, pepper and tobacco	Invess Agriculture Limited, Accra
23.	Kabendazim 50WP	PCL/2181/1890G February 2021	Carbendazim(50%)	III	Fungicide for thecontrol of anthracnose, leaf spots and other fungal diseases in vegetables andcereals	B. Kaakyire Agrochemicals, Kumasi
24.	Kingstar WG	PCL/2199/2163G July 2021	Azoxystrobin (60%) + Cyproconazole (24%)	III	Fungicide for the control of diseases inmaize, rice, groundnut and vegetables	Rainbow AgroSciences Co. Ltd., Tema
25.	KingVictory	PCL/21258/2295G November 2021	Mancozeb (640g/kg) + Metalaxyl (80g/kg)	III	Fungicide for the control of diseasesin vegetables	Agrohao Ghana Co. Ltd., Kumasi
26.	Kinzeb	PCL/21258/2296G November 2021	Mancozeb (800g/kg)	III	Fungicide for the control of diseasesin fruits and vegetables	Agrohao Ghana Co. Ltd., Kumasi
27.	Mangoda 10WG	PCL/21249/2252G October 2021	Difenoconazole (100g/kg)	II	Fungicide for thecontrol of fungaldiseases in fruitsand vegetables	NGC Karida Agro Trading Co. Ltd., Kumasi
28.	Megazeb	PCL/21149/2314G December 2021	Mancozeb (800g/kg)	III	Fungicide for thecontrol of early blight in tomato	Bon Agro Co. Ltd., Kumasi
29.	Mirage 450 EC	PCL/21100/1956G April 2021	Prochloraz (450g/l)	III	Fungicide for the control of fusariumwilt in cowpea	Adama West Africa Ltd., Accra
30.	Okumanonom72 WP	PCL/2135/2224G September 2021	Cuprous Oxide (60%) + Metalaxyl (12%)	III	Fungicide for the control of blackpoddisease in cocoa	K. Badu Agrochemicals, Kumasi
31.	Omnizeb 80WP	PCL/21239/2175G July 2021	Mancozeb (800g/kg)	III	Fungicide for thecontrol of late blight and downy mildew in sweetpotato andcucumber	OmniFert Ltd., Labone-Accra
32.	Orvego	PCL/21206/2150G July 2021	Ametoctradin (300g/l) + Dimethomorph (225g/l)	II	Fungicide for the control of blackpoddisease in cocoa	Josann Agro Consult Ltd., Accra
33.	Othello Top	PCL/21275/2194G August 2021	Azoxystobin (20%) + Defenoconazole (12.5%)	III	Fungicide for the control of early blightin tomato	Dizengoff Ghana Ltd., Accra
34.	Pilartep Sky	PCL/21260/2024G May 2021	Tebuconazole (230g/l) + Pyraclostrobin (115g/l)	III	Fungicide for the control of anthracnose and leaf blight in mango and maize	Sky Agro Science & Solution, Accra
35.	Pilarxanil Sky	PCL/21260/2022G May 2021	Dimethomorph (500g/) + Cymoxanil (200g/kg)	III	Fungicide for the control of late blightin potato and tomato	Sky Agro Science & Solution, Accra
36.	Previcur Energy840 SC	PCL/21183/2300G November 2021	Propamocarb (530g/l) + Fosetyl (310g/l)	III	Fungicide for the control of *Pythiumspp.* in tomato	Bayer West-Central Africa S.A., Accra
37	Proch	PCL/21249/2093G	Prochloraz (267g/l) +	III	Fungicide for the control	Karida Agro

.		May 2021	Tebuconazole (133g/l)		of rice blast,blackspot and banana freckle disease in rice, treecrops and banana	Trading Co. Ltd., Kumasi
38.	Rescue 76WP	PCL/2108/1944G March 2021	Propineb (70g/l) + Cymoxanil (6g/l)	II	Fungicide for thecontrol of fungal diseases in crops	Dizengoff Ghana Ltd., Accra
39.	Scholar 230SC	PCL/2106/2277G October 2021	Fludioxonil (230g/l)	II	Fungicide for the control of *Penicillum spp., Cladosporium spp.* and *Colletotrichumspp* in banana	Calli Ghana Co. Ltd., Accra
40.	Shori 437.5 SC	PCL/21275/2193G August 2021	Metalaxyl-M (37.5g/kg) + Chlorothalonil (400g/kg)	III	Fungicide for the control of early blightin tomato	Dizengoff Ghana Limited,Accra
41.	Skope 370 WP	PCL/21213/2240G October 2021	Mancozeb (320g/kg) + Azoxystrobin (50g/kg)	III	Fungicide for the control of leafspotin tomato	Crop Doctor Ghana Ltd., Kumasi
42.	Splendid 800EC	PCL/2199/2200G August 2021	Spiroxamine (800g/l)	U	Fungicide for the control of black sigatoka in banana	Rainbow AgroSciences Co.Ltd., Tema
43.	Sul-care	PCL/21145/2006G May 2021	Sulphur (80%)	III	Fungicide/Acaricide for the control of powdery mildew andspider mites in vegetables, fruit treesand field crops	Jubaili Agrotec Ltd, Kumasi
44.	Sun-Azodi	PCL/2157/2266G October 2021	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	II	Fungicide for the control of downy mildew and white mould in tomato	Wynca Sunshine AgricPdts., Accra
45.	Sun-Cotala WP	PCL/2157/2267G October 2021	Mancozeb (480g/kg) + Metalaxyl (100g/kg)	III	Fungicide for the control of angular leaf spot in cucumber	Wynca Sunshine AgricPdts., Accra
46.	Sun-Dazim	PCL/2157/1955R April 2021	Carbendazim (500g/kg)	III	Fungicide for the control of anthracnose and downy mildew in onion, cabbage and cucumber	Wynca Sunshine Agric.Products & Trading Co. Ltd., Accra
47.	Sun-Mycin	PCL/2157/2048G May 2021	Validamycin (10%)	III	Fungicide for the control of *Ustilaginoidea virens*in rice	Wynca Sunshine Agric.Products & Trading Co. Ltd., Accra
48.	Sun-Tebu	PCL/2157/2045G May 2021	Tebuconazole (60g/l)	III	Fungicide for the control of fungal diseases in wheat, sorghum and maize	Wynca Sunshine Agric.Products & Trading Co. Ltd., Accra
49.	Sunko pper 77WP	PCL/2157/2269G October 2021	Copper hydroxide (770g/kg)	III	Fungicide for the control of downy mildew and angular leaf spot in cucumber	Wynca Sunshine AgricPdts., Accrai
50.	Suntop 700 WP	PCL/2157/2215G September 2021	Thiophanate-methyl (70%)	III	Fungicide for the control of diseases in cereals, vegetables and legumes	Wynca Sunshine Agric.Products & Trading Co. Ltd., Accra
51.	Swift 77 WP	PCL/21213/1962G April 2021	Copper hydroxide (77%)	III	Fungicide for the control of blackpod disease in cocoa	Crop Doctor, Kumasi

52.	Topcare	PCL/21149/2313G December 2021	Mancozeb (640g/kg) + Metalaxyl (80g/kg)	III	Fungicide for the control of early blightin tomato	Bon Agro Co. Ltd., Kumasi
53.	Tops-M 70 WP	PCL/2143/2001G May 2021	Thiophanate-methyl (700g/kg)	III	Fungicide for the control of potato blight, leafspot, scaband rust on roses, cereals, vegetables and fruit trees	Kumark Agrochemical Co. Ltd., Kumasi
54.	Top Pro	PCL/21249/2257G October 2021	Chlorothalonil (75%)	II	Fungicide for the control of early blight, downy mildew in cucumber	NGC Karida Agro Trading Co. Ltd., Kumasi
55.	Valis Plus	PCL/21275/2190G August 2021	Valifenalate (60g/kg) + Copper oxychloride (150g/kg) + Copper hydroxide (150g/kg)	III	Fungicide for the control of blackpod disease in cocoa	Kaddy Ventures, Accra
56.	Waaf-cozeb 80 WP	PCL/21108/2053G May 2021	Mancozeb (80%)	III	Fungicide for the control of late blight and downy mildew inpotato and cucumber	Waaf Agro Limited, Techiman
57.	X-Glider	PCL/21137/2331G December 2021	Azoxystrobin (200g/l) + Difenoconazole (125g/l)	III	Fungicide for the control of anthracnose in watermelon	Miqdadi Co. Ltd., Accra

(B) Provisionally Cleared Pesticides (PCL)

(B3) Herbicides

No.	Trade Name	Registration No. / Date of Issue	Concentration ofActive Ingredient	Hazard Class	Uses	Local Distributor
1.	Adwuma Beba 41SL	PCL/21259/1986G May 2021	Glyphosate(41%)	III	Herbicide for the control of broadleafgrasses, herbaceousplants and some conifers in cereals, vegetables andsugarcane	Third Row Co. Ltd. Kumasi
2.	Adwuma Boss 48SL	PCL/21249/2274G October 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses infield crops	NGC Karida Agro TradingCo. Ltd., Kumasi
3.	Adwuma Boss-G	PCL/21249/2244G October 2021	Glyphosate(75.7g/kg)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in citrus	NGC Karida Agro TradingCo. Ltd., Kumasi
4.	Adwumafoo Nti	PCL/21265/2146G June 2021	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inarable and tree crops	Bryt Lord Trading Enterprise, Kumasi
5.	Adwuma Master48 SL	PCL/2181/1996GMay 2021	Glyphosate(480g/l)	III	Herbicide for the control of broadleaf grasses, herbaceous plants and conifers incereals, vegetables and sugarcane	B. Kaakyire Agrochemical Ltd., Kumasi
6.	Adwuma Ne Wura	PCL/2123/1868G February 2021	Glyphosate(41%)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in arables	Thomhcof Enterprise, Kumasi
7.	Adwuma Nkoso48 SL	PCL/21233/1892G February 2021	Glyphosate(48%)	III	Herbicide for the control of broadleaf weeds and grasses incereals and vegetables	AB Benaldo Trading Enterprise,

						Kumasi
8.	Adwuma Sky 480 SL	PCL/21260/2025GMay 2021	Glyphosate IPA(41%)	III	Herbicide for the control of annual andperennial grasses, broadleaves and sedges in plantation, field crops and ornamentals	Sky Agro Science & Solution, Accra
9.	Altisate 41SL	PCL/21121/1917G February 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds in arable crops	Altimate Agrochemicals Co. Ltd, Somanya
10.	Agradaa	PCL/21213/1816G March 2021	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in okra, fruits andvegetables	Crop Doctor, Kumasi
11.	Agrazine 80 WP	PCL/2155/2280R October 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual broadleaf weeds and grasses in maize and sorghum	Louis Dreyfus Co. Gh. Ltd., Tema
12.	Agrazine 500 SC	PCL/2155/2279R October 2021	Atrazine(500g/l)	II	Herbicide for the control of annual broadleaf weeds and grasses in maize and sorghum	Louis Dreyfus Co. Gh. Ltd., Tema
13.	Agrifly	PCL/21145/2332G December 2021	Bispyribac-sodium(40%)	III	Herbicide for the control of annual, perennial grasses, broadleaf weeds andsedges in rice	Jubaili Agrotec Ltd.,Kumasi
14.	Agri Force	PCL/21145/2004GMay 2021	Bispyribac-sodium(20%)	III	Herbicide for the control of grasses, broadleaf weeds andsedges in rice	Jubaili Agrotec Limited,Kumasi
15.	Altisate 41SL	PCL/21121/1917G March 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inarable crops	Altimate AgrochemicalCo. Ltd., Somanya
16.	Aminoforce Granule	PCL/21145/1903G February 2021	2, 4-D SodiumSalt (950g/kg)	III	Herbicide for the control of broadleafweeds and sedges inmaize, sugarcane, citrus	Jubaili Agrotech, Kumasi
17.	Andykus 80WP	PCL/2123/1870R February 2021	Atrazine (800g/kg)	II	Pre or early postemergent herbicidefor the control of weeds in maize	Thomhcof Enterprise, Kumasi
18.	Arrow 400 OD	PCL/2108/1938G March 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annual grasses and broadleafweeds in maize	Dizengoff Ghana Ltd.,Accra
19.	Atraben 50 SC	PCL/2186/2017RMay 2021	Atrazine(50%)	II	Herbicide for the control of broadleaf weeds and grasses invegetables, cereals and sugarcane	AB Benaldo Trading Ent., Kumasi
20.	Atraben 80 WP	PCL/2186/2016RMay 2021	Atrazine(80%)	II	Herbicide for the control of broadleaf weeds and grasses invegetables, cereals and sugarcane	AB Benaldo Trading Ent., Kumasi
21.	Atracrown	PCL/21229/1895R February 2021	Atrazine(500g/l)	II	Herbicide for thecontrol of annual, perennial broadleaf weeds and grasses inmaize and othercereals	Agro CrownWest AfricaCo. Ltd., Kumasi
22.	AtraCrown	PCL/20229/1862R February 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual grasses and broadleaf weeds inmaize	Agro CrownWest AfricaCo. Ltd., Kumasi
23.	Atraforce 80WP	PCL/21145/2132R June 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses inmaize	Jubaili Agrotec Ltd.,Kumasi

					and sugarcane	
24.	Atraking 80 WP	PCL/2199/2232R October 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual, perennial broadleaf weeds in maize, sorghum, sugarcane and yam	Rainbow AgrosciencesCo. Ltd., Tema
25.	Atraking 500 SC	PCL/2199/2233R October 2021	Atrazine(500g/l)	II	Herbicide for the control of annual broadleaf weeds and grasses in maize, sorghum, sugarcane and yam	Rainbow AgrosciencesCo. Ltd., Tema
26.	Atraplus 600 SC	PCL/2199/1888R February 2021	Atrazine 300g/l + Terbuthylazine 300g/l	II	Herbicide for the control of broadleaf weeds and grasses inmaize and sorghum	Rainbow AgrosciencesCo. Ltd. Tema
27.	Atrazila 500SC	PCL/2143/1879R February 2021	Atrazine(500g/l)	II	Herbicide for the control of annual,perennial grassesand broadleaf weeds in arable crops	Kumark Company Ltd. Kumasi
28.	Atrazila 80WP	PCL/2143/1878R February 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual,perennial grassesand broadleaf weeds in arable crops	Kumark Company Ltd. Kumasi
29.	Atrazine 80 WP	PCL/2105/2104RMay 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual grasses and broadleaf weeds in maize, sorghum andpineapple	Chemico Limited, Tema
30.	Atrazine 500 SC	PCL/2105/2103RMay 2021	Atrazine(500g/l)	II	Herbicide for the control of annual grasses and broadleaf weeds inmaize, sorghum, sugarcane and pineapple	Chemico Limited, Tema
31.	Batrazine 80WP	PCL/2181/1909G March 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual, perennial grasses and broadleaf weedsin maize and sugarcane	B. Kaakyire Agrochemicals, Kumasi
32.	Bazir Super 24 SL	PCL/2181/2000GMay 2021	Imazethapyr(240g/l)	III	Herbicide for the control of broadleaf grasses, herbaceous plants and conifers incereals and vegetables	B. Kaakyire Agrochemical Ltd., Kumasi
33.	Bellazine 500SC	PCL/2105/2105RMay 2021	Atrazine (250g/l) + Cyanazine(250g/l)	II	Herbicide for the control of annual grasses and broadleaf weeds inmaize and sugarcane	Chemico Limited, Tema
34.	Beta Super 40 SC	PCL/2182/1952G April 2021	Bispyribac-sodium (400g/l)	III	Herbicide for the control of broadleafweeds in maize, sorghum, sugarcaneand rice	Cropstar Enterprise, Kumasi
35.	Bonbuta	PCL/21149/2083GMay 2021	Butachlor(500g/l)	III	Herbicide for the control of annual broadleaf weeds and grasses in rice, groundnut, soybean and vegetables	Bon AgroCo. Ltd., Kumasi
36.	Bondiuron	PCL/21149/1828G February 2021	Diuron(80%)	II	Herbicide for the control of annualweeds in cotton	Bon Agro Company Ltd., Kumasi
37.	Bonfop EC	PCL/21149/2077GMay 2021	Haloxyfop-P-methyl (104g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in pineapple, vegetables, soybeanand cotton	Bon AgroCo. Ltd., Kumasi
38.	Bon Proplus	PCL/21149/2081GMay 2021	Propanil (360g/l) + 2, 4-D Amine(200g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in rice	Bon Agro Co. Ltd.,Kumasi

					and field crops	
39.	BonNico	PCL/21149/1874G February 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annual,perennial grassesand broadleaf weeds in maize	Bon AgroCo. Ltd., Kumasi
40.	Bonquat 276 SL	PCL/21149/1875R February 2021	Paraquat(276g/l)	II	Herbicide for the control of annual,perennial grassesand broadleaf weeds in cereals and vegetables	Bon AgroCo. Ltd. Kumasi
41.	Bon Riz	PCL/21149/1827G February 2021	Bispyribac- sodium (400g/l)	II	Herbicide for thecontrol of annual broadleafweeds in rice	Bon Agro CompanyLtd., Kumasi
42.	Bonzine 80 WP	PCL/21149/1872R February 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals	Bon AgroCo. Ltd. Kumasi
43.	ButaCrown 50 EC	PCL/21229/2160G July 2021	Butachlor(500g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in rice	Agro CrownCo. Ltd., Kumasi
44.	Bonzine 500 SC	PCL/21149/1829RMay 2021	Atrazine(500g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in maize, sorghum,sugarcane and yam	Bon AgroCo. Ltd. Kumasi
45.	Bromadoc	PCL/21213/2118G June 2021	Bromacil(800g/kg)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in food crops, tree cropsand plantations	Crop Doctor Ghana Ltd., Kumasi
46.	Burnsate 41 SL	PCL/2196/1989GMay 2021	Glyphosate(41%)	III	Herbicide for the control of broadleaf weeds and grasses in creals, vegetables and sugarcane	Enepa Ventures Ltd.,Kumasi
47.	Butabak 50 EC	PCL/2181/2179G July 2021	Butachlor(50%)	III	Herbicide for the control of annual broadleaf weeds in cereals and vegetables	B. Kaakyire Agrochemical Ltd., Kumasi
48.	Butadoc	PCL/21213/1923G March 2021	Butachlor(500g/l)	III	Herbicide for the control of annual grasses, broadleaf weeds and sedges indirect and transplanted rice fields	Crop Doctor, Kumasi
49.	Buta Super	PCL/2125/1951G April 2021	Butachlor(500g/l)	III	Herbicide for the control of annualweeds in rice	Bentronic Productions, Kumasi
50.	Butali Super	PCL/21249/2090GMay 2021	Butachlor(500g/l)	III	Herbicide for the control barnyardgrass in rice	Karida Agro Trading Co. Ltd., Kumasi
51.	By Day 40 OD	PCL/2123/1869G February 2021	Nicosulfuron(40%)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in corn, sugarcane, sorghum and pineapple	Thomhcof Enterprise, Kumasi
52.	Cleaner 40 OD	PCL/21158/2177G July 2021	Nicosulfuron(40%)	II	Herbicide for the control of broadleaf weeds and grasses incereals, vegetables and sugarcane	ETC Agro Ghana Ltd., Accra
53.	Council Activ 30WG	PCL/21183/1968GMay 2021	Triafamone (15%) + Ethoxysulfuron(15%)	II	Herbicide for the control of grasses, sedges and broadleaf weeds in transplantedand direct-seeded rice	Bayer West-Central Africa SA., Accra
54.	Crownquat	PCL/20229/1861R February 2021	Paraquat dichloride (276g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses infield	Agro CrownWest AfricaCo. Ltd., Kumasi

					crops	
55.	Crownsate	PCL/20229/1859G February 2021	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses infield crops	Agro CrownWest AfricaCo. Ltd., Kumasi
56.	Cynaplus SC	PCL/2199/2162R July 2021	Atrazine (250g/l) + Cyanazine (250g/l)	II	Herbicide for the control of annual broadleaf weeds in maize	Rainbow AgroSciences Co. Ltd., Tema
57.	Dalot 240 EC	PCL/2181/1997GMay 2021	Clethodim(240g/l)	III	Herbicide for the control of annual andperennial grasses in cereals, vegetables and sugarcane	B. Kaakyire Agrochemical Ltd., Kumasi
58.	Dawude 480 SL	PCL/2025/1854G February 2021	Glyphosate IPASalt (480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses incereals	Bentronic Productions, Kumasi
59.	Decal 11 OD	PCL/2143/1953G April 2021	Trifloxysulfuron-sodium (11g/l)	III	Herbicide for the control of broadleafweeds and herbaceous plants incereals, vegetables and sugarcane	Kumark AgrochemicalCo. Ltd., Kumasi
60.	Diuron Super 80WP	PCL/21249/2245G October 2021	Diuron(80%)	II	Herbicide for the control of broadleafweeds in sugarcane	NGC Karida Agro TradingCo. Ltd., Kumasi
61.	Diuron Xtra	PCL/21229/1898G February 2021	Diuron(80%)	II	Herbicide for thecontrol of annual broadleaf weeds and grassesin vegetables and cereals	Agro CrownWest AfricaCo. Ltd., Kumasi
62.	Diz-Paraquat 20SL	PCL/2108/1948G March 2021	Paraquat dichloride (200g/l)	II	Herbicide for the control of annual,perennial weeds and grasses in cereals and fruits	Dizengoff Ghana Ltd.,Accra
63.	Dojia	PCL/21184/2112G June 2021	Haloxyfop-R- methyl (108g/l)	III	Herbicide for the control of annual andperennial weeds in soybean	Ganorma Agrochemicals Ltd., Tamale
64.	Dzokpata SL	PCL/2199/1889R February 2021	Paraquat dichloride (276g/l)	II	Herbicide for thecontrol of broadleafweeds and grasses inplantain and tree crops	Rainbow AgrosciencesCo. Ltd. Tema
65.	Eagrowamine	PCL/21264/2226G September 2021	2,4-D Amine Salt(860g/l)	III	Herbicide for the control of annual broadleaf weeds in maize	Kesai Eagrow Ghana Co.Ltd., Tema
66.	Eagrowfome	PCL/21264/2312G December 2021	Fomesafen(20%)	III	Herbicide for the control of annual broadleaf weeds in soybean	Kesai Eagrow Ghana Co.Ltd., Tema
67.	Eagrowhawk	PCL/21264/1929R March 2021	Paraquat(200g/l)	II	Herbicide for the control of annual weeds in sugarcane, orchard and non-crop lands	Kesai Eagrow Ghana Co. Ltd., Tema
68.	Eagrownico	PCL/21264/1928G March 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annualweeds in maize	Kesai Eagrow Ghana Co. Ltd., Tema
69.	Eagrowatr	PCL/21264/2149R July 2021	Atrazine(80%)	II	Herbicide for the control of annual weeds in maize, yam and sugarcane	Kesai Eagrow Ghana Co.Ltd., Tema
70.	Eagrowprey	PCL/21264/2227R September 2021	Atrazine(90%)	II	Herbicide for the control of annualweeds in maize	Kesai Eagrow Ghana Co. Ltd., Tema
71.	Eagrowpunch	PCL/21264/2228G September 2021	Glufosinate- ammonium (60%) + Flumioxazin (6%)	II	Herbicide for the control of weeds infallow lands for maize cultivation	Kesai Eagrow Ghana Co. Ltd., Tema
72.	Eagrowquin	PCL/21264/2147G July 2021	Quinclorac (50%) + Pyrazosulfuron-ethyl (4%)	III	Herbicide for the control of annualweeds in rice	Kesai Eagrow Ghana Co. Ltd., Tema

73.	Eagrow Up	PCL/21264/1871G February 2021	Glyphosate(41%)	III	Herbicide for the control of annual,perennial weeds and broadleaf grasses in citrus and non-plough land	Kesai Eagrow Ghana Co.Ltd., Comm. 11,Tema
74.	Eagrowrice	PCL/21264/2148G July 2021	Butachlor(50%)	II	Herbicide for the control of annualweeds in rice	Kesai Eagrow Ghana Co. Ltd., Tema
75.	Eagrowunion	PCL/21264/2229R September 2021	Nicosulfuron (1.5%) + Mesotrione (4.5%) + Atrazine (25%)	II	Herbicide for the control of annualweeds in maize	Kesai Eagrow Ghana Co. Ltd., Tema
76.	Easyclear	PCL/21264/1930G March 2021	Glyphosate Ammonium (88%)	III	Herbicide for the control of annual weeds in non-crop lands	Kesai Eagrow Ghana Co.Ltd., Tema
77.	Emowura	PCL/21213/2120G June 2021	Bispyribac-sodium (400g/l)	III	Herbicide for the control of broadleaf weeds, sedges and aquatic weeds in ricefields	Crop Doctor Ghana Limited, Kumasi
78.	Faaco	PCL/21184/2107G June 2021	Imazethapyr 240g/l	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in soybean	Ganorma Agrochemicals Ltd., Tamale
79.	Farm Up 41 SL	PCL/21259/1992GMay 2021	Glyphosate(41%)	III	Herbicide for the control of broadleafweeds, grasses, herbaceous plants, shrubs and some conifers in cereals, vegetables and sugarcane	Third RowCo. Ltd., Kumasi
80.	Fastherb 720SL	PCL/21249/2246G October 2021	2,4-D Amine(720g/l)	III	Herbicide for the control of broadleafweeds in rice	NGC Karida Agro TradingCo. Ltd., Kumasi
81.	Fast Fast	PCL/21184/2108R June 2021	Paraquat dichloride (276g/l)	II	Herbicide for the control of annual grasses and broadleafweeds in maize	Ganorma Agrochemicals Ltd., Tamale
82.	Flitzer 563 SP	PCL/21100/2156G July 2021	Bispyribac sodium (20g/kg) + 2,4-D Sodium salt(543g/kg)	III	Herbicide for the control of annual grasses and broadleafweeds in rice	Adama West Africa Ltd., Accra
83.	Flysate	PCL/21145/2196G August 2021	Glyphosate(41%)	III	Herbicide for the control of annual, perennial weeds in cereals and vegetables	Jubaili Agrotec Ltd.,Kumasi
84.	Foly'R	PCL/2106/2276G October 2021	Clethodim(120g/l)	III	Herbicide for the control of annual andperennial grasses in pepper	Calli GhanaCo. Ltd., Accra
85.	ForceUp Granular	PCL/21145/2131G June 2021	Glyphosate Mono-ammoniumsalt (757g/kg)	III	Herbicide for thecontrol of annualand perennial weeds in citrus	Jubaili Agrotec Ltd., Kumasi
86.	Forcetop	PCL/21145/1904G February 2021	Pendimethalin(330g/l)	III	Herbicide for the control of annual andperennial weeds in maize and cotton	Jubaili Agrotec Ltd., Kumasi
87.	Franko 2, 4-D	FRE/2139/1978GMay 2021	2,4-D Amine Salt(720g/l)	II	Herbicide for the control of broadleaf weeds and sedges in rice, maize, sorghum,millet and sugarcane	Frankatson Limited, Accra
88.	Frankoquat	PCL/2139/1963R April 2021	Paraquat dichloride (200g/l)	II	Herbicide for the control of broadleaf weeds in cereals andvegetables	FrankatsonLtd., Accra
89.	Frankozine	PCL/2139/2187R July 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in maize	FrankatsonLtd., Accra
90.	Gallon 480 EC	PCL/2181/1998GMay 2021	Triclopyr(480g/l)	III	Herbicide for the control of broadleafweeds in cereals, vegetables and sugarcane	B. Kaakyire Agrochemical Ltd., Kumasi

91.	Ganostom	PCL/21184/2109G June 2021	Pendimethalin(400g/l)	III	Herbicide for the control of annual grasses and broadleafweeds in maize	Ganorma Agrochemicals Ltd., Tamale
92.	Glofert 2,4-D	PCL/21281/2309G December 2021	2,4-D Amine Salt(720g/l)	II	Herbicide for the control of annual andperennial broadleaf weeds and grasses inrice	Glofert Co.Ltd., Accra
93.	Glofert-control	PCL/21281/2310G December 2021	Quizalofop-P-ethyl (125g/l)	II	Herbicide for the control of annual andperennial weeds and grasses in soyabean	Glofert Co.Ltd, Accra
94.	Glofuron	PCL/21281/2154G July 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annualweeds in maize	Glofert Company Limited, Accra
95.	Glosate	PCL/21281/2155G July 2021	Glyphosate IPA(480g/l)	III	Herbicide for the control of annual and perennial weeds in teaplantation, noncropland and citrus orchards	Glofert Company Limited, Accra
96.	Glyphocel 480 SL	PCL/21158/2035GMay 2021	Glyphosate(48%)	III	Herbicide for the control of broadleaf grasses and herbaceous weeds incereals, sugarcane and vegetables	ETC Agro Ghana Limited, Accra
97.	Glyphosate Technical 95%	PCL/21260/2299G November 2021	Glyphosate(95%)	II	Raw material for the formulation of herbicide	August Prosperity Co. Ltd., Kumasi
98.	Gramoking 276SL	PCL/2199/2234R October 2021	Paraquat dichloride (276g/l)	II	Herbicide for the control of grasses and broadleaf weeds in tree crops,maize, cowpea, cotton and pineapple	Rainbow Agrosciences Co. Ltd., Tema
99.	Grammorow 200SL	PCL/21259/1985GMay 2021	Paraquat dichloride(20%)	II	Herbicide for the control of broad- spectrum weeds in cereals, vegetables and fruit trees	Third RowCo. Ltd., Kumasi
100.	Gramoda Super	PCL/21249/2248R October 2021	Paraquat(200g/l)	II	Herbicide for the control of annual,perennial grassesand broadleaf weeds in maize	NGC Karida Agro TradingCo. Ltd., Kumasi
101.	Gramoquin Super	PCL/20237/1852R February 2021	Paraquat dichloride (276g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses inarable crops	K.K Rich Enterprise, Kumasi
102.	Gramospark	PCL/21149/1809R February 2021	Paraquat dichloride (200g/l)	II	Herbicide for the control broadleafweeds and grasses inmaize and cotton	Bon Agro CompanyLtd., Kumasi
103.	Gramozap Super276 SL	PCL/21261/2029RMay 2021	Paraquat dichloride (27.6%)	II	Herbicide for the control of weeds incereals, vegetables and fruit trees	Zapware Ventures,Accra
104.	Gran Super	PCL/21271/2298R November 2021	Paraquat(276g/l)	II	Herbicide for the control of grasses andother weeds in arablecrops	Boasiako Agro Services, Kumasi
105.	Granherb 2,4-D72 SL	PCL/21271/2307G December 2021	2, 4-D Amine Salt(720g/l)	II	Herbicide for the control of broadleaf weeds in cereals andvegetables	Boasiako Agro Services, Kumasi
106.	Granpronil Plus56 EC	PCL/21271/2306G December 2021	Propanil (360g/l) +2, 4-D Amine salts(200g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds in rice	Boasiako Agro Services, Kumasi
107.	Granzine 500 SC	PCL/21271/2303R December 2021	Atrazine(500g/l)	II	Herbicide for the control of broadleaf weeds and grasses incereals	Boasiako Agro Services, Kumasi
108.	Granzine Super80 WP	PCL/21271/2308R December 2021	Atrazine (800g/kg)	II	Herbicide for the control of broadleaf weeds and grasses in cereals and vegetables	Boasiako Agro Services, Kumasi

109.	Grassphosate	PCL/21255/2195G August 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in maize	Kedge Company Ltd., Accra
110.	Groquat Super 27.6 SL	PCL/21175/1933R March 2021	Paraquat dichloride(20%)	II	Herbicide for the control of broadleafweed and grasses incereals, vegetables and fruit trees	Wamwus Agropham Ltd, Kumasi
111.	Guardforce	PCL/21145/2334G December 2021	Nicosulfuron(75%)	III	Herbicide for the control of annual, perennial grasses, broadleaf weeds inmaize	Jubaili Agrotec Ltd.,Kumasi
112.	Hadop	PCL/21249/2249G October 2021	Haloxyfop-methyl(108g/l)	III	Herbicide for the control of annual and perennial grass weeds in watermelon, onions, cabbage, groundnut and soybean	NGC Karida Agro TradingCo. Ltd., Kumasi
113.	Hao Nico	PCL/20258/1848G February 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in maize	AgrohaoGhana Co. Ltd.,Kumasi
114.	Haoquat 276 SL	PCL/20258/1847R February 2021	Paraquat(276g/l)	II	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in maize and non-crop land	Agrohao Ghana Co. Ltd., Kumasi
115.	Haothapyr	PCL/20258/1845G February 2021	Imazethapyr(240g/l)	III	Herbicide for the control of annual grasses and broadleafweeds in soyabean	Agrohao Ghana Co. Ltd., Kumasi
116.	Haosate	PCL/20258/1843G February 2021	Glyphosate (480g/l)	III	Herbicide for the control of annual andperennial weeds in non-crop land	Agrohao Ghana Co.Ltd.
117.	Hao 2,4-D	PCL/20258/1844G February 2021	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleaf weeds and grasses inrice and maize	Agrohao Ghana Co.Ltd.
118.	Hapy	PCL/21249/2092GMay 2021	Imazethapyr(100g/l)	III	Herbicide for thecontrol of annualweeds in soybean and groundnut	Karida Agro Trading Co.Ltd., Kumasi
119.	Hapy Plus	PCL/21249/2096GMay 2021	Imazethapyr(240g/l)	III	Herbicide for the control of broadleaf weeds and grasses insoybean and groundnut	Karida Agro Trading, Kumasi
120.	Herbamine 720SL	PCL/20237/1851G February 2021	2,4-D Amine salt(720g/l)	II	Herbicide for the control of broadleaf weeds in cereals andsugarcane	K.K Rich Enterprise, Kumasi
121.	Herbacrown	PCL/20229/1860G February 2021	2,4-DimethylAmine salt (720g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses infield crops	Agro CrownWest AfricaCo. Ltd., Kumasi
122.	Herbasky 720 SL	PCL/21260/2026GMay 2021	2,4-D Amine Salt(720g/l)	II	Herbicide for the control of annual broadleaf weeds in rice, maize, sorghum, sugarcane, oil palm and grassland	Sky Agro Science & Solution, Accra
123.	Herba 2,4-D Amine	PCL/21260/1981GMay 2021	2,4-D Amine Salt(720g/l)	II	Herbicide for the control of barnyard grass*, Eriochloa villosa, Chemopodium album, Polygonum, Amaranth,* weeds in cereals, grain fields and non-crop lands	August Prosperity Company Ltd., Kumasi
124.	Intter 75WDG	PCL/21234/1972GMay 2021	Glyphosate(75%)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in eucalyptus	Miro Forestry (Ghana) Ltd., Agogo
125.	Inttri	PCL/21234/1971GMay	Triclopyr(500g/l)	III	Herbicide for thecontrol of	Miro Forestry

		2021			woodyshrubs in eucalyptus	(Ghana)Ltd., Agogo
126.	Invesate	PCL/21276/2153G July 2021	Glyphosate IPA(480g/l)	III	Herbicide for the control of weeds in tea plantations, citrusorchards and non- crop land	Invess Agriculture Limited, Accra
127.	Invess-control	PCL/21276/2063GMay 2021	Quizalofop-p-ethyl(125g/l)	III	Herbicide for the control of annual weeds in soybean, peanut and cotton	Invess AgricultureLtd., Accra
128.	Invess 2,4-D	PCL/21276/2032GMay 2021	2,4-D Amine(720g/l)	II	Herbicide for the control of broadleafweeds and sedges inrice and non-crop lands	Invess AgricultureLtd., Accra
129.	Kaba Plus 56 EC	PCL/2181/2058GMay 2021	Propanil (360g/l) +2,4-D Amine Salt (200g/l)	II	Herbicide for the control of broadleaf grasses, herbaceous plants and some confers in cereals and vegetables	B. Kaakyire Agrochemical Ltd., Kumasi
130.	Invessnico	PCL/21276/2033GMay 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of broadleaf weeds and grasses inmaize	Invess AgricultureLtd., Accra
131.	Jetter	PCL/2025/1864G February 2021	mazethapyr(100g/l)	III	Herbicide for the control of annual, perennial grass and broadleaf weeds insoybean and groundnut	Bentronic Productions, Kumasi
132.	Kabafla 234 SC	PCL/20185/1839G February 2021	Terbuthylazine (150g/l) + Mesotrione (84g/l)	III	Herbicide for the control of annualweeds in maize	RMG Ghana Limited, Accra
133.	Kaba Rice 25WP	PCL/2181/1999GMay 2021	Bensulfuron-methyl (5.6%) + Acetochlor (19.4%)	III	Herbicide for the control of broadleaf grasses, herbaceous plants and conifers incereals and vegetables	B. Kaakyire Agrochemical Ltd., Kumasi
134.	Karisate	PCL/21249/2097GMay 2021	Glyphosate IPA Salt (480g/l)	III	Herbicide for the control of barnyard grass, *Eriochloa villosa, Chenopodiumalbum, Polygonum* and amaranth in corn	Karida Agro Trading, Kumasi
135.	Kingfop	PCL/21258/2123G June 2021	Haloxyfop-P-methyl (104g/l)	III	Herbicide for the control of annual perennial broadleaf weeds and grasses in pineapple, vegetables, soybean and cotton	Agrohao Ghana Co.Ltd., Kumasi
136.	Kingforce	PCL/20258/1846G February 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals, vegetables and fruit trees	Agrohao Ghana Co.Ltd., Kumasi
137.	Kingforce	PCL/21258/2055GMay 2021	Glyphosate(750g/kg)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses innon-crop lands	Agrohao Ghana Co. Ltd., Kumasi
138.	King Kong	PCL/21149/1876G February 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses in cereals, vegetables and fruit trees	Bon Agro CompanyLtd. Kumasi
139.	KingKong Granules	PCL/21149/2079GMay 2021	Glyphosate(757g/kg)	III	Herbicide for the control of annual, perennial broadleaf weeds, sedges and grasses in arable crops	Bon Agro Co. Ltd., Kumasi
140.	KingProplus	PCL/21258/2294G	Propanil (360g/l)	III	Herbicide for the control of	Agrohao Ghana

		November 2021	+ 2, 4-D Amine(200g/l)		annual, perennial broadleaf weeds and grasses in rice	Co.Ltd., Kumasi
141.	Kingriz	PCL/21258/2124G June 2021	Butachlor(500g/l)	III	Herbicide for the control of annual grasses, broadleaf weeds and sedgesin rice	Agrohao Ghana Co.Ltd., Kumasi
142.	Kingzine	PCL/21258/2122R June 2021	Atrazine (800g/kg)	II	Herbicide for the annual grasses and broadleaf grasses inmaize, sugarcane and yam	Agrohao Ghana Co.Ltd., Kumasi
143.	Kontrol	PCL/21213/2198G August 2021	Pendimethalin(330g/l)	III	Herbicide for the control of annual grasses and broadleafweeds in cereals, fruits and vegetables	Crop Doctor Ghana Ltd., Kumasi
144.	Liberator 500 SC	PCL/21183/1969GMay 2021	Flufenacet (400g/l) + Diflufenican(100g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and sedges incotton	Bayer West-Central Africa S.A, Accra
145.	Loxy Crown	PCL/21229/2003GMay 2021	Haloxyfop-methyl(108g/l)	III	Herbicide for the control of annual andperennial grasses in onions, shallot, sweet potato, watermelon and cabbage	Agro CrownWest AfricaCo. Ltd., Kumasi
146.	Mega Plus 30 WP	PCL/2143/2002GMay 2021	Bensulfuron-methyl (120g/kg) + Bispyribac sodium (180g/kg)	III	Herbicide for the control of broadleaf grasses, herbaceous plants and conifers incereals and vegetables	Kumark AgrochemicalCo. Ltd., Kumasi
147.	Mestrong 480 SC	PCL/2199/2165G July 2021	Mesotrione(480g/l)	III	Herbicide for the control of annual weeds in maize and sorghum	Rainbow AgroSciences Co. Ltd., Tema
148.	Metrin 480 SC	PCL/2199/2327G December 2021	Metribuzin(480g/l)	III	Herbicide for the control of annualweeds in tomato	Rainbow AgroSciences Co. Ltd., Tema
149.	Mofarno 160EC	PCL/2108/1945G March 2021	Quizalofop-p-methyl (35g/l)	III	Herbicide for the control of annual grasses and broadleafweeds in soybean	Dizengoff Ghana Ltd.,Accra
150.	Namphosate	PCL/21262/1919G March 2021	Glyphosate(360g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inmaize	Nanam Ventures,Tema
151.	Nico-Besta	PCL/21108/2051GMay 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annual grasses and broadleafweeds in maize	Waaf Agro Limited, Techiman
152.	Nico Crown 40 OD	PCL/20229/1863G February 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annual grasses and broadleafweeds in maize	Agro CrownWest AfricaCo. Ltd.
153.	Nicoda 40 OD	PCL/21249/2253G October 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of weeds inmaize	NGC Karida Agro TradingCo. Ltd., Kumasi
154.	Nico Extra 40 OD	PCL/2186/2015GMay 2021	Nicosulfuron(40%)	III	Herbicide for the control of Annual, perennial broadleaf weeds and grasses vegetables, cereals and sugarcane	AB Benaldo Trading Ent., Kumasi
155.	Nicofly	PCL/21145/2333G December 2021	Nicosulfuron(4%)	III	Herbicide for the control of annual grasses and broadleafweeds in maize	Jubaili Agrotec Ltd.,Kumasi
156.	Nico-M	PCL/2027/1858G February 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annual broadleaf weeds in maize	Multivet (Gh) Ltd., Accra
157.	Nicoseed	PCL/21265/2171G	Nicosulfuron(40g/l)	III	Herbicide for the control of	YMDY Co.

		July 2021			annual grasses and broadleaf weeds inmaize	Ltd., Kumasi
158.	Nicosef	PCL/21135/2066GMay 2021	Nicosulfuron(40g/l)	III	Herbicide for the control of annual andperennial grasses andsome broadleaf weeds in maize	Sefa and Jane Agrochemical s, Kumasi
159.	Nwura Best	PCL/21260/1982GMay 2021	Glyphosate Ammonium Salt(715g/kg)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inmaize and non-crop lands	August Prosperity Company Ltd., Kumasi
160.	Nwura Condem	PCL/21279/2075GMay 2021	Glyphosate(41%)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in cereals and beans	Farmers Partner Co.Ltd., Accra
161.	Ogyama	PCL/21213/2243G October 2021	Haloxyfop-R- Methyl (70g/l)	II	Herbicide for the control of annual and perennial grass weeds in cassava	Crop Doctor Ghana Ltd., Kumasi
162.	Ohyew 55 EC	PCL/21213/2242G October 2021	Clethodim(55g/l)	III	Herbicide for the control of broadleafweeds and grasses in cassava	Crop Doctor Ghana Ltd., Kumasi
163.	Okuapamo SL	PCL/20273/1838G February 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in maize	Chobi Ghana Limited, Accra
164.	Omni 2, 4-D	PCL/21239/2175G July 2021	2, 4-D Amine Salt(50%)	II	Herbicide for the control of annual broadleaf weeds in cereals and sugarcane	OmniFertLtd., Labone-Accra
165.	Oxyflow 240 EC	PCL/21275/2192G August 2021	Oxyfluorfen(240g/l)	III	Herbicide for the control of broadleafweeds, grasses and sedges in mango	DizengoffGhana Limited, Accra
166.	Pantera 40EC	PCL/2106/1915G March 2021	Quizalofop-P- Tefuryl (40g/l)	II	Herbicide for thecontrol of annualand perennial grasses in vegetables and beans	Calli GhanaCo. Ltd., Accra
167.	ParaBest	PCL/21260/1980GMay 2021	Paraquat dichloride (276g/l)	II	Herbicide for the control of annual, perennial broadleaf weedsa and grasses innon-crop lands	August Prosperity Company Ltd., Kumasi
168.	ParaForce Super	PCL/21145/2009GMay 2021	Glufosinate- ammonium (20%)	III	Herbicide for the control of grasses andbroadleaf weeds in cereals, vegetables and fruit trees	Jubail Agrotec Limited, Kumasi
169.	Paraeforce 20SL	PCL/21145/2139R June 2021	Paraquat dichloride (200g/l)	II	Herbicide for thecontrol of grassesand broadleaf weeds in rice andvegetables	Jubaili Agrotec Ltd., Kumasi
170.	Parakin 276 SL	PCL/2199/2235R October 2021	Paraquat dichloride (276g/l)	II	Herbicide for the control of grasses and broadleaf weeds in tree crops,maize, cowpea, cotton and pineapple	Rainbow AgrosciencesCo. Ltd., Tema
171.	Paraq SL	PCL/2026/1842R February 2021	Paraquat dichloride(24%)	II	Herbicide for the control of broadleafweeds and grasses in arable crops	The CandelCo. Ltd., Accra
172.	Parasky Plus	PCL/21260/2021RMay 2021	Paraquat(200g/l)	II	Herbicide for the control of weeds incotton, sorghum, soybean and sunflower	Sky Agro Science & Solution, Accra
173.	Pendistomp 40 EC	PCL/2181/2178G July 2021	Pendimethalin(40%)	III	Herbicide for the control of annual broadleaf weeds in cereals and vegetables	B. Kaakyire Agrochemical Ltd., Kumasi
174.	Pergado	PCL/21227/2302G November 2021	Mandipropamid(125g/kg) + Metalaxyl-M (100g/kg)	III	Fungicide for the control of *Phytophtora megakarya and Phytophtora palmivora* in	Overseas Warehouse Ghana Ltd.,

					cocoa	Accra
175.	Prorice	PCL/21249/2087GMay 2021	2, 4 –D Isobutyl ester (200g/l) + Propanil (360g/l)	III	Herbicide for the control of grasses and broadleaf weeds in paddy rice	Karida Agro Trading Co. Ltd., Kumasi
176.	Pyribac Super 40SC	PCL/2186/2221G September 2021	Bispyribac-sodium (400g/l)	III	Herbicide for the control of perennialbroadleaf weeds in cereals, vegetables and sugarcane	Joyful Agro Services, Kumasi
177.	Rezim 80 WP	PCL/2199/2236R October 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual broadleaf weeds and grasses in maize, sorghum, sugarcane and yam	Rainbow AgrosciencesCo. Ltd., Tema
178.	Rezim Max 90 WG	PCL/2199/1887R February 2021	Atrazine(90%)	II	Herbicide for the control of broad leaved annual weeds and grasses in maize, sorghum,sugar cane and yam	Rainbow AgrosciencesCo. Ltd, Tema
179.	Rice-Adwuma	PCL/2157/2261G October 2021	Bispyribac-sodium (400g/l)	III	Herbicide for the control of annual,perennial grasses, broadleaf weeds and sedges in direct-seeded rice	Wynca Sunshine Agric Pdts., Accra
180.	Ricecare Super60 OD	PCL/2199/2201G August 2021	Cyhalofop-butyl(60g/l) + Penoxsulam (10g/l)	IV	Herbicide for the control of annual broadleaf weeds in transplanting and direct seeding ricefields	Rainbow AgroSciences Co. Ltd., Tema
181.	Rice Champion300 WP	PCL/2181/2038GMay 2021	Bensulfuron-methyl (120g/kg) + Bispyribac-sodium (180g/kg)	III	Herbicide for the control of broadleaf weeds and grasses in cereals and vegetables	B. Kaakyire Agrochemicals Ltd., Kumasi
182.	Rice Knoka	PCL/21213/2117G June 2021	Bensulfuron-methyl (100g/kg)	III	Herbicide for the control of broadleaf weeds, sedges and aquatic weeds in ricefields	Crop Doctor Ghana Ltd., Kumasi
183.	Rice Mega 400SC	PCL/21249/2255G October 2021	Bispyribac-sodium (400g/l)	III	Herbicide for thecontrol of grass weeds in rice	NGC Karida Agro Trading Co. Ltd.,Kumasi
184.	Rice Lord	PCL/21249/2095GMay 2021	Cyhalofop-butyl(150g/l) + Bispyribac- sodium (80g/l)	III	Herbicide for the control of broadleafweeds and grasses in rice	Karida Agro Trading Co. Ltd., Kumasi
185.	Rico	PCL/21145/2008GMay 2021	Pretilachlor (300g/l) + Pyribenzoxim(20g/l)	II	Herbicide for the control of weeds andsedges in rice	Jubaili Agrotec Ltd,Kumasi
186.	Rid-off 276 SL	PCL/2181/2223R September 2021	Paraquat dichloride (27.6%)	II	Herbicide for the control of weeds incereals, vegetables and fruit trees	B. Kaakyire Agrochemical Ltd., Kumasi
187.	Riz-Diz 100SC	PCL/2108/1943G March 2021	Bispyribac-sodium (100g/l)	III	Herbicide for the control of annual broadleaf weeds and grasses in rice	Dizengoff Ghana Ltd.,Accra
188.	Riz Masta 100SC	PCL/2199/2143G June 2021	Bispyribac sodium (100g/l)	III	Herbicide for the control of barnyardgrass, cyperus and broadleaf weeds inrice	Rainbow AgrosciencesCo. Ltd., Tema
189.	Seadasate	PCL/21265/2170G July 2021	Glyphosate(480g/l)	III	Herbicide for the control of annual, perennial grasses and broadleaf weeds in plantation crops, fruit trees and non-crop lands	YMDY Co. Ltd., Kumasi
190.	Sefaherb	PCL/21135/2065GMay 2021	2, 4-D Amine Salt(720g/l)	II	Herbicide for the control of broadleafweeds in maize, sorghum, rice and sugarcane	Sefa and Jane Agrochemicals Kumasi
191.	Sefasate 41SL	PCL/21135/1918G March 2021	Glyphosate(410g/l)	III	Herbicide for thecontrol of annualand perennial weeds in arable crops	Sefa and Jane Agrochemicals, Kumasi
192.	Sefazine	PCL/21135/2041RMay	Atrazine(80%)	II	Herbicide for the control of	Sefa and Jane

		2021			annual broadleaf weeds and grasses in maize	Agrochemicals Kumasi
193.	Sekoto 48 SL	PCL/2186/2012GMay 2021	Glyphosate(48%)	III	Herbicide for the control of broadleaf grasses, weeds, shrubs in vegetable, cereals and sugarcane	Joyful Agro Services, Kumasi
194.	Sekoto-G 757 SG	PCL/2186/2018GMay 2021	Glyphosate(75.7%)	III	Herbicide for the control of broadleaf grasses, weeds, shrubs in vegetables, cereals and sugarcane	Joyful Agro Services, Kumasi
195.	Sequat Super SL	PCL/21135/1926R March 2021	Paraquat(276g/l)	II	Herbicide for the control of annual andperennial weeds in arable crops	Sefa and Jane Agrochemicals Kumasi
196.	Shoot Stop	PCL/21249/2094GMay 2021	Pendimethalin(400g/l)	III	Herbicide for the comtrol of broadleaf weeds inrice, cabbage, cotton and maize	Karida Agro Trading Co. Ltd., Kumasi
197.	Siakopac Turbo40 SC	PCL/21271/2219G September 2021	Bispyribac-sodium (400g/l)	III	Herbicide for the control of perennialbroadleaf weeds in cereals, vegetables and sugarcane	Boasiako Agro Services, Kumasi
198.	Siakosate	PCL/21271/2297G November 2021	Glyphosate(46%)	III	Herbicide for the control of annual, perennial broadleaf weeds, grasses and sedges in arable crops	Boasiako Agro Services, Kumasi
199.	Soja Crown	PCL/21229/2013GMay 2021	Imazethapyr(240g/l)	III	Herbicide for the control of broadleaf weeds and grasses insoyabean and groundnut	Agro CrownWest AfricaCo. Ltd., Kumasi
200.	Skyanico 23 OF	PCL/21260/2020GMay 2021	Nicosulfuron (1%) + Atrazine (22%)	II	Herbicide for the control of annual andperennial grasses andbroadleaf weeds in maize	Sky Agro Science & Solution, Accra
201.	Smart	PCL/2125/2281G October 2021	Haloxyfop-P- methyl (108g/l)	III	Herbicide for the control of annual weeds in beans and other crops	Bentronic Productions, Kumasi
202.	Soja King 250 SL	PCL/2199/2142G June 2021	Fomesafen (250g/l)	III	Herbicide for the control of annual broadleaf weeds in soybean, beans and groundnuts	Rainbow Agrosciences Co. Ltd., Tema
203.	Sun-Aceto EC	PCL/2157/2262G October 2021	Acetochlor(900g/l)	III	Herbicide for the control of annual and perennial weeds in maize, soybean, cotton andpeanut	Wynca Sunshine Agric Pdts., Accra
204.	Sun-Ameso	PCL/2157/2263R October 2021	Atrazine (500g/l) + Mesotrione (50g/l)	II	Herbicide for thecontrol annual broadleaf weeds and grasses in maize	Wynca Sunshine Agric Pdts., Accra
205.	Sun-Atrazine 80WP	PCL/2157/2264R October 2021	Atrazine (800g/kg)	II	Herbicide for the control for annual, perennial grasses and broadleaf weeds in pineapple, maize and other cereals	Wynca Sunshine Agric Pdts., Accra
206.	Sun-Atrazine 500SC	PCL/2157/2265R October 2021	Atrazine(500g/l)	II	Herbicide for the control for annual, perennial grasses and broadleaf weeds in pineapple,maize and other cereals	Wynca Sunshine Agric Pdts., Accra
207.	Sun-Buta	PCL/2157/2049GMay 2021	Butachlor(500g/l)	III	Herbicide for the control of annual and perennial weeds in cotton, rice and maize	Wynca Sunshine Agric. Prdts & Trading Co. Ltd., Accra
208.	Sun-Dicamba	PCL/2157/2068GMay 2021	Dicamba(480g/l)	III	Herbicide for the control of annual broadleaf weeds in	Wynca Sunshine Agric. Prdts &

					maize	Trading Co. Ltd., Accra
209.	Sunglusate 100SL	PCL/2157/2213G September 2021	Glufosinate ammonium (10%)	III	Herbicide for the control of annual andperennial weeds in citrus, vegetables andnon-farmland	Wynca Sunshine Agric. Prdts& Trading Co. Ltd.,Accra
210.	Sun-Paraquat G	PCL/2157/2271G October 2021	Paraquat dichloride (200g/kg)	II	Herbicide for the control of annual, perennial grasses and broadleaf weeds in fruit trees,plantation crops and maize	Wynca Sunshine Agric Pdts., Accra
211.	Sun-Meto EC	PCL/2157/2216G September 2021	Prometryn (13%) + Acetochlor (38%)	III	Herbicide for the control of annual grasses, broadleaf weeds and sedges inmaize, soybean and groundnut	Wynca Sunshine Agric. Prdts & Trading Co. Ltd., Accra
212.	Sun-Oxadia	PCL/2157/2067GMay 2021	Oxadiargyl(400g/l)	III	Herbicide for the control of annualweeds in rice andonion	Wynca Sunshine Agric. Prdts & Trading Co. Ltd., Accra
213.	Sun-Oxy	PCL/2157/1954G April 2021	Oxyflourfen(240g/l)	III	Herbicide for the control of weeds inonion	Wynca Sunshine Agric. Prdts & Trading Co. Ltd., Accra
214.	Sunsate 41SL	PCL/2125/2282G October 2021	Glyphosate(410g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds and grasses inmaize, soybean and tomatoes	Bentronic Productions, Kumasi
215.	Sunward WG	PCL/2199/2164G July 2021	Isoxaflutole(75%)	III	Herbicide for the control of annual grasses and broadleafweeds in maize and sugarcane	Rainbow AgroSciences Co. Ltd., Tema
216.	Sun-Zema	PCL/2157/2273G October 2021	Imazethapyr(10%)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in beans, groundnut, soybean and other legumes	Wynca Sunshine Agric Pdts., Accra
217.	Supercrown	PCL/21229/2159G July 2021	Bispyribac-sodium (400g/l)	II	Herbicide for the control of grasses andbroadleaf weeds in rice	Agro CrownCo. Ltd., Kumasi
218.	Super Duper 40SL	PCL/2181/2222G September 2021	Bispyribac-Sodium(40%)	III	Herbicide for the control of broadleafweeds in rice	B. Kaakyire Agrochemical Ltd., Kumasi
219.	Super Nicogan 800 WDG	PCL/21100/1960G April 2021	Mesotrione(570g/kg) +Nicosulfuron(230g/kg)	III	Herbicide for the control of weeds inmaize	Adama West Africa Ltd., Accra
220.	Superquat 50SG	PCL/2199/2166R July 2021	Paraquat dichloride (500g/kg)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in plantation and tree crops	Rainbow AgroSciences Co. Ltd., Tema
221.	Supremo	PCL/21149/1873G February 2021	Imazethapyr(240g/l)	III	Herbicide for the control of annual grasses and broadleaf weeds insoybean	Bon AgroCo. Ltd. Kumasi
222.	Tempra 800 SC	PCL/2106/2278G October 2021	Diuron (800g/l)	II	Herbicide for the control of broadleafweeds, grasses and sedges in pineappleand cassava	Calli GhanaCo. Ltd., Accra
223.	Topman	PCL/20149/1836GMay 2021	Bispyribac (180g/kg) + Bensulfuron-methyl (120g/kg)	III	Herbicide for the control of annual grasses, sedges and broadleaf weeds inrice	Bon Agro Co. Ltd., Kumasi
224.	Tradazine 80 WP	PCL/21249/2258R October 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual,perennial grasses and	NGC Karida Agro TradingCo.

					broadleaf weeds in maize	Ltd., Kumasi
225.	Trazine 80 WP	PCL/2125/2283R October 2021	Atrazine (800g/kg)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses inarable crops	Bentronic Productions, Kumasi
226.	Trazine 500 SC	PCL/2125/2284R October 2021	Atrazine(500g/l)	II	Herbicide for the control of annual, perennial broadleaf weeds and grasses in arable crops	Bentronic Productions, Kumasi
227.	Triclean 260 OD	PCL/21158/2034GMay 2021	Atrazine (200g/l) + Mesotrione (40g/l) +Nicosulfuron (20g/l)	II	Herbicide for the control of broadleaf grasses and herbaceous weeds in cereals and vegetables	ETC Agro Ghana Limited, Accra
228.	Tropica Plus 400EC	PCL/2199/2326G December 2021	Acetochlor (250g/l) + Prometryn(150g/l)	II	Herbicide for the control of annual grasses and roadleaf weeds in maize	Rainbow Agrosciences Co. Ld., Tema
229.	United Force 360SL	PCL/21145/2197G August 2021	Glyphosate isopropylamine (240g/l) + 2,4-D Amine (120g/l)	III	Herbicide for the control of annual, perennial broadleaf weeds in maize, yam, sugarcane, oil palm and citrus plantations	Jubaili Agrotec Ltd.,Kumasi
230.	Veggie Force	PCL/21145/2010GMay 2021	Haloxyfop-methyl(108g/l)	III	Herbicide for the control of annual and perennial grasses in vegetables, pineapple, cotton and legumes	Jubail Agrotec Limited, Kumasi
231.	Viju Super 300 WP	PCL/21271/1867G February 2021	Bispyribac-sodium(180g/kg) + Bensulfuron- methyl (120g/kg)	III	Herbicide for the control of annual grasses, broadleaf weeds and sedgesin rice	VijusephCompany Ltd, Accra
232.	Waafosate	PCL/21108/2050GMay 2021	Glyphosate IPASalt (480g/l)	III	Herbicide for the control of perennialweeds in citrus	Waaf Agro Limited, Techiman
233.	Waafquat Super	PCL/21108/2052GMay 2021	Paraquat(20%)	II	Herbicide for the control of weeds in vegetables and citrus	Waaf Agro Limited, Techiman
234.	Wadwumanie	PCL/21175/1936G March 2021	Glyphosate(410g/l)	III	Herbicide for the control of annual and perennial weeds in citrus, pear and paddyrice	Wamwus Agrochemical Ltd., Kumasi
235.	WeedBlock 62.5ME	PCL/21100/1959G April 2021	Imazethapyr (37.5g/l) + Propaquizafop(25g/l)	III	Herbicide for the control of grasses andbroadleaf weeds in cowpea	Adama West Africa Ltd., Accra
236.	Weed Captain	PCL/21184/2114G June 2021	Quizalofop-P-ethyl (35g/l) +Fomesafen (125g/l)	III	Herbicide for the control of annual weeds in cereals, vegetables, cottonand legumes	Ganorma Agrochemicals Ltd., Tamale
237.	Weed Konka 48SL	PCL/21266/2180G July 2021	Glyphosate(48%)	III	Herbicide for the control of perennialweeds, shrubs, broadleaf trees and grasses in cereals, vegetables and sugarcane	Taos Enterprise, Kumasi
238.	Wypa	PCL/21213/2116G June 2021	Imazethapyr(240g/l)	III	Herbicide for the control of annual, perennial grasses andbroadleaf weeds in cowpea, groundnut and leguminous plants	Crop Doctor Ghana Ltd., Kumasi
239.	Zapsate 48 SL	PCL/21261/2028GMay 2021	Glyphosate(48%)	III	Herbicide for the control of broadleafgrasses, herbaceousplants, shrubs and conifers in cereals,	Zapware Ventures,Accra

					vegetables andsugarcane	

(B) Provisionally Cleared Pesticides (PCL)
(B4) Plant Growth Regulators

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Sun-Mequat SL	PCL/2157/2270G October 2021	Chlormequat (50%)	III	Growth Regulator for anti-lodging of cotton	Wynca Sunshine Agric Pdts., Accra
2.	Paclo Super	PCL/21249/2254G October 2021	Paclobutrazol (500g/kg)	II	Plant Gowth Regulator for regulating treetops in mango	NGC Karida Agro Trading Co. Ltd., Kumasi

(B) Provisionally Cleared Pesticides (PCL)
(B5) Nematicide

No.	TradeName	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Fulan 3%	PCL/21259/1987G May 2021	Carbofuran (3%)	II	Nematicide for the control of nematodesin tomatoes, cabbage, maize, potatoes and sunflower	Bentronic Productions, Kumasi
2.	Nematode Master 24SL	PCL/2157/1849G March 2021	Oxamyl (24%)	II	Nematicide for the control of root-knot nematodes in vegetables, cereals and cowpea	Wynca Sunshine Agric. Products & Trading Co.Ltd., Accra
3.	Nemover10GR	PCL/2199/2168G July 2021	Fosthiazate (93%)	II	Nematicide for the control of cyst nematodes and wireworms in okro, cowpea and banana	Rainbow AgroSciences Co. Ltd., Tema
4.	Vytal 3G	PCL/2106/1916G March 2021	Oxamyl (30g/kg)	II	Nematicide for thecontrol of nematodes and soil insects in tomatoes	Calli GhanaCo. Ltd., Accra
5.	Sun-Foza	PCL/2157/2268G October 2021	Fosthiazate (5%)	II	Nematicide for the control of root-knot nematodes in cucumber	Wynca Sunshine Agric Pdts.,Accra

(B) Provisionally Cleared Pesticides (PCL)
(B6) Repellants

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	AV 5055	PCL/21221/2203G September 2021	Anthraquinone(18%)	III	Avicide for repelling birds in rice fields	API Produce Enterprise Ghana, Accra
2.	Bird Away SL	PCL/2157/2260G October 2021	Methyl Anthranilate (246g/l)	III	Bird repellent forthe control of birds	Wynca Sunshine AgricPdts., Accra

(B) Provisionally Cleared Pesticides (PCL)
(B7) Rodenticide

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor

1.	Baraki 0.005%RB	PCL/2102/2287R November 2021	Bromadiolone (0.005%)	Ib	Rodenticide for the control of rats and mice	AgrimatLimited, Madina
2.	Brody Pellet	PCL/21100/2070R May 2021	Brodifacoum(0.005g) + Denatonium Benzoate (0.001g)	Ib	Rodenticide for the control of rodents, mice and rats	Adama WestAfrica Ltd., Accra
3.	Brody 5.0 Wax Block	PCL/21100/2069R May 2021	Brodifacoum(0.005g) + Denatonium Benzoate (0.001g)	Ib	Rodenticide for the control of rodents, mice and rats	Adama WestAfrica Ltd., Accra
4.	D-Lion Rodenticid e	PCL/21208/1988R May 2021	Brodifacoum (0.005%)	Ib	Rodenticide for the control of rats and mice	Desert Lion Int.Ltd., Accra
5.	Dryforce	PCL/21145/2290R November 2021	Brodifacoum (0.005%)	Ib	Rodenticide for the control of rats and mice	Jubaili Agrotec Co. Ltd., Kumasi
6.	Super Guard	PCL/2102/2288R November 2021	Bromadiolone(2.5%)	Ib	Rodenticide for the control of rats and mice	Agrimat Limited, Madina
7.	Vertox	PCL/20212/1841R February 2021	Brodifacoum(>98%)	Ib	Rodenticide for the control of rats and mice	Divine Business Ventures Ltd., Accra

(B) Provisionally Cleared Pesticides (PCL)
(B8) Adjuvants

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Toil	PCL/2102/2318G December 2021	Rapeseed fatty acid esters	III	Adjuvant to improve product penetration in cereals	Agrimat Limited, Madina
2.	Agspur	PCL/2102/2317G December 2021	Polyether modified siloxane	III	Adjuvant for use as spray sticker in cereals	Agrimat Limited, Madina

(B) Provisionally Cleared Pesticides (PCL)
(B9) Biocides

No.	Trade Name	Registration No. / Date of Issue	Concentration of Active Ingredient	Hazard Class	Uses	Local Distributor
1.	Biopol C103L	PCL/21268/2209R September 2021	2,2-dibromo-2-cyanoacetamide	II	Biocide for the control of Bacteria,yeasts and fungi formembrane cleaning	AbengoaWater, Accra
2.	Biopol FI 31	PCL/2120/2211R September 2021	5-chloro-2-methyl-4-isothiazolin-3-one and 2-methyl-4-isothiazolin-3-one	II	In-can preservativefor the control of bacteria, yeasts and algae	BBC Industrial Industrial Co. Ltd. Accra
3.	Fungipol 237	PCL/21261/2161R July 2021	Carbendazim + Diuron + Octylisothiazolone	II	Biocide/film preservative for thecontrol of fungi, yeasts and algae	Azar Chemicals Ltd., Accra
4.	Versalis e®-BIOC 2000	PCL/21240/2062R May 2021	Glutaraldehyde(40-50%)	II	Biocide for the control of microbesand disinfection of water offshore	Versalis Zeal Limited, Takoradi
5.	Versalis e®-BIOCW030C01	PCL/21240/2059R May 2021	Solfato di tetrachis (idrossimetil) fosfonio ≥ - <80%	II	Biocide for the treatment of tanks and reinjected water offshore	Versalis Zeal Limited, Takoradi
6.	Versalis e®-BIOC W030C02	PCL/21240/2060R May 2021	Quartenary Ammonium Compounds + Benzyl-C12-14 Alkyldimethyl, chlorides 25-30% + Glutaral 10- 20%	II	Biocide for the treatment of tanks and reinjected water offshore	Versalis Zeal Limited, Takoradi
7.	Versalis e®-BIOC W030C03	PCL/21240/2061R May 2021	5-chloro-2- methyl-4-isothiazolin-3-one + 2-methyl-2H-isothiazol-3-	II	Biocide for the treatment of membrane	Versalis Zeal Limited, Takoradi

			one (>1≤ 5%)			
8.	Vincocide DBNPA 20B	PCL/2120/2212R September 2021	2, 2-dibromo-3-nitrilopropionamide	II	Bactericide/paint preservatiive for the control of bacteria, fungi and yeasts	BBC Industrial Co. Ltd., Accra

(C) Banned Pesticides

No	Name of Pesticide
1.	2,4,5-T and its salts and esters
2.	Aldrin
3.	Binapacryl
4.	Captafol
5.	Chlordane
6.	Chlordimeform
7.	Chlorobenzilate
8.	Dichlorodiphenyltrichloroethane (DDT)
9.	Dieldrin
10.	Dinoseb and its salts and esters
11.	Dinitro-*ortho*-cresol (DNOC) and its salts (such as ammonium salt, potassium salt and sodium salt)
12.	Endrin
13.	HCH (mixed isomers)
14.	Heptachlor
15.	Hexachlorobenzene
16.	Parathion
17.	Pentachlorophenol and its salts and esters
18.	Toxaphene
19.	Mirex
20.	Methamidophos (Soluble liquid formulations of the substance that exceed 600 g active ingredient/l)
21.	Methyl-parathion (emulsifiable concentrates (EC) with at or above 19.5% active ingredient and dusts at or above 1.5% active ingredient)
22.	Monocrotophos (Soluble liquid formulations of the substance that exceed 600 g active ingredient/l)
23.	Parathion (all formulations – aerosols, dustable powder (DP), emulsifiable concentrate (EC), granules (GR) and wettable powders (WP) – of this substance are included, except capsule suspensions (CS))
24.	Phosphamidon (Soluble liquid formulations of the substance that exceed 1000 g active ingredient/l)
25.	Dustable powder formulations containing a combination of Benomyl at or above 7%, Carbofuran at or above 10% and Thiram at or above 15%
26.	Methyl Bromide
27.	Chlordecone
28.	Alpha hexachlorocyclohexane
29.	Beta hexachlorocyclohexane
30.	Lindane
31.	Pentachlorobenzene
32.	Technical Endosulfan and its related isomers

Legend to Register of Pesticides

FRE - Full Registration (valid for 3 years)	The Agency may approve and register a pesticide subject to such other conditions as it may determine and may only register a pesticide if it is satisfied that the pesticide is safe and effective for the use for which it is intended and that the pesticide has been tested for efficacy and safety under local conditions (Section 31, Part II of Act 490)
PCL - Provisional Clearance Permit (Valid for a maximum of 1 year)	Where in respect of an application for registration of a pesticide, the Agency is satisfied that most information required for its registration has been provided to the Agency, and the pesticide does not present a toxicological risk to people, animals, crops or the environment, it may clear the pesticide for use without the registration, and this clearance shall be known as provisional clearance and shall be temporary pending the registration by the Agency of the pesticide (Section 32, Part II of Act 490)
Experimental permit	The Agency may authorize the importation of unregistered pesticide if the pesticide is imported for experimental or research purposes and not for distribution Section 28, (2), (a), (i)

General use pesticides (G)	Pesticides when applied for the use for which it is registered will not have unreasonable adverse effects on people, animals, crops or on the environment (Section 30 (1), (a) of Part II of Act 490)
Restricted use pesticides (R)	Pesticide when used in accordance with widespread commonly recognized practice in the absence of additional regulatory restrictions may cause unreasonable adverse effect on people, animals, crops or on the environment (section 30 (1), (b) of Part II of Act 490). Such pesticides are restricted for use on only selected crops by competent pesticide applicators and should be sold by dealers licensed to handle restricted pesticides
Suspended or Banned Pesticides	Pesticide when used in accordance with widespread commonly recognized practice even in the presence of additional regulatory restrictions will cause unreasonable adverse effect on people, animals, crops or on the environment. Such pesticides are prohibited for use in the country (Section 30, (1), (c).

ANNEX 2: GHANA 2020 FERTILIZER STATISTICS SUMMARY

New HS code	Product	Production	Imports Total Solid (MT)	Imports Total Liquid (Liters)	Fertilizer Exports Solid (MT)	Fertilizer Exports Liquid (Liters)	NFU Imports Solid (MT)	NFU Imports Liquid (Liters)	2020 Solid Fertilizer Imports (MT)	2020 Liquid Fertilizer Imports (liters)	2020 Apparent Consumption - Solid (MT)	2020 Apparent Consumption - Liquid (Liters)	2019	% Change
3105200000	NPK		299,423	734,325	2,782		0		299,423	734,325	296,641	734,325		
3102100000	Urea		90,025	-	1,576		69		89,956	-	88,379	-		
3104200000	MOP		55,621	1			10	1	55,611	-	55,611			
3105400000	MAP		47,966	-			0		47,966	-	47,966	-		
3102210000	Ammonium sulphate		44,084	-			90		43,994	-	43,994	-		
3103101000	TSP		35,268	-			0		35,268	-	35,268	-		
3104900000	Other potash fertilizers		10,378	72,391					10,378	72,391	10,378	72,391		
3105300000	DAP		9,938	-	219		0		9,938	-	9,719	-		
3103900000	Other phosphate fertilizers		9,174	-					9,174	-	9,174	-		
3104300000	SOP		6,538	-			0		6,538	-	6,538	-		
9999999990	Enhancers		5,098	253,697					5,098	253,697	5,098	253,697		
3102900000	Other nitrogenous fertilizers		3,862	-	19				3,862	-	3,843	-		
2510000000	Rock phosphate		494	-	50				494	-	444	-		
2834210000	Potassium nitrate		398	-			12		386	-	386	-		
3102600000	Calcium nitrate		275	-					275	-	275	-		
3101000000	Organic fertilizer		270	339,335	50	10	0		270	339,335	219	339,335		
3102400000	CAN		8	-					8	-	8	-		
3105600000	PK fertilizer		-	8					-	8	-	8		
3102300000	Ammonium nitrate		79,812	-			79,812		-	-	-	-		
3102500000	Sodium nitrate		312	-			312		-	-	-	-		
3103100000	SSP		0	-			0		-	-	-	-		
Grand Total without Enhancers			**693,844**	**1,146,060**	**4,696**	**10**	**80,304**	**1**	**613,540**	**1,146,059**	**608,844**	**1,146,059**	**422,447**	**44%**
Grand Total with Enhancers			**698,943**	**1,399,757**	**4,696**	**10**	**80,304**	**1**	**618,638**	**1,399,756**	**613,942**	**1,399,756**	**423,603**	**45%**

ANNEX 3 2020 NPK IMPORTS

2020 NPK Imports	Solid Imports (MT)	Liquid Imports (Liters)
NPK 20 10 10	52,892	
NPK 20 10 10 + 3S	37,813	
NPK 23 10 5	34,957	
NPK 23 10 5 + 2MgO + 3 S + 0.3Zn	27,281	
NPK	22,516	109,050
NPK 11 22 21 + 5S + 0.5B + 0.7Zn	21,500	
NPK 27 6 6	20,000	
NPK 7 20 13 + 6CaO + 5S + 5MgO + 0.4B + TE + Zn	18,907	
NPK 25 10 10 + TE	18,900	
NPK 27 6 6 + TE	18,000	
NPK 2-23- 18+8 CaO+6SO3+6MGO+0.5ZN+0.5B	10,200	
NPK 2 18 16	9,700	
NPK 15 15 15	6,465	
NPK 20 20 20	137	
NPK 19 19 19	36	
NPK 15 8 33 + TE	25	
NPK 20 20 20 + TE	20	
NPK 28 10 10 + TE	13	
NPK 30 10 10 + TE	13	
NPK 30 10 10	12	
NPK 18 18 18 + TE	12	
NPK 12 12 36 + TE	8	
NPK 19 19 19 + TE	8	
NPK 28 4 4	5	
NPK 15 5 30	4	
NPK 13 40 13	0	
NPK 10 8 10 + TE		389,588
NPK 10 10 10		93,096
NPK 12 8 4 + 1.2S +0.07Zn + 0.07Fe +0.03Mn + 0.04Cu + 0.31B		62,505
NPK 10 8 10		50,386
NPK 8.5 3.4 6 + 0.2B +1Cu +1.3Mg + 0.03Mo + 0.7Zn		20,004
NPK 14 6 5 + TE		3,984
NPK 4 16 28 + TE		3,984
NPK 7 21 7 + TE		1,728
Total	299,423	734,325

ANNEX 4 GCAP Manual for Safe Use of Pesticides (Extracts)

MINISTRY OF FOOD
AND AGRICULTURE

GHANA COMMERCIAL AGRICULTURE PROJECT (GCAP)

MANUAL FOR SAFE USE OF PESTICIDES

Compiled by Plant Protection and Regulatory Services Directorate (PPRSD) of the Ministry of Food and Agriculture (MOFA) with support and funding from the Ghana Commercial Agriculture Project (GCAP)

Ministry of Food & Agriculture · GCAP · USAID · THE WORLD BANK

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Annex 5: Details of Stakeholder Engagement

Annex 5.1: Sakeholder Engagement- Mion District

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
Government Institutions – Category A					
Ministry of Food and Agriculture – Mion	Prince Namkazoa Yelabeyani Dennis	Management Information System Officer	0243483674	2025-04-14	• **Land-Acquisition** – The department is aware of land acquisition for the project. • **District Agriculture Production –** Agriculture is the main livelihood of the people in the district and it is suitable for the project. - About 61,337 people are into agriculture. - Maize, Rice, Soya, groundnut and Yam are the common crops grown in the dis. - The farmers do not have generally are engaged in rain-fed agriculture which is making production difficult. • **Project Implementation -** The Department must be well-resourced (finance/logistics) for monitoring/supervision of the project. - There is land available in the proposed area and it stool land. - Farmers should be supported with farm inputs and machinery for land preparation and crop harvesting to reduce post-harvest losses through farmer service centers. - Main agriculture problem in the area is lack of irrigation therefore this should be factored into the project planning. • **Project Impact –** The project is expected to have a positive impact on community members where it is expected to create jobs in the rice value chain thereby reducing rural migration. • **Recommendations -** All relevant stakeholders should be involved in the project. - There should be ready markets for the rice that will be produced. - The road network in the area should be improved to enhance mobility of people and goods.
Environmental Protection Authority (EPA) – Tamale	Abdul karim Jato	Programme Officer	0201224235	2025-04-22	• **Compensation -** Compensation issues will arise if there are PAPs in the valley. - Compensation should be addressed through comprehensive RAP. - There must be valuation of properties if any, as well as compensation for any form of displacement. • **Project Implementation** - Environmental permit is required for the project. - Biodiversity conservation should be a consideration in the project implementation. - If there are RAP issues, it should be handled properly in order not to impoverish persons involved. - There will be field visits by the EPA team to monitor environmental compliance during implementation. - Farmers should be educated on the use and handling of agro-chemicals. - The project has the potential to transform livelihoods of beneficiaries if it is implemented effectively.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					• **Recommendations -** There should be environmental monitoring during implementation to check results against established baseline conditions. - There should be good water management practices. - There should be a flood control plan in the valley. • **EPA Monitoring** – the project should include EPA staff in the implementation phase of the project to monitor the compliance of the farmers with environmental standards.
Lands Commission	Mohammed Alhassan	Assistant Secretary	0242081543	2025-04-14	• **Compensation** - Land acquisition will warrant some form of compensation to right owners. - There must compensation for physical and economic displacement if any. - Capturing of PAPs data must be done comprehensively. • **Project Implementation** - The land in the area is owned by stools. - Land for this kind of project are normally acquired from the traditional authorities. - The project will help to improve livelihoods and food security. - Assistance in the farm of farm inputs should be provided to the farmers. - The project will lead to effective land utilization. • **Recommendation** - Need more community engagement for on the project for enhanced participation.
Water Resource Commission (WRC)	Yussif Abdul -Razak Gunu	Accountant	0249768120	2025-04-15	• **Concerns/Recommendations: -** Farmers should **f**orm fire fighter groups. - Education on agrochemicals use for farmers - There should be timely harvest of crops by farmers. - community education on disaster management
NADMO, Mion (Kpabia)	Iddrisu Alhassan Ganiyu	NADMO director	0242772740	2025-04-22	• **Floods –** Floods mostly happen once in a year during the rainy season. • **Drought –** Drought is also experienced sometimes • **Disaster Impact:** There have been loss of farmland as a result of floods. This can pose the risk of food insecurity in the area. • **Sensitization:** NADMO sensitizes the communities once a year. • **Operations:** They assess the situation and report for support. • **Concerns/Recommendations:** NADMO appeals to farmers to stop farming along waterways.
District Assembly, Mion	Fuseini Karim	Assistant Co-ordinating Director	0243509709	2025-04-25	• **Support from the District Assembly –** The assembly is willing to provide support to any project that will improve the production of farmers in the community. • **Compensation -** Compensation must be clearly determined before the commencement of the project if that is doing to be undertaken. • Compensation should be comprehensive covering land, physical and economic displacement if identified.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					• **Project Implementation -** The district assembly is delighted to be part of the project. - The project will improve upon the living condition of the people in the area if implemented well. - The main economic activity in the district farming and majority of the population engage in it. - Land for farming is acquired from the traditional authorities. - Main agricultural challenges in the area are lack of mechanization, and agro-input cost. - The area is generally peaceful and there is no existing conflict. • **Recommendations -** The road network needs upgrade to make transportation easy. - The farmers should be supported seasonally to maintain high production levels.
Ghana National Fire Service, Tamale	Isaac Ofei Dodoo	Administrative Officer	0249829629	2025-04-14	• **Preservation of water bodies –** The project should put measures in place to preserve existing water bodies as this serves as farm boundaries and also helps to curb bush fires. • **Training of fire volunteers –** Fire volunteers from the farming communities should be trained to provide immediate assistance in the case of fire outbreaks. • **Soil tests –** The project should conduct water logging as well as fertility tests to determine the suitability of soil for maximum crop production. • **Inadequate logistics –** The Fire Service department should be provided with adequate logistics like vehicles to facilitate project monitoring and training of fire volunteers.
Private Sector – Category B					
Commercial Farmer, Mion	Abdulai Karim	Farmer	0598590323	2025-04-16	• **Farming** – Crops like Maize, Rice, Groundnut, and Yam are mostly grown by the commercial farmers on farm lands which are owned or leased. - Fertilizer like NPK and Urea are mostly used by farmers. - A Farmer can cultivate on about 150 acres of land. • **Project Implementation -** The project should make farm inputs available to farmers that will be involved in the project. - Farmer service centres should be instituted to support the farmers with modern equipment. - There should be ready market for produce with reasonable pricing regime. - Irrigation should be an important project component to ensure dry season farming. - Extension services should be provided by qualified professionals. • **Recommendations -** Government support for the project should be timely - Farm inputs provision to the farmers is key if production levels are to be increased to make the project a success. - Rice milling machines should be provided for processing of harvested rice. • **Concerns –** The project should be devoid of any political interferences. • **Challenges –** selling due to low prices, inadequate buyers, poor roads

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
Small Holder Farmers	Iddrisu Abdul Rahman	Farmer	0558801927	2025-04-16	• **Farming Activities** – They farm in crops like Soybean, maize, rice, sorghum, yam, cassava and groundnut. - They don't indulge in Irrigation farming. - They engage in weekly insect monitoring. - They use pesticide like Lambda yearly. - They decide pest control methods via AEA recommendation. • **Concerns –** Their top 3 needs are tractor service, assistance in getting fertilizer and agrochemicals for their crops. • Poor road network need to be addressed. • **Project Implementation -** The project should take into consideration challenges of climate change to incorporate irrigation. - Inputs and credit support will be required for the beneficiaries on the project. - Drought and pest resistant seed varieties should be provided for production. - Ready market for produce is key to encourage more people to get involved. - Land preparation support is required before planting. - Existing farmers on the proposed project site must be compensated if they are to move out. • **Recommendations -** Gender bias/political influences should be avoided in the project implementation. - Farmers should be trained on sustainable farm practices by extension officers. - The road in the area should be improved especially during the raining season.
Faith Based Organizations (FBO) / Mion (Dabogni)	Abdulai Awabu	(Soglo Mbori Buni group)	0557758314	2025-04-16	• **Associations -** There are VSLA group like Soglo Mbori Buni thjat offer financial assistance to members**.** • **Project Impact –** They believe the project can boost the economy of the area by increasing farming activities • **Concerns/Recommendations –** Avoid political bias during project implantation. - There should be consideration and much focus on the vulnerable during the project implementation - Traditional authorities shouldn't be ignored but should be involved in the project implementation. - Inputs should be subsidized for farmers to afford them. - Address land reallocation concerns through consultation. - They can partner farmers for capacity building.
Aggregator, Mion Tindantua	Musah Abdul Rashid	Member	0597833024	2025-04-16	• **Rice Variety –** Rice variety mostly aggregated are AGRA and Jasmine rice. These are bought from individual farmers. • **Storage facilities –** Aggregators purchase about 30 bags per month and store them in rented rooms. • **Challenges –** Inadequate buyers hence have to end up lowering their price**.**

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					- Poor roads making transportation difficult. - No digital platforms to ease business process. - Access to finance is very difficult. - Storage infrastructure is not enough. • **Recommendations** – They expect the programme to provide fertilizers/agrochemicals to farmers.
Agro Input Dealers	Shani Amin	Member	0535698730	2025-04-22	• **Activities –** They **s**ell fertilizers, seeds (maize, soybean), chemicals, tools/equipment. - Customers are mostly small holder farmers. - March to June is their peak season. - They Source their products from local distributors. - The bundle inputs on credit to 10% of their customers. • **Other roles –** Aside selling, they offer technical advice/training to farmers**.** • **Concerns/Recommendations -** They need easier means of connecting to suppliers and accessing credit/financial services. • **NGO Partnership** - They are open to partnering with NGOs and other private organizations. • **Challenges –** They have limited capital, inadequate storage facility for their products. - Farmers' inability to sometimes purchase their products due to seemingly high cost. - Farmers lacking enough technical knowledge on how to use agro-chemicals. - High transport cost - Lack own transport making transportation difficult. • **Opinion -** They believe the project is going to have a Positive impact and increase rice production for farmers. They will also need support and training on business management.
Community and Focus Group, , Tindantua – Category C					
Traditional Elders	Saani Muftawu Mohammed Abdulai Abdul Razak Issahaku, Shani Sherazu Iliasu Issahaku Shei Napari Hamza Ayisha Abukari Adam	Chief Zaachi Zagyuri na Wulan bla Kpana lana Community Member	0555524505, 0244870321, 0539661971, 0549794263, 0542733042, 0547113628, 0543751635, 0547564722, 0555392007	2025-04-22	• **History of Town -** Town was formed about 400 years ago. - Found was called Chief Yidana and he initially came to farm. - The natives are Dagombas with a population of 5200 and mostly practiced Islam. • **Culture -** They celebrate the Damba festival which is a festival of fire. - There are sacred sites in the area. - There are drama and entertainment group for the youth and women. - They practice traditional medicine like bone setting due to lack of clinic resources. • **Land Ownership –** All the land are stool lands. • **Land Use –** The land is mainly used for farming and rearing of livestock. • **Health Challenges –** Some of the health challenges experienced include Piles, fever, HBP, Hepatitis B. etc. - The nearest health facility is the Dabogni CHP compound.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
	Abdul Mateen Amadu Mohammed Hardi				• **Conflicts** – There have been conflict with locals with regards activities of herdsmen. Conflict resolved at palace, infrequent). • **Compensation -** Land documentation to indicate its allocation for the project should be undertaken. - Compensation for physical and economic displacement must be clearly determined before the commencement of the project. • **Project Implementation -** The traditional authorities are in support for the project as it will improve incomes and reduce youth unemployment. - Enough land owned by the traditional authority available in the area for farming and the chiefs are ready to give out lands for such activities. - There should not be discrimination in the selection of beneficiaries. - Input and credit support should be extended to the farmers on the project increase production. - Irrigation for dry season farming should be provided to make the project more impactful. - There is no conflict issue in the area. • **Recommendations -** Improve seeds and agro-chemicals should always be provided on time. - The road network in the area should be improved to support the implementation of the project.
Womens' Group	Memuna Soale, Fuseina Asumana Nafisa Osman Nasifa Alhassan Azimpaga Alhassan Abubakari Safura Azaratu Yakubu Mutaru Ayisha Imoro Sanatu Zakaria Sanatu	Chairperson Key stakeholder Treasurer Member Member Member Member Member Member Member	0557364663 0595450936 0240601889 0248014801 0537435427 0598134306 0598126606	2025-04-16	• **Project Implementation -** The project will go a long way to enhance women's and families livelihood. - The project should be made to be successful by providing all necessary assistance to the women who are mostly disadvantaged. - The women have interest in been part of the rice production initiative. - Input support to the women will be key for their involvement in the project. - Land is controlled by men (ownership) in the area. • **Recommendations -** Ready market for produce should they be made available in the district. - Processing facilities should be provided to reduce post-harvest challenges**.** - Support for women in this project should be deliberate and targeted. • **Women role in the Community –** They cook, fetch water and clean the house. - Though they take part in decision making regarding finance, the men make the final decision. - They also engage them in farming activities by growing legumes, groundnut, vegetables, and soybean to sell at the market. • **Other activities -** They engage in shea picking. - Some engage in livestock rearing e.g. sheep, goat, cattle, poultry etc**.** - Some also process soy bean for kebab and groundnut for cake, paste or oil.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					• **Vulnerable Groups –** There are vulnerable persons in the community as well as disabled persons in the community. • **Health Challenges –** They mostly experience health challenges like Waist/chest pains, fever. They mostly treat these illness with herbs. • **Women Association –** They have formed a women association with about 30 members where they have savings and loans and meet weekly. The association is not formally registered. • **Cultural Group** – The have a cultural group called Tora which is mostly for entertainment. • **Local groups** – Local groups present include: VSLA group, providing financial support to members, farm groups, and youth groups providing assistance to each other.
Mens' group	Saani Muftawu Mohammed Abdulai Abdul Razak Issahaku, Shani Sherazu Iliasu Issahaku Shei Napari Abukari Adam Abdul Mateen Amadu Mohammed Hardi Yakubu Adam	Chief Zaachi Zagyuri na Wulan bla Kpana lana Community Member Community Member Community Member Community Member Community Member	0555524505, 0244870321, 0539661971, 0549794263, 0542733042, 0547113628, 0547564722, 0555392007	2025-04-16	• **Activities –** Some of the activities the men engage in are Farming (Maize, groundnut, yam, rice, sorghum, soybean), rearing of livestock (e.g. sheep, goat, cattle) for subsistence and charcoal production. • **Farming -** The Planting season which used to be between June to December of the years have been changing due to deforestation. • **Health Challenges -** They mostly experience health challenges like High blood pressure, malaria and chest pains, fever. They mostly treat these illness with herbs. • **Concerns –** Their top concerns are road network, access to portable drinking water, farming support and hospital. • **Project Implementation -** The project is good news to the men in the area as it will help improve incomes and livelihoods. - Opportunity should be given to all men to decide to be part of the project. - Those who are not currently farming in the project valley should also be considered. - Water for dry season irrigation should be a part of the project. - Farm inputs support should be provided to the beneficiaries. - Ready market for produce is key if the project will be sustained. - Extension services should be part of the project especially in the use of agro-chemicals. • **Recommendations -** Credit for farmers to buy inputs if the inputs will not be supplied. - Processing facility should be established to cater for the farmers. - The road transportation should be improved to facilitate movement of goods. - Farmer service centers should be set up in the district to help farmers especially during land preparation.
Youth group	Adam Abdul Somed Abdul Rahim Yakubu	Chairperson Keyholder	0540347921, 0533251028,	2025-04-14	• **Project Implementation –** The youth in the area enthusiastic about the project and looking forward it its full implementation.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
	Abdul Karim Abass Yakubu Amin Nasifa Alhassan, Azimpaga Alhassan, Abubakari Safura, Azaratu Yakubu,	Member Member Member Member Member Member	0542644629, 0240658186, 024801480, 0537435427, 0598134306, 0598126606		- The project will help to reduce youth unemployment in the area. - The necessary support should be extended to the beneficiaries especially the youth to buy inputs. - Ready markets for the rice produce will be required to ensure flow of income. - Irrigation is necessary to make the project more effective and sustainable. • **Recommendations -** Extension officers should be attached to the project. - Machinery for land preparation and harvesting as well as processing facilities should be part of the project. - The roads in the area are not in good shape and should be improved. • **Community**– Healthcare, potable water and Farm machinery, are the three topmost needs of the community.
Cattle Herders, Tindantua	Kadri Sulemana	Herdsman	0558376779	2025-04-16	• **Origin** – The cattle herders are originally from Bimbilla and the family have been herding for about 45 years. - They don't have any cattle herders association • **Conflict Resolution -** They manage crop intrusion by paying affected farmers as compensation for crops destroyed or settling conflicts at chief's palace. - They mostly check on their cattle regularly to prevent intrusion when grazing. • **Herding Activities -** They can travel more than 10 km with their cattle to graze mostly setting off in the morning around and there are no specific spot to graze. - Their cattle mostly feed on waste/plants in dry season. - Most of them own the cattle and also farms as well. - They have no association. • **Concerns –** They need clear demarcation of pathways for their cattle to move during grazing so they don't intrude into people's farms. • **Challenges –** Food becomes scarce especially during the dry season and they have to travel far with their cattle for pastures. - The cattle herders sometimes thirst and get hungry especially under the scorching sun when they take the cattle out to graze.

Annex 5.2: Sakeholder Engagement- Savelugu Municipal

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
Government Institutions – Category A					
Ministry of Food and Agriculture – Savelugu	Kojo Inusah	Management Information System Officer	0242808705	2025-04-14	• **Resolution of land-related conflicts** – The project should collaborate with chiefs and traditional leaders in order to resolve land-related issues before commencing the project. • **Bush fire education** – Farmers should be educated to on the effect of bush fire and its prevention especially as this is a major issue especially after harvest. • **Municipal Agriculture Production -** About 68,345 people are into agriculture. - Maize, Rice, Soya, groundnut, cowpea are the common crops grown. - Adequate agriculture inputs are not available to farmers to increase production. - The farmers are mostly engaged in peasant agriculture making their production levels low. - The farmers generally are engaged in rain-fed agriculture which is making production difficult. • **Project Implementation -** The project is a welcomed development as it will boost rice production. - The municipal economy is dominated by agriculture, therefore any project in agriculture has a high probability of been successful. - The project will be beneficial to the people economically and help alleviate poverty in the area. - Project should deeply involve the Municipal Dept. of Agriculture for sustainability. - The municipal MOFA office will offer the needed support for the successful implementation of the project. - Land in the municipality are largely owned by stools. • **Employment of competent personnel –** The project should ensure that experienced and dedicated technical staff are employed on the field to ensure project efficiency. • **Agricultural conservation practices –** In order to maintain good soil texture and fertility all year round appropriate conservation practises should be followed. • **Marketing of produce and post-harvest management –** Produce marketing can be difficult, therefore it should be carefully managed, and storage facilities should be available to cater for post-harvest losses. • **Recommendations -** Government and NGOs should offer more support to farmers to boost production. - The farmers to benefit from the project should be adequately engaged so they buy into the rationale for the project. - Irrigation should be considered as a component of the project. - Machinery and extension services support should be offered to farmers to make the project successful.
Environmental Protection Authority (EPA) – Tamale	Abdul karim Jato	Programme Officer	0201224235	2025-04-22	• **Compensation -** Compensation issues will arise if there are PAPs in the valley. - Compensation should be addressed through comprehensive RAP. - There must be valuation of properties if any, as well as compensation for any form of displacement.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					• **Project Implementation** - Environmental permit is required for the project. - Biodiversity conservation should be a consideration in the project implementation. - If there are RAP issues, it should be handled properly in order not to impoverish persons involved. - There will be field visits by the EPA team to monitor environmental compliance during implementation. - Farmers should be educated on the use and handling of agro-chemicals. - The project has the potential to transform livelihoods of beneficiaries if it is implemented effectively. • **Recommendations -** There should be environmental monitoring during implementation to check results against established baseline conditions. - There should be good water management practices. - There should be a flood control plan in the valley. • **EPA Monitoring** – the project should include EPA staff in the implementation phase of the project to monitor the compliance of the farmers with environmental standards.
Lands Commission	Mohammed Alhassan	Assistant Secretary	0242081543	2025-04-14	• **Compensation** - Land acquisition will warrant some form of compensation to right owners. - There must compensation for physical and economic displacement if any. - Capturing of PAPs data must be done comprehensively. • **Project Implementation** - The land in the area is owned by stools. - Land for this kind of project are normally acquired from the traditional authorities. - The project will help to improve livelihoods and food security. - Assistance in the farm of farm inputs should be provided to the farmers. - The project will lead to effective land utilization. • **Recommendation** - Need more community engagement for on the project for enhanced participation.
Water Resource Commission (WRC)	Yussif Abdul -Razak Gunu	Accountant	0249768120	2025-04-15	• **Concerns/Recommendations: -** Farmers should **f**orm fire fighter groups. - Education on agrochemicals use for farmers - There should be timely harvest of crops by farmers. - community education on disaster management
NADMO, Savelugu	Abukari Abdul Rahim Yahuza Saibu	Accountant Stores	0247667079 0245745493	2025-04-15	• **Floods –** Seasonal floods occur in the municipality between September to October and should be taken into consideration by the project as this could be a potential risk to the project. • **Windstorm –** Windstorms are experienced between April and May when the wet season is beginning. • **Bush fires –** Bush Fires occur between November and January during the dry season and this has caused low productivity. NADMO will liaise with the Ghana Fire Service to train fire fighters and community volunteers to handle bush fires as well provide education on the effects of bush fires on the project.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					• **Disaster Impact:** There have been loss of lives and properties as a result of floods, bush burning and windstorms. This has also in some instance caused food scarcity. • **Sensitization:** NADMO sensitizes the communities twice a year. • **Operations:** They provide Relief items, evacuation and collaborate with fire service. • **Concerns/Recommendations:** NADMO appeals for means (transport) and fuel to support Nakpanzoo. Communities should form volunteers who are trained in disaster management to help manage disasters.
Municipal Assembly, Savelugu	Abdullah Shiraz	Planning and Coordination	0242808705	2025-04-15	• **Support from the Municipal Assembly –** The assembly is willing to provide support to any project that will improve the production of farmers in the community. • **Compensation -** If people are identified to be impacted by the project, compensation plan must be undertaken and implemented. - Land acquisition must be properly done from the traditional authorities and compensation paid before start of project if requested. - There must be compensation of individuals lands will be acquired for the project. • **Project Implementation -** The municipality's population is heavily dependent on agriculture; therefore, the project will offer strategic partnership to boost food security. - Irrigation should be seriously considered as part of the project as rainfall is not predictable these days. - The municipality is ready to partner the project proponent to implement the project. - The right infrastructure must be put in place to make the project sustainable. - The potential of the project to impact positively on the people livelihood is high. - Adequate land is available in the area for the project. - Project implementation should include vulnerable people. • **Recommendations -** Regular training should be given to beneficiary farmers by extension officers. - Farm inputs and machinery should be made available to the farmers regularly to make the project successful.
Ghana National Fire Service, Savelugu	Isaac Ofei Dodoo	Administrative Officer	0249829629	2025-04-14	• **Preservation of water bodies –** The project should put measures in place to preserve existing water bodies as this serves as farm boundaries and also helps to curb bush fires. • **Training of fire volunteers –** Fire volunteers from the farming communities should be trained to provide immediate assistance in the case of fire outbreaks. • **Soil tests –** The project should conduct water logging as well as fertility tests to determine the suitability of soil for maximum crop production. • **Inadequate logistics –** The Fire Service department should be provided with adequate logistics like vehicles to facilitate project monitoring and training of fire volunteers.
Private Sector – Category B					
Commercial Farmer, Savelugu	Iddrisu Issah Alhassan Abukari	Farmer Farmer	0547856198 0553985174	2025-04-15	• **Project Implementation -** Bunding of the field is needed for the project. - Seeds and fertilizer will be required as support for the farmers. - If peoples land will be taken, compensation should be paid accordingly.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					- The farmers are happy about the project and are eager to be part. - Irrigation and machinery will be required to make the project successful. • **Recommendations -** Improved seeds should regularly be supplied to farmers as well as fertilizer and pesticides. - Government support for the project must be consistent. - There should be processing and storage facilities after harvesting. - There should be ready market to sell produce. • **Lack of storage facilities –** The project should provide adequate storage facilities and warehouses to store produce after harvest since they are kept in the open and in homes. • **Inadequate machinery –** There's not enough agricultural tractors to plough fields, for example, delaying planting at the start of the season, and the ones that are available are broken. The project should procure such machinery as harvesters and tractors etc. to facilitate farming. • **Bush fire awareness –** There is the need for farmers to be educated on fire belt creation and other preventive measures during farming to help curb bush fires.
Aggregator	Abukari Adam	Member	0247400156	2025-04-15	• **Political interference –** To ensure that the project is implemented successfully, the project should be devoid of all political interference. • **Procurement of quality seeds –** The project should procure quality seeds for farmers in order to increase the yield of farm produce. • **Storage facilities –** The Busaka warehouse in Savelugu for example should be reconstructed and new facilities provided to prevent post-harvest losses. • **Availability of food –** The project will help provide adequate food in the community as production will be increased. • **Income generation –** The increase in farm yield will generate income as farm produce is supplied to consumers.
Agro Input Dealers	Adam Ibrahim	Salesman	0246239295	2025-04-15	• **Activities –** They **s**ell fertilizers, seeds (hybrid/OPV), crop protection chemicals, tools/equipment for Rice, Maize, Soybean, and Vegetables. There are no peak season for them as they are busy all year round. • **Source –** They Source their products from local distributors**.** • **Other roles –** Aside selling, they offer technical advice/training to farmers**.** • **Concerns/Recommendations -** They need easier means of connecting to suppliers and accessing credit/financial services. • **NGO Partnership** - They are open to partnering with NGOs and other private organizations. • **Technical Training** – The programme should consider more technical training for farmers. • **Challenges –** High transportation costs and limited access to capital has been a challenge for them.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					• **Opinion -** They believe the project is going to have a Positive impact and increase yield for farmers.
Community and Focus Group, Nakpanzoo, Savelugu – Category C					
Traditional Elders	Adama Abdul Malik Yakubu Issahaka Issahaka Abdulai Mahamadu Ntoli Abukaru Adam	Chief Zagyuri na Wulan bla Kpana lana Community Member	0249517241 055 359 5731 0599302119 0547907685 0249249715	2025-04-14	• **Land Ownership –** All the land are stool lands. • **Land Use –** The land is mainly used for farming and rearing of livestock. • **Land Related Conflicts –** Community members have not experienced any land-related conflicts. • **Ethnic Groups –** Members of the community belong to the Dagomba ethnic group. • **Compensation -** Every Project Affected Person if determined must be captured for the payment of appropriate compensation. - Land acquisition must be properly done from the traditional authorities who are in-charge of the land. - Any form of compensation payment must be fair. • **Project Implementation -** Farming is what most people are engaged into, therefore the project is welcomed as it will help to boost food security and livelihoods in the area. - There is abundant of land in the area for the project which belong to the traditional authority. - The youth and the women should be encouraged to part of the project. - Adequate support should be given to farmers on the project. - Irrigation and machinery support should be part of the project. - Buying of farm inputs is a major challenge for the people in the area, therefore, these inputs should be covered by the project. • **Recommendations -** Processing and storage should be a vital project component - Ready market with competitive produce pricing should be arranged for farmers. - The roads in the area should be improved to facilitate easy movement of goods and persons.
Womens' Group	Muminatu Isaac Shaba Abibata Abudulai Mariya Abudulai Sanatu mohammed Safuri Ali Abu	Secretary Chairperson Box Keeper VSLA Key Holder VSLA Vice Chairperson Treasurer	0535289624 0245234041 0246557417 0555200251 0539589570 0534213470	2025-04-14	• **Project Implementation -** The project will help the people in the area especially the women to have sustainable income. - Women should be given the opportunity to be part of the project. - Women usually do not have money to buy farm inputs, so support in that regard will be required. - Irrigation should be considered for the project so that there can be all-year round farming. - There is enough land in the area to use for the project. • **Recommendations -** Adequate support to women will be required to make the project impactful. - There should not be discrimination is selecting beneficiaries - There should be training on modern rice production methods and use of agro-inputs for beneficiaries.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					• **Project Impact on Community –** They feel the initiative will benefit them by increasing the output of their produce and, as a result, providing income. • **Vulnerable Groups –** There are vulnerable persons in the community as well as disabled persons in the community. • **Indigenous people –** There are indigenous people in the community. • **Support for Less Privileged –** There is support for the less privileged in the community through the LEAP project. The months of April through July are the most difficult in terms of having money. • **Women in leadership** – Women are involved in decision making through the unit committee and the women representatives.. • **Local groups** – Local groups present include: VSLA group, providing financial support to members, farm groups, and youth groups providing assistance to each other.
Mens' group	Adama Abdul Malik Yakubu Issahaka Issahaka Abdulai Mahamadu Ntoli Abukaru Adam Alhassan Saibu Mohammed Issah Mohammed Issahaka Mohammed Yahaya	Chief Zagyuri na Wulan bla Kpana lana Community Member Member Member Member Member	0249517241 055 359 5731 0599302119 0547907685 0249249715 0547486747 0245374424 0248404961 0249249715	2025-04-14	• **Project Implementation -** The project will go a long way to boost the livelihoods of the men in the area. - There is considerable interest in rice production in the area among the men. - The necessary support should be given to those who will be on the project. - Rain-fed agriculture is not improving livelihoods; therefore, irrigation should be considered. - Land preparation support should be part of the project. • **Recommendations -** The road network in the area should be improved to make transport of goods easy. - Support for people on the project should not be delayed. - If people's lands are taken for the project, the right compensation should be paid to the right owners.
Youth group	Alhassan Abdul Karim Abdulai Safianu Fuseini Ibrahim Alhassan Sualey Alhassan Mohammed Iddrisu Yakubu	Member Member Member Member Member Member	0539062573 0248868307 0533651601 0249414684 0595344744 0557300778	2025-04-14	• **Project Implementation -** The youth are interested in the project. - Adequate input support should be given for production. - The youth are mostly engaged in agriculture; therefore, the project will help to boost their production. - The project will boost income if implemented well with the people. - Irrigation, agro-inputs and machinery support should be extended to beneficiaries**.** • **Recommendations -** There should be processing and storage facilities after harvesting. - There should be ready market to sell produce. - Support is to farmers is key if the project is to succeed. • **Community needs/priorities** – Healthcare, potable water and Farm machinery, are the three topmost needs of the community.
Cattle Herders	Ziblida Haruna	Herdsman	0535759377	2025-04-15	• **Origin** – The cattle herders originate from Burkina Faso and have been herding for about 25 years. - They have a cordial and friendly relationship with nearby communities. • **Conflict Resolution -** They manage crop intrusion by paying affected farmers as compensation for crops destroyed or settling conflicts at chief's palace.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					- They mostly check on their cattle regularly to prevent intrusion when grazing. • **Herding Activities -** They can travel about 10 km with their cattle to graze mostly setting off in the morning around and there are no specific spot to graze. - Their cattle mostly feed on waste/plants in dry season. - Most of them own the cattle and also farms as well. - They have no association. • **Challenges -** One of their challenges is accessing water for their cattle.

Annex 5.3: Sakeholder Engagement- West Gonja Municipal

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
Government Institutions – Category A					
Municipal Department of Agric West Gonja		Management Information System Officer		2025-04-17	**Project Implementation -** Agriculture as the main economic activity of the people will be boosted by the project. - Main crops grown are maize, rice, yam, cassava, millet, soybean, and groundnut - The department should fully be involved in the project implementation. - Access to land for projects such as this is acquired from the Chiefs. - A challenge to farmers is the activities of cattle herders in the area. - Farm inputs and machinery will be required to modernize the farming process. - Irrigation should be a key component of the project to facilitate dry season farming. **Recommendations -** Logistics for the department is required to help in the provision of agricultural services to farmers. - Processing and marketing of produce should not be glossed over. - The Municipal Department of Agriculture should be involved fully with the project. **Concerns –** The department **n**eed resources (motorbikes) to function effectively.
Municipal Assembly West Gonja		Head of Physical Planning		2025-04-16	**Compensation -** If there will be resettlement issues in the proposed rice valley, compensation must be determined and paid. - Compensation plan should be comprehensive to cover all PAPs. - Land is assessed via chiefs who are the main custodians of the land. - Land acquisition should be properly documented from the right owners. **Project Implementation -** The land in the municipality are stool lands. - The municipality is predominantly a farming area. - Major agricultural challenge in the area is farm inputs and access to credit facilities. - The project will be beneficial to households and communities. - The Assembly will endeavour to provide support for the project as it will help the locals economically. - Processing and marketing of the produce should be factored into the project design and implementation. - Irrigation as a component of the project should be considered to help in dry season agriculture. **Recommendations -** Access to water and agro-inputs should be integral to the project. - Project infrastructure should be properly put up for benefit of the farmers. **Vulnerable Groups –** There are few women households and people with disabilities in the district. - There is LEAP that support the vulnerable group in the society.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					Municipal Information - The natives of the municipality are mostly Gonjas (80%) and they are the dominant ethnic group in the area. - The 20% are mostly migrants with the origins of their ethnicity from Northern, Upper East and some parts of Upper west region. - The region has schools from primary, JHS, SHS up to Training college. - Electricity and mobile network coverage is at 90% and 80% respectively. - Water is mostly accessed via boreholes and dams.
Lands Commission (LC) West Gonja	Tuotir Norl Mohammed Abubakar Abubakar Tijani Salim Iddrisu	Director Divisional head Land Surveyor	0244016620 0245308016 0545062818 0593809556	2025-04-14	**Compensation -** Compensation for this project may cover land, structures, physical displacement/economic displacement. - Compensation values must be validated by the Lands commission if undertaken by independent valuers. - It is vital for compensation be determined and paid to deserving individuals before start of project. **Project Implementation -** Land for the project must be properly acquired. - Interested parties must be identified and compensated for lands acquired. - Lands in the area are in the care of the traditional authorities (skin lands). - The land should be put to the best use to increase food production. - The LC is ready to provide the necessary assistance should there be a need for land acquisition for the project. **Recommendation -** Land acquisition procedure should be followed, if lands are to be acquired for the project.
Environmental Protection Authority (EPA) Savannah	Eyram Evortri	Program officer	0273857109	2025-04-14	**Compensation -** Compensation must be paid to PAPs if determined to be currently present on the land. - Physical and economic displacement should be considered in the compensation planning. **Project Implementation -** EPA permit is a requirement for the project. - The project has the potential to improve food security and living standards. - Chemical application on the project should done properly. - Land degradation and soil contamination should be controlled. - There should be fire belts to prevent fire from destroying farms. **Recommendation -** There should be environmental monitoring for the project during implementation.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					Project Impact – Some positive impact expected include increase food availability. - Some adverse impact expected are loss of trees, pest's infestation, fire risk, land degradation, soil contamination, and noise/air pollution. - These adverse impacts can be minimized through training, tree planting and constructing fire belts.
Ghana National Fire Service / West Gonja	Philip Okumah Felix Kuumwaar Richad Aheiren	Municipal Commander, Training officer Operations Officer	0245099540, 0241609420, 0552508845	2025-04-14	**Concerns/Recommendations -** Involve fire command in implementation of the project. **Project Impact -** Positive impacts expected include improving living conditions, provision of employment, food security and reduction of rural migration. **Fire Info -** Bush fires are mostly rampant between November and March during the dry season. - Some effects of the bush fire include loss of food, animals, economic trees, farm structures. - Risks exist due to lack of info. - There is no fire station close to the project site. There need to be a fire cover to prevent/suppress fire.
NADMO / West Gonja	Dawda saaka	Human resource	0249803939	2025-04-17	**Concerns/Recommendations -** Other water-loving crops can also be considered for the programme. - Farmers should not farm in waterlogged areas. - Involve NADMO in sensitization. **Disaster Info:** - Floods are caused by heavy rains and mostly occur between Aug and September. - These leads to the Loss of food/animals and properties. - NADMO sensitizes yearly.
Private Institutions – Category B					
Commercial Farmers West Gonja (Busunu)	Abdulai Salamu	Farm Manager	0551740367	2025-04-14	**Project Implementation -** The project will help to address unemployment in the area. - Project will be key to rice production transformation in the area. - The necessary support should be offered to farmers to be involved in the project. - Measures should be put in place to make the project sustainable. - Project should help market products, support farm expansion. - Compensation for physically and economically displaced persons must be undertaken. - Farm inputs, machinery and irrigation should be incorporated into the project design. **Recommendations -** There should be a fire prevention and response plan for the project specific to the valley. - Processing and marketing of rice should be properly integrated into the project. - Measures should be put in place to deal with post-harvest losses.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
Rural Enterprise Programme / West Gonja	Seidu			2025-04-17	• **Activities** – They enrol the business communities like agro-processors, manufacturers, weavers, dressmakers and farm service providers. - They register a business through assessment of its needs. - They also support small holder businesses and farmers with loans and farm equipment. - They monitor businesses via visits. - They provide non-financial roles through training (managerial and technical) - Women, Youth and PWDs are mostly beneficiaries of the programme. - They sensitize the community through local media. • **Concerns/Recommendations –** They haven't heard of the project. - Participation of financial institutions challenging. **Project Impact -** It will help reduce rice import, create jobs, and reduce poverty. - The REWARD programme will enhance REP goals. • The adverse it may cause is that other crops may be overlooked and its cultivation may suffer.
Small Holder Farmers West Gonja (Busunu)	Kombat Mark	.		2025-04-18	**Project Implementation -** The project will help to improve the activities of small holder farmers. - Climate smart rice production should be implemented - Need to support in the form of agro-inputs and finance. - The project will enhance food security, livelihoods and income. - Input support should be provided to the beneficiaries and project communities. - Irrigation for dry farming should be provided to sustain the project. - Training for beneficiaries in modern farm practices to enhance crop yield. - Pest and disease control support should be provided. - Machinery to help in land preparation should be part of the project. **Recommendations -** Training in rice production, processing and packing should be offered to the beneficiaries. - Construction of roads for easy transport - Improved seeds should be the primary seedlings for the project. - Appropriate agriculture infrastructure should anchor the project. - Processing facility and ready market required for the long-term sustainability of project.
Suppliers / West Gonja (Busunu)	Teleeb Philip Simon, Teleeb patience	CEO, Sells Manager	0543208999, 0246191899	2025-04-14	**Concerns/Recommendations-** They need capacity building and access to credit. - They have heard about the project. - Open to partnership (capacity building, credit access). **Project Impact -** It's going to Increase rice production/income and employment. - The project can have adverse effect such as soil erosion, land degradation if not well managed. **Business Info - The** Farmer Life company was established in 2019 and is registered under the EPA.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					- They operate all year-round and have a turnover of about 5,000. - Customers include Smallholder farmers which mostly comprise of 60 males, 10 females and 40 youth. **Operations** – They offer tech advice, market linkage. - They source from local people & foreign manufacturers. - They sometimes face stockouts due to high cost and few manufacturers available. - They use digital tools (Laptop) and don't offer credit. Don't access loans. **Challenges –** They have limited capital, storage, transport means. - They sometimes receive fake/low-quality products from the market. - Some of them lack the technical knowledge in the field. - There are sometimes limited demand which affects business. - They do sometimes have regulatory issues. - They need support for their business.
Agro-Input Dealers / West Gonja (Busunu)	Dong Richard Tinonetaar, Awudu Mariam	CEO, Sells personal (Tinonetaar); CEO (Farmer Life)	0241537323, 0593291083	2025-04-19	**Concerns/Recommendations –** The programme should consider and sponsor input dealers. Need credit support. **Business Information -** Sole proprietorship, registered and established in 2017. - Not certified but PPRSD licensed. - They sell seeds, fertilizers, chemicals, tools, irrigation equip (various crops). - They are busy all year round. - Customers are mainly smallholders (various numbers). - Offer technical advice, market linkage, credit (5-10%). - Have a turnover of about 30000 per month. - Use digital tools (Mergdata, laptop) in their business. - Source from local distributors, importers. Use digital tools (smartphone GPS). **Challenges -** Farmer inability to pay, limited capital, transport. - Fake/low-quality products, lack tech knowledge, limited demand. - Limited storage space. - Face delays and stockouts due to inadequate capital and harbour clearance). **Project Impact:** Increase yields/production and employment.
NGOs (Holland Green Tech)/ West Gonja (Busunu)	Musah Muzaminu	Field Officer	0247281436	2025-04-20	**Concerns/Recommendations –** They will be interested in collaboration with the programme. - Impact of land acquisition. **Project Impact:** Positive – increase crop production and income. **NGO Information -** Holland Green Tech focuses on vegetable Seeds, irrigation, Green House installation. - They have been in operation for 2 years. - Support farmers via community leaders/lead farmers. - They are expert in community group formation/training. **Pressing issue** – Lack of water and high irrigation tool cost.
Community and Focus Group – Category C					
Traditional Authorities	Shaibu Alhassan	Community leader	0547527789	2025-04-19	**Origin –** Majority of natives are Gonjas and they are mostly Muslims.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
West Gonja (Busunu)					- Fulanis make majority of the Busunu community who migrated from Nigeria. - They celebrate the Damba and Fire festival. - Some sacred sites exist in the community. - Aside farming, they are also involved in shea picking and animal rearing. **Compensation -** Physical and economic displacement should be catered for by the project should that occur as part of project implementation. - Land documentation should be acquired for the project to forestall any future disagreements. - Proper valuation should be conducted before payment is made to PAPs. **Vulnerable Groups** - Women households and PWD exist in the community. **Project Implementation -** Farming is prominent in the project area and a lot of livelihoods depend on agriculture. - Land for farming is acquired usually from the traditional authorities. - The land in the valley area is stool land and is available for the project. - Farmer support services should be provided to the farmers to enhance machinery usage. - The project will improve the lives of the project beneficiary communities and make lives better. - The youth and the women should be encouraged to part of the project to curb unemployment. - Adequate support should be given to all persons to be engaged on the project in the form of farm inputs. - Irrigation support should be part of the project to all farmers. **Recommendations -** There should be no political interference in the project development. - The roads in the project valley area should be improved to facilitate easy movement of goods and the community people. - Rice processing and storage should be a vital project component. - Ready market for rice with competitive pricing should be arranged for farmers to benefit from the project. - Government support for the project should not be delaying like other programs.
Men West Gonja (Busunu)	Fuseini Mohammed	Group secretary	0551009865	2025-04-21	**Activities –** Farm crops like maize, groundnut and rice. - Planting season normally between the months of April and June. - Harvest period mostly between November to December but this have been changing due to climate change.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					- They are into livestock rearing such as cattle, sheep and goats. They also hunt grasscutter for their sale and consumption. **Challenges** – They lack adequate finance, agro- inputs and tractor service for their farming activities. **Project Implementation -** The project will help to improve the livelihoods of the men in the area which will help to support families. - There is interest in rice production among the men and should be supported to make the project a success. - The necessary support in the form of inputs should be given to those who will be on the project. - Farmer support centers should be provided by government to support farmers with modern machinery. - Support to beneficiaries should be provided timely and adequately. - Rain-fed agriculture is not improving livelihoods; therefore, irrigation should be provided as part of the project. - Marketing and good pricing should be key in the project implementation. **Recommendations -** The road network in valley area should be improved to make transport of goods easy and affordable. - If people's lands are taken for the project, the right compensation should be paid to the right owners. - Extension officers should be involved in the project implementation.
Women West Gonja (Busunu)	Sakina	Farmer		2025-04-15	**Project Implementation -** Women's groups should be supported on the project with farm inputs to fully engage in the project. - Vulnerable women who lack access to land should be put on the project. - The project will help to enhance livelihoods of the women in the project communities. - Marketing of the produce should be paramount in designing project implementation. - Targeted support for women should be provided and maintained. - Incomes will be improved for women if engaged on the project. - Vulnerable women like widows and single parent women should be included in the beneficiaries. - Irrigation should be considered for the project so that there can be all-year round farming. - Machinery support for women will enhance farming outcomes.

Stakeholder/ Institution/ Location	Contact Person(s)	Role	Contact No.	Date	Concerns Raised/ Information Received
					Recommendations - There should be non-discrimination is selecting beneficiaries in the project communities - Training of the women to fully take advantage of the project should be done. - The road infrastructure around the valley and the nearby communities should be improved.
Cattle Herders / West Gonja (Busunu)	Ibrahim Wahab	Cattle Herder		2025-04-18	**Cattle Herders Profile** – They originate from Nigeria and are from the Fulani tribe. - They have been herding for more than 30 years where they are mostly caretakers. - They also engage in farming. - A Herdsmen association exists in Busunu where they hold meetings in every two months. - Grazing is difficult during the dry season when feed and water is difficult to come by. - They mostly travel long distances (5-6 km) in search of pastures for their cattle. - There are no specific location to scout when grazing. - Manage crop intrusion by apology/payment via chief/landlord. - Prevent intrusion via guarding/kraal. - Resolve conflicts via dialogue, apology, owning damage/payment. - Cordial relations with community. **Challenges -** Water scarcity, theft, farmer fights, thirst/hunger on field. - They (Fulani) sometimes feel marginalized.

Annex 5.4: Sakeholder Engagement- Nandom Municipal

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
Municipal Department of Agric Nandom	Abaching Esther Gaeten Baligi Issah Salifu	Coordinating Director Director of Agriculture, Plant protection & regulatory service	0541109393 0243845050 0559636688	2025-04-15	**Compensation** • If there are indications that there will be PAPs in the valley, they must be captured for the payment of appropriate compensation after valuation. • Possible compensation must cover structures and economic displacement as may be determined. • Compensation for land may arise if that is the requirement of the project. • Compensation must be based on proper valuation. **Project Implementation** • Crops grown are maize, sorghum, rice, beans, groundnut, millet, yam and soya. • The municipality is dominated by agricultural production activities. • The project should incorporate climate issues in the implementation. • Project activities (land development) should be timely before rains. • A refresher training needed on rice production for the people • More communities should be enrolled on the project. communities. • The project will improve food security/livelihood, boost farmer income, improve rice value chain, increase rice yields, enhance farm income, and create jobs. • Irrigation development should be part of the project component to sustain the project. • Lands are mostly stool owned. • Logistics (motor), funds (fuel), and inadequate staff are some of the challenges faced by the department. **Recommendations** • Agro-inputs from government will be required to boost the project. • Machinery for land preparation and processing should be provided.
Commercial Farmers Nandom-Kpee	Slyvester Aasom	Farm manager	0552106284	2025-04-16	**Project Implementation** • The project wi • ll boost commercial agriculture production in the area. • Ready market for the rice produced will determine the sustainability of the project. • The project will enhance livelihood and improve household incomes. • The project can increase rice production volumes when implemented well. • Proper consultation with all beneficiary communities is necessary.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
					Recommendations • Extension services should be extended to the farmers. • Irrigation should be key in the project implementation.
Women Nandom (Ko)	Beyuo Cecilia Cordilia Kobe Kele Jane Canteen Kilien Evelyn Aa-Are Felicia Kelle Naamwen-Elie Ophelia Magdaline Yiribeyour Comfort Dabuo, Francisca Tuopare	Farmers	0249497912 0551006551 0551548400 0547399209 0597919412 0257715463 0530885405 0555544223 0596736376	2025-04-17	**Project Implementation** • Support should be given to farmers to get inputs for the farming activities. • Water for dry season farming should be part of the project. • The project can improve income and livelihood of women if properly involved in the project. • The project could enhance food security when it comes to rice production in the region. • There women association that the project can provide support to undertake rice production. • Access to financial services to farmers should be facilitated to boost production. **Recommendations** • The road network in the area is bad and should be attended to. • Support to beneficiary and women especially will be key to the success for the project.
Small Holder Farmers Nandom (Ko)	Flavenu Be-iire, Gregory Mwenderi, Joseph Dery, Francis Dery, Titus Sinkang, Barely Siekang, Tangsegtaa Mary, Kale Elizabeth, Callistus Tengang	Farmers	0547490045 0245334860 0546872290 0540657631 0557587693 0559713922	2025-04-17	**Project Implementation** • The project is a welcome development for farmers generally in the area. • Marketing of farm produce is a challenge which the project must intervene to resolve. • The project will improve income and livelihoods in the area. • Irrigation should be considered for the project to make farming sustainable. • Pest and disease control should be planned for the project. • Extension education and training should be offered to all farmers on the project. • Agriculture mechanization should be part of the project. • Improved seeds should be provided to farmer for cultivation. **Recommendations** • Modern farming technology should be incorporated into the project design. • Agriculture infrastructure should be provided as part of the project.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
Small Holder Farmers Nandom-Kpee	Yiryang Thomas Bulmour Dominic Guo Martin Kuubertery Poukang Aayel Reginald Lambol Robert, Kalle Gregory Kaale Kennedy Kog Callistus Tamseb-Teb Anthony	Farmers Elder, Sub Chief Community Member Farmers	0554423670 0594787798 0207881330 0595068894 0554518110 0543300623 0595739839 0249889575	2025-04-17	**Project Implementation** • The project will increase production, income levels. • All farmer groups interested in the project should be considered. • Marketing and processing of produce should be well planned before harvesting. • Pest and disease control should be planned for the project. • Extension education and training should be offered to all interested farmers on the project. **Recommendations** • Support farmers with mechanization service, inputs • The roads in the area should be improved.
Traditional Authorities Nandom Kpee	Naawere Begel yen, Joseph Kuuvenibe, Dery Jula, Kundobuo Tagchuni, Bangfor Tadoor, Nyunyni Walieri	Chief Elders	0535210485 0531384637 0551472867	2025-04-17	**Project Implementation** • The lands in the project area are owned by the traditional authority and are available for the project. • The people are predominantly farmers and will be greatly involved in the project. • Irrigation for dry season farming should be part of the project. • Support for farmers should be consistent and timely. • Conflicts are not major issues in the area. • The project will help the youth and improve incomes and livelihoods. • Agro-inputs and other supports should be extended to the farmers. **Recommendations** • Continuous engagement of the traditional authorities and the people on the project should be prioritized. • The road network is poor and should be improved. • Project implementation should be non-discriminatory.
Traditional Authorities Nandom (Ko)	Naa Thomas Domepeeh Gyereh	Chief of Ko Elders	0551470720 0554040162	2025-04-17	**Compensation** • Land compensation may arise depending on the nature of negotiation and agreement arrived at with the proponent.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
	Gregory Beyuo Aalangdong Prosper Dapilah Peter Aayel Cornelius		0245417621 0551468707 0543299297		• If people are found to be dependent on the earmarked land, some assistance must be extended to them. • Valuation must be conducted for properties fairly and honestly. **Project Implementation** • The project is laudable and will be important for the people. • Farming is prominent in the area and must be supported. • The lands in the project area are owned by the traditional authority and are available for the cultivation of rice as the project intend. • Irrigation for dry season farming should be part of the project as the dry season makes the people redundant. • Support for farmers should be consistent and timeous. • The project will help the communities and improve incomes and livelihoods. • Agro-inputs and other supports should be extended to the farmers. • Mechanization centers for the farmers should be set up to support land preparation. • Marketing and processing should be well planned and coordinated. **Recommendations** • The traditional authorities should always be consulted on the project especially in respect of land acquisition. • Project implementation should be non-discriminatory and non-political.
Youth Nandom (Ko)	Andrews Dery Martin Billley Vitus Yirwille Clement Kyorku Vitus Dabuo Baawuo Oswald Christopher Kpime Theresa Kuuper	Farmer Organizer Chairman Member Women's organizer	0537443843 0530721680 0240206804 0241126217 0555426306 0240087845 0546259421 0594842064 0256992112	2025-04-17	**Project Implementation** • The project will help the youth in the farming business. • Support should be extended to the in the form of inputs • Agriculture mechanization should be set up as part of the project to support land preparation. • The project will help to manage the increasing migration of the youth down south. • Irrigation for dry season farming should be integral in the project implementation. • Training on modern agronomic practices should be offered to the youth to engage well in the farming activities. • The project will help to curb unemployment among the youth in the communities. **Recommendations** • The selection of beneficiaries should be apolitical.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
	Esther Dabuo Mercy Zinale		0595570577		• Attention should be given to the provision of input support as the youth do not have the resources to buy inputs. • Extension education and training should be part of the project • Processing and marketing issues should be resolved by the project before implementation.
Youth Nandom Kpee	Haruna Basit Issahaku Muniru	Youth leaders	0241299383 0204412799	2025-04-18	**Project Implementation** • Attention should be given to the provision of input support as the youth do not have the resources to buy farm inputs. • Extension education and training to the youth should be part of the project • Processing and marketing issues should be resolved by the project before commencement. • The project will help the youth in income generation. • Support should be extended to the in the form of inputs and tools. • Agriculture mechanization should be set up as part of the project to support land preparation. • The project will help to manage the increasing migration of the youth down south. • Irrigation for dry season farming should be integral in the project implementation. • Training on modern agronomic practices should be offered to the youth to engage well in the farming activities. • The project will help to curb unemployment among the youth in the communities. **Recommendations** • Further Community sensitization on the project is needed. • The selection of beneficiaries should be non-partisan. • The road network to facilitate easy movement is bad in the area and should be improved.
Men Nandom (Ko)	Daata Robert Lanbol Albert Naabieka Inatious Kulem Amasuou Aayel Reginald	Head Man Community Member Animator Elder Sub Chief	0554906616 0534457929 0256818448 0595068894 0554518110 0595739839	2025-04-17	**Project Implementation** • The project will improve food security in the region and its laudable. • The project should provide the necessary support to men and other interested persons to undertake the rice production. • Irrigation facility to help in dry season farming should be incorporated in the project. • Farm inputs and machinery for land preparation should be extended to all beneficiaries. • Those who are already farming at the site should be compensated. • Access raid to the project site should be worked on. • Farmer support centers should be set up to help in land preparation.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
	Kalle Gregory Kog Callistus	Community Member			• The project has the potential to improve livelihood for men and enhance incomes. **Recommendations** • Government support for this project should be offered timeously • Processing and marketing of rice should be vigorously pursued. • All the necessary support that needs to be provided by the project proponent should be available.
Men Nandom Kpee	Kuunibe Joseph Mwinyang Dominic Bangfo Kuubio Kuunibe Peter Aratuo Festus Begarebogr Raymond Yiryang Thomas Saabnuu Der Bangfo Francis	Member Men Organizer	0248320309 0245129491 0551973290 0247737946 0248585376 0256897464 0554423670 0505423553 0541912158	2025-04-17	**Project Implementation** • Men have easy access to land and can fully participate in the project. • The men are mostly farmers and support the project. • The project could help improve food security in the area and the region. • The project should provide the necessary production incentives to encourage more men to be involved. • Agro-inputs and machinery for land preparation should be provided by the project. • Irrigation facility to help in dry season farming should be incorporated in the project. • Those who are already farming at the site should be compensated. • Access raid to the project site should be worked on. • Farmer support centers should be set up to help in land preparation. • The project should be open to all persons in the area including the youth and women. **Recommendations** • Government and NGOs should fully support the project. • Processing and marketing of rice should be vigorously pursued. • The roads should be improved in the area for easy mobility.
Women Nandom Kpee	Sombuor Eunice Nifaakang Gladys Aapuobe Grace Eru Tieruwel Zaba Alice	Farmers	0548159811 0593444356 0596150770 0541912158	2025-04-18	**Project Implementation** • There are women groups in farming that can be supported to engage in the project implementation. • The women support the project as it will boost income and livelihood if implemented effectively. • Support should be extended to women in terms of agro-input provision. • Land preparation support should be given to the beneficiaries. • Irrigation as a component of the project should seriously be considered. • The selection of women to partake in the project should be fair. • Adequate training should be provided to all farmers to be placed on the project.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
	Naawerebagr Emila				• Extension services by the Agric department should be effectively undertaken. • Improved seedlings should be the choice for the project to enhance crop yield. **Recommendations** • Processing and marketing to guarantee prices should be led by the project proponent. • All necessary support to make the project a success should not be withheld from the farmers. • Infrastructure for the project should fully be provided to make the project sustainable.

Annex 5.5: Sakeholder Engagement- Tamale Metropolitan

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
Tamale Metropolitan Assembly Tamale	Iddriss Nouridean Abdul Baasit Zakari Dennis Bangnekuu	In-charge of Engineers District Director MISO	0244953595 0548796651 0245278244	2025-04-15	**Compensation** • Compensation should be paid if there are persons undertaking economic activities in the valley. • Land for the project should be properly documented from the traditional authority who are the owners of the land. • Compensation should be fair and adequate. • The Assembly can help address grievance issues in relation to compensation. **Project Implementation** • About 80% of the land in the metropolis are stool lands. • There are quite a number of persons involved in farming in the metropolis. • The project will help increase rice production in the rice and improve income. • Support in the form of agro-inputs and machinery should be extended to farmers. • Training for the farmers on modern farming methods should be done before project implementation. • Irrigation facility to support farming in the dry season should seriously be considered. • The project has the potential to help increase households income and reduce poverty. • There should be more dedicated interventions for the project to be successful. **Recommendations** • Roads connecting the valley and nearby communities should be improved and made more motorable. • Processing, storage and marketing systems should be put in place to anchor the project. • There should be adequate engagement of traditional authorities and communities on the project.
Metro Agric Department Tamale	Sulemana Awal Iddrissu, Alhassam Mohammed	District Planner Accountant	0242514231 0245736433	2025-04-16	**Project Implementation** • Agriculture is an essential livelihood in the metropolis especially in the periphery. • About 60% of land in the Metropolis are stool lands under the authority of the Chiefs. • There should be collaboration with the Agric department on the project implementation. • The project could increase food security and farmer income. • Access roads to the valley should be improved to facilitate transportation. • Farm inputs should be made available to farmers as majority of them cannot afford the inputs.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
					• The choice of rice is good as most farmers in the area has experience in its cultivation. • Irrigation for all year farming should be part of the project component. **Recommendations** • Project should adhere to timelines. • Support to the Agric department to help in the project implementation in the form of logistics.
Environmental Protection Authority (EPA) Tamale	Abdul Karim Jato	Office Staff	0201224235	2025-04-22	**Compensation** • Compensation issues will arise if there are PAPs in the valley. • Compensation should be addressed through comprehensive RAP. • There must be valuation of properties if any, as well as compensation for any form of displacement. **Project Implementation** • Environmental permit is required for the project. • Biodiversity conservation should be a consideration in the project implementation. • If there are RAP issues, it should be handled properly in order not to impoverish persons involved. • There will be field visits by the EPA team to monitor environmental compliance during implementation. • Farmers should be educated on the use and handling of agro-chemicals. • The project has the potential to transform livelihoods of beneficiaries if it is implemented effectively. **Recommendations** • There should be environmental monitoring during implementation to check results against established baseline conditions. • There should be good water management practices. • There should be a flood control plan in the valley.
Commercial Farmers	Mahama Aminu Ibrahim IssahAlhassan Fuseini	Farmers	0245249126 0246403438 0541669083	2025-04-15, 2025-04-17	**Project Implementation** • Commercial farming is not a major practice in the area and the project can help to bring about commercialization of agriculture. • The commercial farmers are ready to be engaged on the project, provided the necessary support

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
Tamale Metro (Nyankpala)	Alhassan Adam		0598082093		in respect of agro-inputs and machinery will be available. • Irrigation component should be considered to guarantee farmers investment. • Access to market should be a key priority of the project. • Credit facility support is crucial for farm expansion. • Improved seedlings should be adopted to increase production yield. **Recommendations** • The size of the rice valley should be increased, if possible, for more commercial farmers to be engaged on the project. • Water conservation technology should be used in the production.
Youth Tamale Metro (Nyankpala)	Mahama Munkaila	Plan Ghana	0244689343	2025-04-18	**Project Implementation** • Youth unemployment is rife in the area and the project will help reduce the phenomenon. • A number of the youth are into farming and have the opportunity to take advantage of the project to better their lives. • Youth support on the project should be targeted by providing inputs. • Support for dry season farming should be provided in the form of irrigation to make the project sustainable. • Marketing for rice should be part of the project so that income can be guaranteed. • Access to land should be facilitated by the project proponent. **Recommendations** • Training for the youth in modern rice farming technology will be helpful. • Processing and storage facilities should be provided to make the rice not go to waste.
Small Holder Farmers Tamale Metro (Nyankpala)	Abdalla Abukari Mohammed Razak Karim Abdul Latif	Farmers	0246238118 0248428508 0246705295 0247586820 0247925527 0554857403	2025-04-18	**Project Implementation** • Maize and rice are the dominant crops grown by the small-holder farmers in the metropolis. • High value rice variety should be used for the project to increase yield. • The project has the potential to increase agricultural productivity in the area as well as enhance income of agriculture households. • Access to ready market for the rice to be produced should be guaranteed for all farmers to be engaged on the project. • Input support for the farmers in the area of agro-inputs and tools will make the project effective. • Sustainable resources agricultural technologies should be adopted for the project

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
	Iddi Manza Abdallah Ziblim Abdul Ganiu Abdul Aziz Latif Majeed Abdul-Baaki Sulemana Iddrisu Abdul Rahaman Alidu		0556464055 0245244212 0553854285		• Animal grazing is widespread in the area which could negatively affect the project; therefore, such issues should be addressed with the metropolitan assembly, the herders and farmers. • Irrigation and climate change should be factored into the project as rain-fed farming is not sustainable **Recommendations** • Capacity building and training needed for farmers on the project. • Infrastructure for the project in terms of roads, processing and storage facilities should be provided. • Support for the project should be timely throughout the lifetime of the project.
Traditional Authorities Tamale Metro (Nyankpala)	Abdulai Sheini Haruna Wumbei Alhassan Tidoo Issahaku Adam Issahaku Aminu Alhassan Majeed Sulemana Alhassan Karim Adam	Chiefs/Farmers	0548792259 0531997972 0249354335 0554978031 0241582964 0533027547 0248558082	2025-04-19	**Compensation** • Physical and economic displacement by the project if any, should be addressed through compensation. • Compensation must be based on valuation undertaken by certified valuers. • Compensation should go to only persons captured and deserving of same. • Land earmarked for the project should be properly acquired and documented. **Project Implementation** • The traditional authority supports the project and hopes it is implemented as planned. • The valley land is owned by the traditional authorities and its skin land. • Land in the area is mostly skin lands under the authority of traditional authorities. • Farming is an essential part of the people's livelihoods; therefore, the project is in the right direction. • There should be adequate input support to farmers. • The project will help to reduce youth unemployment and improve people's livelihood. • Marketing for the rice to be produced should be strong to make sure the product gets to the consumers. • There should be farmer service centers to support farmers in land preparation and other farming activities.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
					Recommendations • The project should not be embroiled in politics in order not to derail its success. • Infrastructure for the project should be put in place to support the implementation of the project. • The traditional authorities should be constantly updated on the project.
Women Tamale Metro (Nyankpala)	Abdul Mumin Anbariya Andaratu Zakaria Alhassan Asana Fuseini Asana Iddrisu Barkisu Musah Samata Nashira Imoro Rahaman Jamila Asana Yakubu	Traders Food sellers Kpaluwa	0248150826 0249016866 0247271884 0545642285 0598001581 0246577393 0535751858 0556479768 0533581278	2025-04-18	**Project Implementation** • Women require financial support to enhance their farming activities. • Vulnerable and marginalized women should be given the chance to be on the project. • Dry season farming supported by irrigation infrastructure will make the project implementation more impactful. • Agro-inputs and tools are expensive to purchase, support to get these materials is required. • The women are very much involved in the running of their homes, the project if implemented well will help improve incomes for the benefit of their families. • Dealers in rice will get products for the market at a more reasonable price. • People to be displaced in the valley earmarked for the project should be compensated. **Recommendations** • Processing and marketing systems should be put in place to ensure income from the farm is guaranteed. • The men should be supported to also engage in the project for the betterment of their families.
Men Tamale Metro (Nyankpala)	Abdul-Rahaman Inusa Umar Mohammed Yakubu Ibrahim Alhassan Alhassan Mumuni Nsuna Dauda Alidu	Farmers	054160961202 49621569 0540963644 0245614616 0243246171 0554106513 0548457243 0543100960	2025-04-18	**Project Implementation** • The project will boost food security and incomes among the men that will be given the opportunity to be on the project. • The main activity undertaken by the men is farming and the major crops grown are rice, maize, cassava, soybean and groundnut, the project will therefore align with their work. • Credit facilities from the banks should be made available for the expansion of farms. • Compensation for land loss is very important to sustain livelihoods. • Extended droughts are a concern which can be solved by dams for irrigation. • Agro- inputs and tools should be made available to the farmers to improve yield. • Mixed farming method should be adopted for the cultivation of the rice. **Recommendations**

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
	Sumani Fuseini Yakubu Salifu				• Training on modern rice farming methods for beneficiary farmers is key to project success. • The infrastructure required for the project should be installed to avoid challenges for the project. • The government should collaborate with NGOs in the supply of inputs to farmers to make input provision timeous and more effective.
NGO (CLIP) Tamale Metro	Aminu Awal	Project Officer (Changing Lives in Innovative Partnership - CLIP)	0245007520	2025-04-23	**Project Implementation** • The project can change livelihoods if managed well. • Farmers need briefing on land acquisition/compensation. • Consider irrigation for dry season for farmers. • Land acquisition may displace existing farmers. • The project should be climate smart. • Vulnerable and marginalized persons should be included on the project to make it more inclusive. • Agro-inputs and tools for farmers should be part of the project. **Recommendations** • Partner with NGOs, and avoid politicization of the project. • Communities should be sensitized on the project. • Farmer capacity building for climate change impacts.

Annex 5.6: Sakeholder Engagement- Wa Municipal

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
District MOFA Wa Municipal				2025-04-14	**Compensation** • Compensation for land acquisition should be tackled properly to avoid difficulties. • There should also be compensation for physical and economic displacement if that is a possible impact in the proposed rice valley. **Project Implementation** • The project is welcomed as agriculture is the major economic activity in the district. • The project could enhance job creation and food security. • The main challenge to agriculture in the district is lack of finance. • Improved seeds and pest/disease resistant varieties should be distributed to farmers for the project. • Irrigation component should be added to the project. • The project could enhance livelihood of project communities. • The department requires logistic support to function effectively. • There valley land is appropriate for the project and it is owned by the traditional authorities. • Population in the district involved in agriculture is 120,276. • Support in the form of agro-inputs should be provided on time before cultivation. **Recommendations** • Refresher training courses on rice production needed for the people. • More communities should be enrolled unto the program. • All support required for the project should be provided. • Logistics for the Agric Department officials to provide support for the project is required.
District Assembly Wa Municipal	Ayisha Seidu Sarah Abdul Hak	Development Planning Officer, Senior Development Planning Officer	0546785516 0242112283	2025-04-16	**Compensation** • There may be issues with compensation in relation to land acquisition that must be considered. • Physical and economic displacement may be occasioned by the project and should be addressed. • Compensation must be clearly determined before the commencement of the project.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
					Project Implementation • The municipality's population is heavily involved in agriculture; therefore, the project will offer opportunities to the farmers. • Irrigation should be seriously considered as part of the project as rainfall to make it sustainable. • The municipality is ready to provide support to make the project successful. • The right project infrastructure must be put in place to make the project reach its full potential. • The potential of the project to impact positively on the people livelihood is great. • Adequate land is available in the area for the project in the Municipality. • Project implementation should include vulnerable people. • There must be compensation of individuals lands will be acquired for the project. **Recommendations** • Regular training in rice production should be given to beneficiary farmers by extension officers. • Farm inputs and machinery should be made available to the farmers regularly to make the project successful.
Lands Commission (LC) Wa Municipal	Acheampong Wilfred	Regional Lands Officer	0244456194	2025-04-16	**Compensation** • Compensation issues relating to land, physical and economic displacement should be resolved before project commencement. • The LC is ready to validate valuations that will be done for affected persons. • The LC will help to acquire necessary land related documentation if required. • The LC will help the project to acquire necessary land related documentation if required. **Project Implementation** • Lands in the municipality are mostly stool lands. • The project is good for agriculture revitalization. • Communities should be properly involved in the project. • Land for the project can be acquired from traditional authorities. • The project should be inclusive in its implementation. **Recommendations**

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
					• There should be compensation for those to be displace by the project. • There should be proper community sensitization on the project. • All project related support should be provided to project communities.
Environmental Protection Authority (EPA) Wa Municipal	Fabians Aberinga	Program officer	0246484579	2025-04-15	**Project Implementation** • The permit for the project will be issued upon submission and review of the ESIA. • There should be environmental consideration during project implementation. • The project has the potential to increase rice production if implemented. • The ESIA should be comprehensive to cover all project potential risks and mitigation measures proffered. And prevent pollution/contamination. • The use of agro-chemicals should be properly handled to prevent pollution/contamination **Recommendations** • Extension staff should be trained for the project. • Monitoring should be done during project implementation. • Fish/snail farming should be incorporated into the project. • There should be compensation for those to be displace by the project.
Commercial Farmers Wa Municipal (Dokpong, Sing)	Safadeen Yelkumo Yakubu Ishak Jinsung Alhassan Adam	Commercial farmers	0540432140 0244159635 0598082093	2025-04-15, 2025-04-17	**Project Implementation** • Agro-inputs such as fertilizer and pesticides should be provided as part of the project implementation. • Seeds and fertilizer will be required as support for the farmers. • If peoples land will be taken, compensation should be paid accordingly. • The farmers are happy about the project and are eager to be part. • Irrigation and machinery will be required to make the project successful and sustainable. • Improved rice seedlings should regularly be supplied to farmers as well as fertilizer and pesticides **Recommendations** • Government support for the project must be consistent. • There should be processing and storage facilities after harvesting. • There should be ready market to sell produce.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
Traditional Authorities Wa Municipal (Charia/Sing)	Azaanaang Theophilius Hillary Seidu Issahaku	Assembly member Chief linguist	0201690806 0592346960	2025-04-17 2025-04-18	**Compensation** • Physical and economic displacement should be catered for by the project if identified. • There should be documentation for lands allocated for the project. • Issues of compensation should be handled well to prevent agitations that may affect project implementation. **Project Implementation** • The traditional authority supports the project fully and prays the government implements the project. • The land in the valley area is skin land and is available for the project. • Farmer support services should be provided to the farmers. • Land in the area is acquired through inheritance. • The project will improve the lives of the project beneficiary communities. • Farming is prominent in the project area and a lot of livelihoods depend on it. • The youth and the women should be encouraged to part of the project to curb unemployment. • Adequate support should be given to all persons to be engaged on the project in the form of farm inputs. • Irrigation and machinery support should be part of the project. • Customarily, anyone who wants to gain access to lands must present cola nuts with cash to see the landlords for the necessary negotiations to be done. **Recommendations** • There should be no political interference in farmers selection unto the project. • The roads in the project valley area should be improved to facilitate easy movement of goods and persons. • Rice processing and storage should be a vital project component • Ready market for rice with competitive produce pricing should be arranged for farmers.
Women Wa Municipal (Charia)	Doreen Yakubu Georgina Ali Mwinibanzora Gladys	Group leader Group member Group organiser	0541847084 0241370752 0249539132	2025-04-17	**Project Implementation** • The women are interested in taking part in the project implementation. • Targeted support for women should be provided and maintained. • The project if implemented well can benefit women greatly. • Incomes will be improved for women if engaged on the project.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
	Batung Rita				• The project will help the people in the area especially the women to have sustainable income. • Vulnerable women like widows should be included in the beneficiaries. • Women usually do not have money to buy farm inputs, so support in that regard will be required. • Irrigation should be considered for the project so that there can be all-year round farming. • Machinery support for women will enhance farming outcomes. **Recommendations** • Adequate support to women should be prioritized. • There should be non-discrimination is selecting beneficiaries. • There should be training on modern rice production methods and use of agro-inputs for beneficiaries.
Youth Wa Municipal (Charia/Sing)	Jude Azaanaang Ali Kanyeregbani Marcellinus Kanyeregbani Haruna Basit Issahaku Muniru	Youth leaders Youth	0247402220 0241370752 0556391833 0241299383 0204412799	2025-04-17 2025-04-18	**Project Implementation** • The project will help to reduce unemployment in the area. • Support to the youth in the form of agro-inputs and tools to fully participate in the project is required. • Improved seedlings for higher yield should be provided to the farmers. • Agric mechanization centers should be set up by the project to support the farmers. • Dry season farming aided by irrigation should be part of the project as rainfed agriculture is unpredictable. **Recommendations** • Training for the youth in modern farming should be provided. • Credit support should be extended by financial service providers. • Project infrastructure should be provided before and during project implementation.
Men Wa Municipal (Charia/Sing)	Radoth Namani Adams Braimah Mahama Saanpuribu	Opinion leader Group members Farmers Kpaluwa	0543108533 0532956967 0245672715	2025-04-17 2025-04-18	**Project Implementation** • If people's lands are taken for the project, the right compensation should be paid to the right owners. • The project will go a long way to boost the livelihoods of the men in the area which will help to support families. • There is interest in rice production among the men.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date	Summary of Information Received and Recommendations
	Bawulu Mumuni Abaywmwini Francis Yendao Sule Braimah Seidu Abubakari Yakubu Ibrahim Alhassan Alhassan Mumuni Nsuna Dauda Alidu Sumani Fuseini Yakubu Salifu		0532564246 0241590215 0537331009 0533178413 0540963644		• The necessary support should be given to those who will be on the project. • Farm input provision will be key for project success. • Farmer support centers should be provided by government to support farmers. • Support to beneficiaries should be provided timely and adequately. • Rain-fed agriculture is not improving livelihoods; therefore, irrigation should be considered. **Recommendations** • The road network in valley area should be improved to make transport of goods easy and affordable. • The project implementation unit should be very much involved in the execution.
Small Holder Farmers / Wa Municipal (Sing)	Mahama Hamidu Abdulai Mahama Bayong Abubakari Alhassan Seidu Nachinaa Abdulai Nachinaa Salifu Dauda Yakubu Abudi	Farmers	0547732980 0549839236 0551903008 0243821370 0241591371 0205365523 0551848187	2025-04-18	**Project Implementation** • The project will help to improve the activities of small holder farmers. • The project will enhance food security, livelihoods and income. • Input support should be provided to the beneficiaries and project communities. • Irrigation for dry farming should be provided to sustain the project. • Training for beneficiaries in modern farm practices to enhance crop yield. • Pest and disease control support should be provided. • Machinery to help in land preparation should be part of the project. **Recommendations** • Improved seeds should be the primary seedlings for the project. • The right agriculture infrastructure should anchor the project. • Processing facility and ready market required for the long-term sustainability of project.

Annex 5.7: Sakeholder Engagement- Mamprugu Moagduri District

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date(s)	Concerns Raised/ Information Received
Government Institutions – Category A					
NADMO / Mamprugu Moagduri District (Kubori)	Mahama Abdul-Rahaman	Director	0544286819	2025-04-16	**Concerns/Recommendations:** Project should bring more interventions for youth. Provide life-jackets for farmers during flood periods. **Information Received:** Understands the project will reduce poverty and improve livelihood. **Project Impact:** Positive. **Disasters:** Area experiences floods, wildfire, earthquake (Aug-Sep). Causes include mining, deforestation, pollution, soil erosion. **Effects of disaster**: Reduced crop yield, disrupted human life. **Agriculture risks**: Livelihood disruption, reduced yield. Need early maturity seeds, regular weather updates. NADMO organizes early warning sensitization. NADMO coordinates resources and develops community capacity for response; claims to have required resources.
Rural Enterprise Programme / Mamprugu Moagduri District	Mahama Imoru	Business Development Officer	0248451154	2025-04-16	**Concerns/Recommendations:** Project should install rice processing machines. **Questions:** How soon will the project start?. **Information Received:** Programme targets the poor and reproductive age; known via community sensitization, VSLA, traditional leaders, word of mouth. Enrolment deals with groups. Offers training (e.g., soap making). **Major beneficiaries**: Women, Physically Challenged, Aged, VSLA groups. No direct financial support, links to banks for loans. **Main activities**: Soap making, farming. Links farmers to financial institutions. Officers monitor participants' businesses. **Challenges:** Inadequate resources to support beneficiaries. **Project Impact:** Positive - boost local economy, create jobs. REWARD programme expected to enhance REP goals.
District Assembly / Mamprugu Moagduri District	Seidu Soalihu	Coordinating Director (assumed role)	0548999951	2025-04-24	**Concerns/Recommendations:** Project should be participatory, speed up timelines, include capacity building for staff and farmers. Need agricultural mechanization. **Questions:** How will project operate? What is the role of the district assembly (DCE, Coordinating Director)?. **District Info:** Land mainly used for farming, residential buildings. Access land via

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date(s)	Concerns Raised/ Information Received
					chiefs, landowners, families. No known squatters. No land conflicts experienced. **Main economic activities**: Farming, Trade, Animal Production. Challenges: Inaccessible roads, inadequate market & farm inputs, lack of mechanization. **Population**: 66,181. **Ethnic group**: Mole Dagbani (Mamprusi dominant/native). No migrants mentioned. **Vulnerable**: ~90% (cannot meet daily needs), receive support (LEAP, SOCO, etc.). **Religion:** Islam 80%, Christian 9.5%, Traditional 9.4%. Women-headed households: ~2%; Disabled: ~2%. **Better-off**: Formal education, hardworking, tractor/livestock owners. **Difficult time**: Off-season farming. **Health**: CHPS compound, polyclinic; **Challenges:** inadequate facilities/personnel. Education: Tertiary, SHS, JHS, Primary; challenges: inadequate teachers, accommodation, materials. **Water:** Dugouts, wells, borehole (inadequate). Electricity: ~62% coverage; Mobile network: ~58% access. Security: Not safe, no police station. Positive: Land tenure not a problem. Needs/Priorities: Farming, Good Education, Healthcare.
Private Institutions – Category B					
Aggregator / Mamprugu Moagduri District (Kubori)	Abu Imoro	Aggregator	0243933464	2025-04-17	**Concerns/Recommendations:** Needs support (training, machinery, digital tools), adequate finance. Project leaders should collaborate for timely implementation. **Questions:** Will project support aggregators?. **Business Info:** Sole proprietor since 2006, MoFA/PPRSD certified. Aggregates Jasmine, AGRA, local rice (~400 bags/month) from individuals/FBOs (has written agreements), mainly from Volta Region. Owns storage (rooms). Does cleaning value addition. Transports via own/hired vehicles. Sells to local markets, retailers, millers. Uses WhatsApp/calls for markets. Provides improved seed, fertilizers, training, credit access to farmers. Doesn't work with govt/NGOs. **Challenges:** Access to finance, storage infrastructure, market access. Difficulty selling due to inadequate finances, low price.
Agro-Input Dealers /	Yakubu Musah, Ayuba Hardi,	Input Dealers	0592247466, 0247355225,	2025-04-17	**Concerns/Recommendations:** Project should improve livelihoods, bring development. Open to partnerships to gain knowledge on agri-tech. Needs support: credit/financial

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date(s)	Concerns Raised/ Information Received
Mamprugu Moagduri District (Kubori)	Fatawu Yakubu, Abubakari Asmiu		0540530994, 0557213750		services, digital inventory/POS systems. **Business Info:** Sampaaba enterprise kubori, established June 2019, certified. Sells seeds (rice, maize, veg), fertilizers (brands: Agro-craw, jubali, Barizaa, etc.). Busiest season: Mar-Jun. Customers: Smallholders (100 male, 40 female, 80 youth). Offers technical advice, market linkage. Offers inputs on credit (to 50% customers). Sources from local distributors. Access credit from banks, input suppliers. Faces stockouts due to lack of financials. Doesn't use digital tools. **Challenges:** Limited access to capital, inadequate storage facilities, transportation costs.
Commercial Farmers / Mamprugu Moagduri District (Sagbisi)	Tahiru Razak, Abubakari Aziz, Iddrisu Aminu	Farmers	0544724259, 0542624545, 0256827164	2025-04-17	**Concerns/Recommendations:** Needs market availability, rice processing factory. Fair compensation if land acquired: money for new land development or project develops alternative land. No other suggestions/concerns. **Farming Info:** Farming ~30 yrs, ~100 acres (owned/leased). Grows rice, maize using mechanized methods. Uses inorganic fertilizer, selective herbicides. No irrigation access. Sells to small aggregators, market women. Receives no govt/org support. **Challenges:** Inadequate tractor service, market access, fertilizer access, drought, road network. **Project Impact:** Potential benefits: access farming techniques, increased market opportunities, job creation, promotion of local rice. Adverse effect concern: project hijack if not careful. Not aware of planned land acquisition, thinks it won't affect them.
Community and Focus Group – Category C					
Women / Mamprugu Moagduri District (Kubori)	Salifu Asana, Abu Barichisu, Salifu Zara, Issahaku Laadi, Yakubu Adisah, Salifu Malia, Iddrisu Taiba, et al. (10 total)	Women/Farmers	0552963697, 0538135734, 0257171794, 0533386383, 0531321943, 0594491908, 0552674268, etc.	2025-04-16	**Concerns/Recommendations:** Praying project meets needs/implementation. Needs: Water, farming equipment, education. **Questions:** Will there be recovery at end of harvesting?. **Community Info:** Roles: home sanitation, family feeding, rice processing/selling. Represented by queen leader, contribute to decisions. Men often make final household decisions but women decide on expenses, education, finance. Rely on each other for income generation, childcare. Get info via radio, TV, leaders. No women's associations. Men's activities: farming, trading, rearing. Men contribute more income (seen as household head). Women need business/trading/processing opportunities. Access bank accounts; participate in NGO-organised savings groups (e.g., CRS). Receive support

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date(s)	Concerns Raised/ Information Received
					from World Food Programme when struggling. **Difficult time**: Jul-Aug. Land controlled by men; access via families/owners. Women farm, harvest, process, plant, winnow; grow rice, maize, groundnuts, veg. Plant Jun, harvest Oct/Nov (changing due to rainfall). Process rice (rice water, T.Z), broken rice. Use firewood from bush. Education access exists, girls complete SHS/college. **Barriers**: teenage pregnancy, finance, sickness. Access healthcare at Kubori CHC. Manage family planning, access pre/post-natal care. Health challenges: inadequate drugs, no special treatment access. Treat illness by going to hospital. Disabled people require care. **Needs for better quality of life**: health incentives. No leisure facilities. **Festival**: Fire festival. Aware of sacred site but not close to project site.
Youth / Mamprugu Moagduri District (Kubori)	Abubakari Tamimu, Iddrisu Fataw, Musah Jabaru, Fuseini Sadik, Alhassan Mudashiru, Musah Ishaw, et al. (10 total)	Youth	0546258425, 0533544139, 0594769437, 0248197326, 0257026665, 0534056154, etc.	2025-04-17	**Concerns/Recommendations:** Project owners should fulfil implementation. Prefer mixed-gender agricultural training for equal treatment. **Questions:** Impact on youth? **Community Info:** Not heard of project. Aware of potential land acquisition/resettlement. Priorities: income, business, quality seeds/education. Issues: lack of credit/finance/skills; need govt/NGO/private support. Have youth representative, feel voices heard (farming, development). No specific youth programs (apart from small rice farming). Most finish school age 25-30 (Dip/Degree); limited by finance/parental support; travel south to earn for education. Contribute via business/farming/trading; roles: help farming, household choices. Skills: business, innovation. High unemployment (~90%) due to lack of opportunities/connections; look via applications. **Barriers:** lack of connections, finance. Most (98%) work for self; 100% in agriculture (rice, maize, veg; sheep, goats, birds). Own land/crops/assets. Aspirations: network tower, improved education; plan via finance generation. Barriers: lack of credit/finance; overcome via knowledge, govt/project support. Spare time: skills work, football. **Quality of life**: peaceful, basic infrastructure access; need livelihood support. Issues: no network, water crisis, lack of inputs/jobs/finance. Believe men/women have equal agriculture involvement/access (women earn more in farming season). Gender roles (farming, harvesting) seen as fair. Barrier for women: men claiming land ownership. Interested in agri training.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date(s)	Concerns Raised/ Information Received
Cattle Herders / Mamprugu Moagduri District (Kubori)	Brama Abdulai	Caretaker/Herdsman (from Burkina Faso)	0537414531	2025-04-17	**Concerns/Recommendations:** Project should support them with folderbank for grazing. **Community Info:** Herding 25 yrs, also does poultry production. Herdsmen have an association, meets once/year. Graze cattle daily (early morning, ~2hr journey). Handle crop destruction via deliberation/payment with farmer. Use bean chaff for feed in dry season. Prevent intrusion by fencing at night, careful daytime grazing. Manage straying onto farms by reporting to chief for resolution/compensation. Prevent conflict escalation via resettlement. Good relationship with community members. **Challenges:** Inadequate grazing land during farming season. **Project Impact:** Positive - boost production, change lives.
Cattle Herders / Mamprugu Moagduri District (Zanwara)	Mahammudu Hoife, Adama Issifu, Shahadu Jemilirah, Sumai Bearah, Hamidu Mahammudu, Yakuba Issah, et al. (8 total)	Herdsmen (Caretakers, from Burkina Faso)	0545504164, 0532741916, 0241998243, 0532647641, 0535912067, 0557310644, etc.	2025-04-23	**Concerns/Recommendations:** Project should implement all it can; provide dam to store water for animals. **Questions:** Project should involve community members. **Community Info:** Herding ~33 yrs, also farm/rear animals. No herdsmen association. Graze daily (from 9 am, ~1hr journey); no specific location due to farmers. Handle crop intrusion by reporting to chief for resolution. Manage scarce grass in dry season by letting animals find leftovers. Prevent intrusion using fence/kraal. Manage straying onto farms by meeting farmer one-on-one or involving chief. Good relationship with community ("native find"). **Challenges:** Farmers sometimes chase them away from farms. **Project Impact:** Happy about the project.
Traditional Authorities / Mamprugu Moagduri District (Kubori)	Koja Haruna, Salifu Yidana, Bugdoo Issah, Imoru Yidana, Issifu Bugdoo, Hassan Yidana, Fuseini Yidana, et al. (10 total)	Elders, Chief	0550857507, 0550561544, 0596438634, 0245853230, 0539370647, 0248431154, etc.	2025-04-16	**Concerns/Recommendations:** Ready to collaborate and support the REWARD project. **Questions:** How will TAs be involved in decision making? What measures for land ownership/compensation? Will project provide ongoing support (inputs, extension, market links)?. **Community Info:** Land: 70% stool/family, 30% private. Use: Agriculture (dominant), grazing, residential. Access land via chief, inheritance, family. Informal users: migrant farmers, women, Fulani herders. Find land by requesting from chief/elders. Aware of squatters/informal users who could be affected. No land conflicts experienced.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date(s)	Concerns Raised/ Information Received
					Livelihoods: Farming, Animal production, **Business. Challenges**: No price control/market/value addition, inadequate harvesters. **Population**: ~5000 (Mamprusi, Kantosi, Fulani, Hausa). Vulnerable groups exist. Religion: Islam. Women-headed HH: 25; Disabled present. Better-off: Large land holdings, tractor/cattle owners. No support for less well-off. Decision-makers: Chief/elders, Religious leaders, Assembly persons, youth/women groups. Rep via Assembly Member (satisfied). Women actively involved in decisions. Local groups: Imams, pastors, TAs, women/youth groups, FBOs (purposes: economic empowerment, savings, youth dev, culture). Leaders appointed by chief based on tradition/experience/respect. Community >500 yrs old, founded by Naa Salifu. **Festival**: Bugum. No known sacred sites/taboos. Health: Clinic; challenges: ambulance, staff residence, medicine shortage. No traditional medicine use mentioned. Education: Primary, JHS, Nurses College; challenges: infrastructure, teachers, materials. Water: Boreholes, wells (scarce in dry season). Energy: Electricity, fuelwood. Poor mobile network (10%). Quality of life: Peaceful, unity; need clean water, network, health, agri support, jobs, sanitation. Top 3 needs: Clean water, good mobile network, improved health services.
Traditional Authorities / Mamprugu Moagduri District (Zanwara)	Yakubu Abdulai, Mahama Samari, Alhassan Abdulai, Yakubu Zakari, Wahabu Bako, Yahaya Karim, Seidu Zakari, et al. (10 total)	Elder, Chief Rep, Chief Secretary	0597856545, 0543497526, 0541262136, 0551161596, 0553853510, 0597879774, 0592610885, etc.	2025-04-23	**Concerns/Recommendations:** No opinions/comments/recommendations mentioned. **Community Info:** Not heard of project. Land: 100% chief-owned. Use: Farming, residential. Access land via chief (request with cola nut/money). No informal access/squatters/land conflicts. Livelihoods: Farming, livestock production. Challenges: Inadequate tractor service, bad road network, lack of inputs, animal loss risk, flood, drought. Pop: ~3500 (Mampruli, Bulsa, Fulani). Migrants: Fulani (Mali), Bulsa (Bulsa south). Vulnerable groups exist (poor, limited land access). Religion: Muslim 85%, Christian 5%, Traditional 10%. Women-headed HH: 50; Disabled: 30. Better-off: Tractor, cattle, goat, sheep owners. No support for less well-off. Decision-makers: Chief/TAs (most important), youth/women groups. Rep via Assembly Member (satisfied). Women attend meetings but culture may limit participation. Local groups: TAs, pastors, Imams. Leaders appointed via chief/clans. Founder: Mba Bapiliya (settled for farming). Festivals: Bugum, Eid fitr, Eid adha. No sacred sites. Health: CHPS compound; challenges: no clinic, transport, sanitation. Use traditional medicine (herbalists, bone setters, TBAs) due to effectiveness, cost, access, culture. Education: Primary, JHS; challenges: classrooms, teachers, materials, chairs. Water: No source in

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date(s)	Concerns Raised/ Information Received
					dry season. Energy: Yes (type not specified). No mobile network. **Quality of life**: Positive=Farming; need water, health, education, roads, market, network. Top 3 needs: Water, network, quality healthcare.
Men / Mamprugu Moagduri District (Zanwara)	Yahaya Hudu, Musah Iddrisu, Yakubu Osman, Yahaya Osman, Musah Osman, Dahamani Osman, Salifu Nashiru, et al. (10 total)	Farmers	0559316106, 0243875809, 0549184633, 0549476436, 0247999976, 0559909610, 0553129502, etc.	2025-04-23	**Concerns/Recommendations:** Project owners should coordinate to achieve goals. Prefer mixed-gender training; find mobile apps useful for farming. **Questions:** Will there be recovery afterwards? **Community Info:** Not heard of project. Roles: Farming, trading, small business. Believe men/women have equal opportunities (women understand education importance). Men typically make final household decisions (education, expenses, finance) & manage money (not always well). Get info via DA, radio, TV, social media, leaders. No men's associations/cooperatives. Main economic activity: Farming. Men contribute more income (seen as family head). Can improve opportunities via farming/trading. Access bank accounts; participate in NGO-organised savings groups. Better-off exist; no support for less well-off. Difficult time: Aug-Sep. Men decide land use, feel control; access via owners, family, friends, chief. No informal access mentioned. Experienced land conflicts (arguments, infrequent). Land uses: family, individual, chief. Activities: Farming, planting, harvesting, conservation ag. Grow maize, rice, cowpea, groundnuts (sell?). Plant May, harvest Oct-Nov (changing due to climate). Own/harvest trees. Keep sheep, cows, goats, poultry (subsistence). Hunt squirrels, rabbits. Natural resources not common anymore. **Challenges:** Lack of finance, inputs, implements. Health access via hospital/locals (needs unmet); issues: finance, standard hospitals, ambulance. Disabled require care (blindness mentioned). Quality of life: Peaceful; need financial support, quality healthcare. Top 3 needs: Water, healthcare, education. **Project Impact:** Positive: food security, jobs, reduced spoilage, development. Adverse: potential land degradation, quarrels.
Women / Mamprugu Moagduri District (Zanwara)	Iddrisu Saliha, Abdulai Ubeida, Alhassan S. Bushira, Salifu Ayi, Ibrahim Bushira, Seidu	Farmers	0256569175, 0597263970, 0531222319, 0531299128, 053129128, 0531296549,	2025-04-23	**Concerns/Recommendations:** Hoping project commences this farming season. Needs: Farming equipment, education, water. **Questions:** Who provides inputs? Will there be recovery? **Community Info:** Not heard of project.

Stakeholder/ Institution/ Location	Contact Person(s)	Role(s)	Contact No.	Date(s)	Concerns Raised/ Information Received
	Sadia, Osman Sharifa, et al. (10 total)		0531276796, etc.		Roles: Farming, trading, processing. No female head/leader mentioned. Contribute to decisions, represented at meetings. Make decisions on education, finance, expenses; men often make final decision (respect). Female-headed households exist (not common). Money managed by both (men more due to respect). Rely on each other for childcare, education, income generation. Get info via leaders, radio, TV, govt, NGOs. No women's associations/savings groups. Men's activities: farming, trading, business. Men contribute more income (family head). Can improve opportunities via business. Access bank accounts. Better-off exist; receive support from better-off for farming (pay back). Difficult time: Aug-Sep. Do not control land; access via chief, individuals, friends, families. Decide on efficient land use. Activities: farming, processing. Grow maize, groundnuts, rice, cowpea. Plant May, harvest Oct (changing due to climate). Own/harvest trees. Process beans (cakes), soybean (Kibab). Use firewood. Education access exists but quality lacking. Girls complete school after SHS. **Barriers**: finance, teen pregnancy. Access healthcare locally/nearby. Access family planning, pre/post-natal care; special care provisions exist. Health challenges: lack of ambulance, inadequate drugs, finance. No support if ill. Disabled require care (blind). Needs for better QoL: financial support, improved education, water. No leisure facilities. Festival: Fire festival. No known sacred sites impacted. **Challenges:** Inadequate finance, farm inputs, implements.

Annex 6: Pictures of Stakeholder Engagement

Pictures of Stakeholder Engagement at MionDistrict

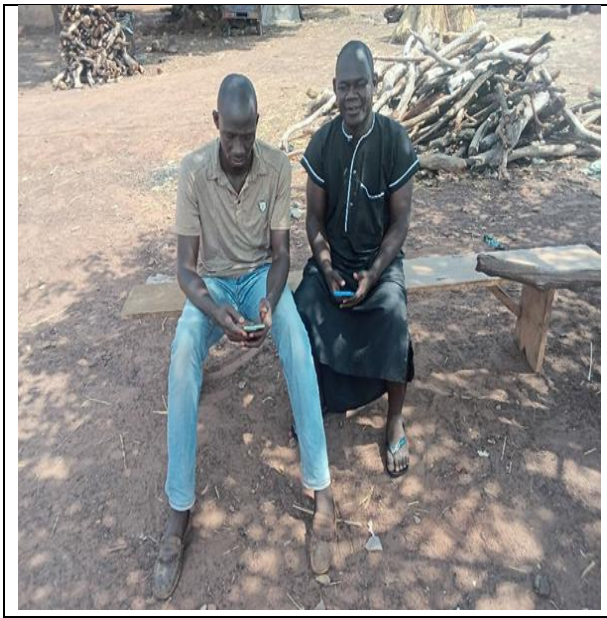
	
Engagement with Mion District Department of Agric	Engagement with Small Holder Farmers

	
Engagement with the Youth	Engagement with women group

	
Engagement with Cattle Herders	Engagement with Commercial Farmers

	
Engagement with Aggregators	Engagement with Men Group

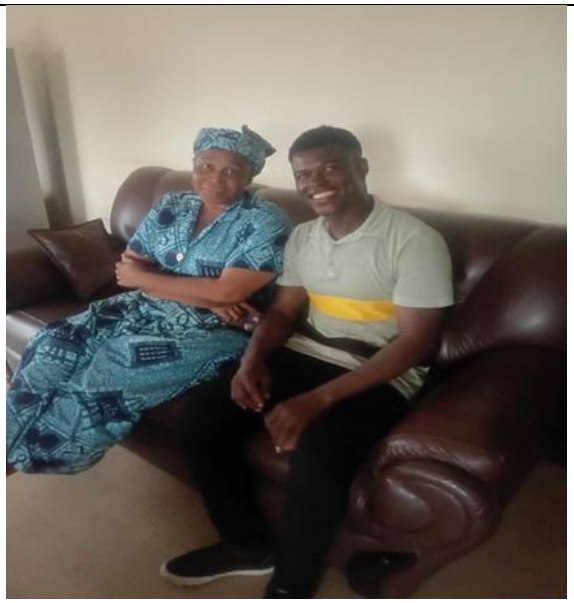
	
Engagement Faith Based Organizations (FBO)	Engagement with Traditional Authorities

	
Engagement with National Disaster Management Organisation (NADMO) Official	Engagement with Agro-Input Dealers

Pictures of Stakeholder Engagement at Nandom Municipal

	
Engagement with Officials of Water Resource Commission	Engagement with Official of the District Department of Agriculture
	
Engagement with NADMO official	Engagement with Women Groups
	

Engagement with Men's Group	Engagement with Commercial Farmers
	
Engagement with Youth Group	Engagement with the Ghana National Fire Service
	
Engagement with small holder farmers	Engagement with Traditional Authorities
	
Engagement with the Rural Enterprise Programme	Engagement with Private Non-Governmental Agency

	
Engagement with Aggregators	Engagement with Faith Based Organization

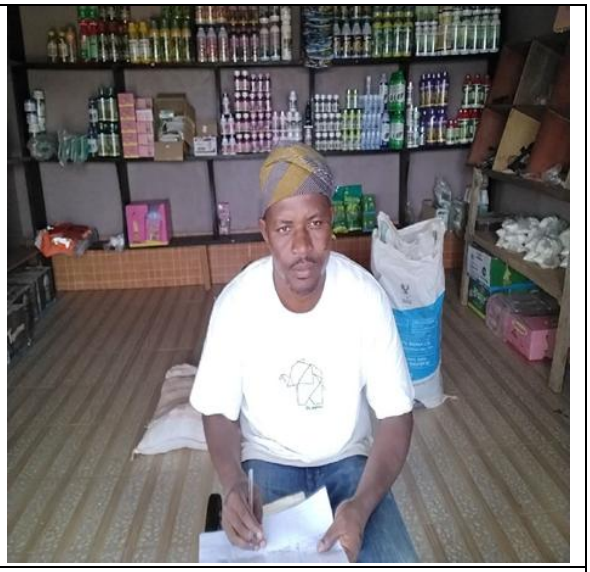
Pictures of Stakeholder Engagement in the Savelugu Municipal

	
Engagement at the Savelugu District Assembly	Engagement at the Lands Commission
	
Engagement with Traditional Leaders	Engagement with Water Resources Commission
	
Engagement with NADMO	Engagement with a farmer

	
Engagement with Agro-Input Dealers	Engagement with members of the Rural Enterprise Programme

Pictures of Stakeholder Engagement- Wa Municipal

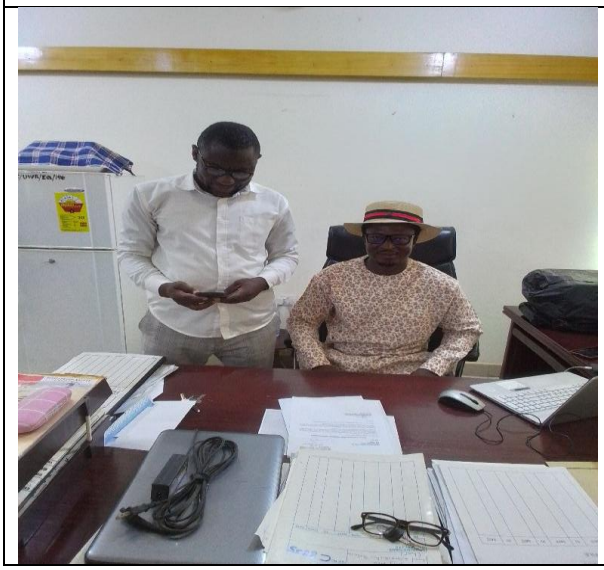
Engagement with Officials of Ghana National Fire Service

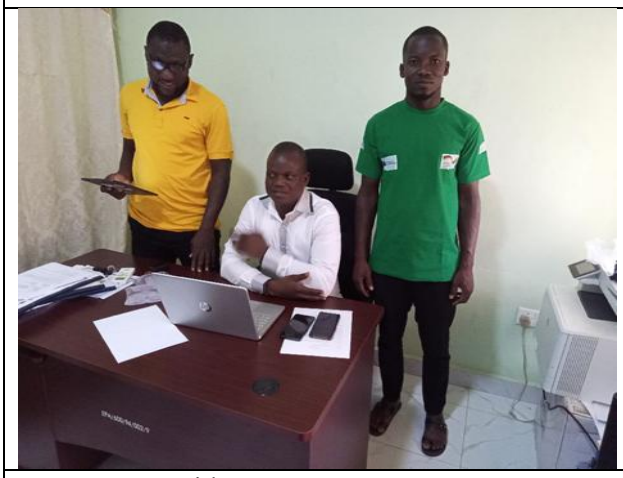


Engagement with Agro Input Dealers

Engagement with NADMO official

Engagement with Private Non-Governmental Organization



Engagement with Lands Commission	Engagement with Rural Enterprise Agency
	
Engagement with Youth Group	Engagement with Men's group
	
Engagement with EPA	Engagement with small holder farmers
	
Engagement with women group	Engagement with Faith Based Organization

Pictures of Stakeholder Engagement- West Gonja Municipal

Engagement with Officials of the District Assembly

Engagement with Official of the Department of Agriculture

Engagement with NADMO official

Engagement with Women Groups

Engagement with Traditional Authorities

Engagement with Small Scale hold Farmers

	
Engagement with Suppliers	Engagement with Agro Input Dealers
	
Engagement with Private Non-Governmental Agency	Engagement with Rural Enterprise Programme

Pictures of Stakeholder Engagement- Tamale Metropolitan

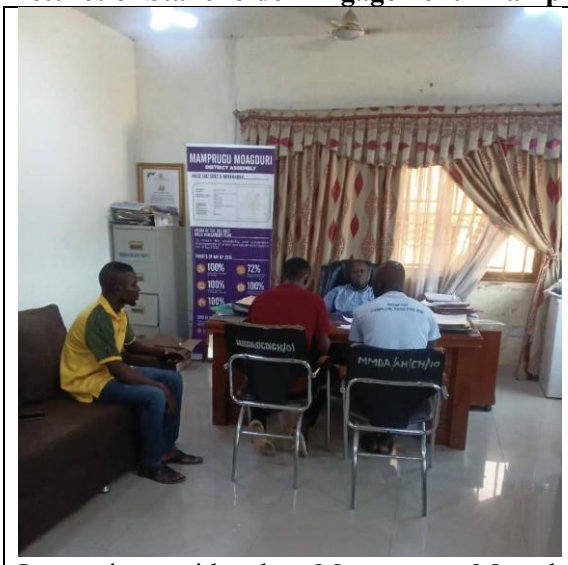
	
Engagement with Department of Agric Tamale Metro	Engagement with National Fire Service of Ghana
	
Engagement with NADMO	Engagement with the Metropolitan Assembly
	
Engagement with Agro Input Dealers	Engagement with Commercial Farmers

	
Engagement with Agro Input Dealers	
	
Engagement with Faith Based Organisation	Engagement with Commercial Farmers
	
Engagement with Aggregators	Engagement with Agro Input Dealers

	
Engagement with Women Group	Engagement with Youth
	
Engagement with small Holder Farmers	Engagement with Cattle Herders
	
Engagement with Traditional Leaders	Engagement with Women Group

	
Engagement with Men's group	Engagement with the Rural Enterprise Programme Official
	
Engagement with a Private NGO	Engagement with the EPA

Pictures of Stakeholder Engagement- Mamprugu Moagduri



Interaction with the Mamprugu Moagduri District Chief Executive Officer

Engagement with NADMO Director

Engagement with Farmer Based Organizations - Agro input dealers

Engagement with Farmer Based Organizations - Aggregators

Engagement with Traditional Authorities

Focus group discussion – Men at Kubori

Focus group discussion – Men at Zanwara

Engagement with women at Kubori

Engagement with women at Zanwara