GOVERNMENT OF THE REPUBLIC OF LIBERIA

MINISTRY OF AGRICULTURE

PROJECT IMPLEMENTATION UNIT (RETRAP / SUPAWEP)

SUSTAINABLE URBAN AND PERI-URBAN AGRICULTURE FOR WOMEN EMPOWERMENT PROJECT (SUPAWEP)

Project ID No.: P510360

INTEGRATED PEST MANAGEMENT PLAN (IPMP)

Prepared in accordance with World Bank Environmental and Social Standard 3 (ESS3): Resource Efficiency and Pollution Prevention and Management

Draft, July 2026

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ACRONYMS

CARI	Central Agricultural Research Institute
CDA	Cooperatives Development Agency
EPA	Environmental Protection Agency
ESS	Environmental and Social Standard
FAO	Food and Agriculture Organization of the United Nations
FBO	Farmer-Based Organization
GAP	Good Agricultural Practices
GLOBALGAP	Global Good Agricultural Practice certification standard
IPM	Integrated Pest Management
IPMP	Integrated Pest Management Plan
JSDF	Japan Social Development Fund
MoA	Ministry of Agriculture
NAIDAL	National Agro-Inputs Dealers Association of Liberia
OHS	Occupational Health and Safety
PIU	Project Implementation Unit
PMU	Project Management Unit
POP	Persistent Organic Pollutant
PPE	Personal Protective Equipment
PPRSB	Plant Protection and Regulatory Services Bureau
RETRAP	Rural Economic Transformation Project
SUPAWEP	Sustainable Urban and Peri-Urban Agriculture for Women Empowerment Project
WHO	World Health Organization

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1.0 INTRODUCTION

1.1 Background

The Government of Liberia, through the Ministry of Agriculture (MoA), is preparing the Sustainable Urban and Peri-Urban Agriculture for Women Empowerment Project (SUPAWEP), Project ID No. P510360, with grant financing from the Japan Social Development Fund (JSDF) administered by the World Bank. The development objective of the project is to enhance the productivity, resilience and access to market of beneficiary women and youth vegetable farmers in selected urban and peri-urban communities in Liberia. The project will be implemented over a multi-year period through the existing Project Implementation Unit (PIU) that coordinates the Rural Economic Transformation Project (RETRAP, P175263), leveraging its systems, fiduciary capacity and safeguards experience for implementation readiness. The project targets women and youth vegetable farmers across six project counties, including Montserrado, Bong, Margibi, Grand Bassa, Bomi, and Nimba.The project is organized around three components, drawn from the Concept ESRS, the draft ESMF and the draft Project Paper:

- **Component 1:** Support for the Development of Modern (Smart) Community Vegetable Gardens, financing water infrastructure (boreholes, solar-powered pumping, elevated storage tanks, drip/sprinkler irrigation, greenhouses, fertigation and, where feasible, vertical farming), multipurpose sheds and sanitary facilities, and capacity-building of women and youth vegetable farmers in climate-smart and integrated pest management practices.
- **Component 2:** Support for Vegetable Farmer Clustering, Institutional Strengthening and Market Linkages, including productive partnerships with agribusiness and lead farmers, GLOBALGAP and food safety training, and co-financed postharvest infrastructure such as pack houses and cold storage.
- **Component 3:** Project Management, Monitoring and Evaluation, and Knowledge Dissemination.

Closing Date: 29 June 2029 (implementation period: 4 years, 2026–2029).

Total project cost confirmed at US$5.59 million, financed by a US$4.73 million JSDF grant and US$860,420 in beneficiary/government contributions.

Because Component 1 will directly increase the availability of water and inputs for year-round, intensive vegetable production, it is expected to raise both the incidence of pest and disease pressure in project gardens and the exposure of farmers, principally women, to agrochemicals used to manage that pressure. The Concept ESRS accordingly identifies World Bank Environmental and Social Standard 3 (ESS3) as relevant to the project, on the basis that smallholder support activities may increase the use of pesticides, fertilizers and other agrochemicals, with associated risks of water, soil and air contamination and health risks to nearby communities if these substances are handled improperly. The Concept ESRS commits the project to preparing a Fertilizer and Pest Management Plan as an annex to the ESMF. This document constitutes the Integrated Pest Management Plan (IPMP).

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1.2 Objectives of the IPMP

This IPMP aims to ensure safe, effective, and environmentally sound pest and fertilizer management across 30 climate-smart community gardens (5–10 ha each, totaling 300 ha). Train women and youth farmers in Integrated Pest Management (IPM) focused on organic and low-risk practices. Align with PDO indicators: increased productivity, resilience to climate risks, and improved market access. The specific objectives are to:

- Ensure safe, effective, and environmentally sound pest and fertilizer management across 30 climate-smart community gardens (5–10 ha each, totaling 300 ha).
- Train women and youth farmers in Integrated Pest Management (IPM), emphasizing organic and low-risk practices.
- Align pest management with PDO indicators: increased productivity, resilience to climate risks, and improved market access.
- Support compliance with national, regional, and World Bank standards, including GLOBALGAP food-safety requirements.

1.3 Rationale

Vegetable crops are highly susceptible to pests and diseases, and urban markets demand cosmetically unblemished produce, often leading to pesticide misuse. Addressing this challenge is central to SUPAWEP's market-access objective under Component 2. This IPMP builds on lessons from RETRAP (2022), adapted to the urban and peri-urban horticultural context, with emphasis on bio-fertilizers, bio-pesticides, and climate-smart practices.

2.0 INTEGRATED PEST MANAGEMENT APPROACH FOR SUPAWEP

With commercial, market-oriented vegetable production as the central activity of Component 1, the project will continue to monitor pesticide use in community gardens. The design and environmental and social screening of each community garden subproject will consider the pest and disease pressure likely to be encountered and the appropriate IPM techniques to mitigate reliance on chemical pesticides. The project will train women and youth garden members to develop holistic IPM approaches to pest and disease management, from seed and seedling selection through nursery management, planting and garden maintenance, to harvest and postharvest handling. Garden members will be trained to regularly monitor their plots so they can detect pest and disease infestations early and manage them before they require chemical intervention. The decision to use chemical pesticides will be taken only as a last resort, following the structured decision sequence set out in Section 9.4: Chemical Control and Decision ThresholdThe PIU Agribusiness and Environmental Specialists will regularly survey pesticide use and pest issues among garden members, agro-dealers, and other downstream actors, working with the county Focal Persons, MoA extension staff, and, where relevant, the Environmental Protection Agency (EPA). These observations and recommendations from garden groups and FBOs will inform decisions on pest management strategy at the community garden level.

3.0 CURRENT PEST AND DISEASE MANAGEMENT IN LIBERIA'S VEGETABLE SUB-SECTOR

The following draws on the certified RETRAP IPMP (November 2022), which found that vegetable farming in Liberia relies on a mix of cultural and chemical pest control methods, has low awareness

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of proper pesticide handling, and relies heavily on visual crop appearance rather than pest thresholds to trigger spraying decisions.

3.1 Common Cultural Practices

Traditional practices include:

- Use of bird scarecrows, catapults and rattling string cables on cereal plots adjoining garden areas;
- Boiling water poured onto nursery beds to kill nematodes prior to transplanting, a practice that can also harm beneficial soil organisms and should be discouraged in favor of solarization or bio-fumigation where feasible;
- Keeping fields free of weeds and removing diseased plants;
- Use of Neem tree leaf extracts, applied as a bitter deterrent against aphids, leaf-miners, mealybugs, beetles, nematodes, grasshoppers, mites, cabbage worms, moth larvae, thrips, caterpillars and whiteflies, and as an antifungal and antiviral agent against blackspot, powdery mildew, anthracnose and rust;
- Planting resistant or early-maturing varieties and staggering planting dates to reduce synchrony with pest emergence.

Despite these measures, RETRAP consultations found that farmers growing vegetables continue to record significant losses and resort to chemical pesticides, often without adequate knowledge of safe handling, correct dosage or pre-harvest intervals.

3.2 Key Pests and Diseases of Vegetable Crops Relevant to SUPAWEP

Cabbage, cucumber, lettuce, onion, tomato, pepper, and okra face major insect and fungal threats, with losses reaching up to 100% during severe infestations.
The table below, adapted from the RETRAP IPMP, summarizes the principal pests and diseases affecting the vegetable crops most likely to be grown in SUPAWEP community gardens.

Crop	Pest / Disease	Notes
Cabbage	Diamond-back moth (Plutella xylostella)	Most serious pest of cabbage; larvae bore through leaf tissue from the underside, progressively defoliating the plant.

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	Bacterial soft rot (Erwinia carotovora)	Water-soaked, decaying leaves with unpleasant smell; cabbage heads decay.
Cucumber	Aphids (Aphis gossypii)	Colonize leaf undersides, suck sap, and transmit virus diseases between plants.
Lettuce	Cutworms (Agrotis spp.)	Cut through stems at ground level at night, causing seedling collapse.
	Damping-off (Pythium spp.)	Soil-borne fungus infecting stems and roots of nursery seedlings.
Onion	Onion thrips (Thrips tabaci)	Cause white/silvery leaf patches and distortion; highly mobile.
	Downy mildew (Peronospora destructor)	Purple fungal patches on mature leaves.
Tomato	Tomato mirid bugs (Cyrtopeltis tenuis)	Inject toxic saliva causing necrotic spots; egg-laying damages stems.
	Late blight (Phytophthora infestans); Tomato yellow leaf curl virus (whitefly-transmitted)	Rapidly enlarging water-soaked lesions; stunting and leaf curl respectively.
Pepper	Root-knot nematodes (Meloidogyne spp.); Fusarium wilt (Fusarium oxysporum)	Root galling and stunting; soil-borne wilt.
Okra	Aphids (Aphis gossypii, Myzus persicae); Anthracnose (Colletotrichum spp.)	Aphids cause leaf yellowing and twisting; anthracnose produces dark necrotic spots that wrinkle and destroy leaves and can affect flowers and fruit.

Insects and fungi are, across all vegetables grown in Liberia, the most serious biotic constraint, with the RETRAP IPMP citing losses that can reach 100 percent during severe infestation. More than 80 percent of Liberian vegetable farmers have not received formal training in vegetable cultivation or pest management, a gap that SUPAWEP Component 1 capacity-building activities are designed to help close for project beneficiaries.

3.3 Weaknesses in the Current Agro-Input Supply Chain

Challenges include adulterated products, weak regulation, unsafe storage, and lack of PPE use. SUPAWEP must integrate farmer-level safeguards and training. Garden groups will be trained to purchase only from registered NAIDAL-affiliated or otherwise licensed dealers, and to check for intact labels, valid registration and expiry dates, and batch numbers. The PIU will establish a verification protocol requiring dealers to provide proof of registration. The PIU will conduct random product-

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quality checks in collaboration with EPA and MoA Plant Protection Services to detect adulterated or counterfeit products.

3.4 Risk Considerations for SUPAWEP

OHS risks include exposure to agrochemicals, improper disposal, and water contamination.
Mitigation measures include providing PPE and training, ensuring safe storage, and keeping first-aid kits readily available.
Children under 18 are strictly prohibited from handling pesticides.
Gender inclusion: ensure equal access to training, inputs, and protective equipment for women and youth.

4.0 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Liberian Legal and Policy Framework

- **The Environmental Protection Agency (EPA) Act, 2003:** Establishes EPA as the principal environmental authority, including environmental impact assessment procedures relevant to any agro-chemical-intensive subproject.
- **The National Environment Policy of Liberia, 2003:** Sets the overarching goal of sustainable social and economic development that safeguards environmental quality.
- **The Public Health Law, revised 2019/2020:** Obliges those dealing in agro-chemicals to ensure the safety of persons handling and applying such inputs.
- **The National Environmental and Occupational Health Policy, 2010:** Provides guidelines and standards for occupational health services relevant to agro-chemical handling.
- **The draft Liberia Plant Protection and Regulatory Policy and the associated draft Plant Protection and Regulatory Services Bureau Act:** Intended to establish a dedicated semi-autonomous agency to register, regulate and license agro-chemical importers and dealers; as of the most recent RETRAP IPMP this legislation remained pending before the Legislature, and its status should be re-confirmed for SUPAWEP appraisal.
- **ECOWAS Seed, Fertilizer and Pesticide Regulations, 2014:** Activated in Liberia's National Gazette in September 2014, providing regional harmonization for agro-input quality and safety.

4.2 World Bank Requirements

ESS3 requires IPMPs that reduce reliance on hazardous pesticides. SUPAWEP will not finance WHO Class Ia/Ib or unrestricted Class II products;
ESS3 requires that Bank-financed projects likely to use a considerable quantity of pesticides, or that introduce new or altered pest management practices, prepare an IPMP that promotes biological or environmental control methods and reduces reliance on synthetic chemical pesticides. Where pesticides are procured or used, whether directly or through project financing of inputs, the World Bank applies the WHO Recommended Classification of Pesticides by Hazard (2009) and does not finance formulated products in WHO Classes Ia (extremely hazardous) or Ib (highly hazardous), nor

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Class II products where the country lacks distribution and use restrictions or where such products are likely to be used by untrained lay personnel or farmers, which is the prevailing condition among SUPAWEP's target beneficiary population. Accordingly, SUPAWEP will not finance, directly or indirectly, any WHO Class Ia, Ib, or unrestricted Class II pesticide product, and will prioritize bio-pesticides and Class III / U (unlikely to present acute hazard) products, consistent with the project's own design emphasis on bio-fertilizers and bio-pesticides.

The selection and use of any pesticide financed or facilitated by the project must, per ESS3 and FAO guidance: have negligible adverse effects on human health; be demonstrably effective against the target pest; have minimal effect on non-target species and the environment; be applied by methods, timing and frequency designed to minimize damage to natural enemies of pests; and be selected with regard to preventing the development of pest resistance.

4.3 International Conventions

Liberia is party to Stockholm (POPs), Rotterdam (PIC), Basel (hazardous waste), IPPC, and ILO Convention 184;

- The Stockholm Convention on Persistent Organic Pollutants (POPs), ratified by Liberia in 2004, obligating the elimination of POP pesticides;
- The Rotterdam Convention on Prior Informed Consent for hazardous chemicals in international trade;
- The Basel Convention on the control of transboundary movement of hazardous wastes, relevant to disposal of obsolete or expired pesticide stocks and containers;
- The International Plant Protection Convention (IPPC);
- ILO Convention 184 on Safety and Health in Agriculture.

4.4 SUPAWEP-Specific Safeguard Commitments

- SUPAWEP will not finance, directly or indirectly, any WHO Class Ia, Ib, or unrestricted Class II pesticide product. The project will prioritize bio-pesticides and Class III/U products, consistent with its design emphasis on bio-fertilizers and bio-pesticides.
- All pesticide procurement and use must comply with ESS3 and FAO guidance: negligible adverse effects on human health, demonstrable effectiveness against target pests, minimal impact on non-target species, and application methods that prevent resistance development.
- Provide mandatory IPM training to all beneficiary cooperatives, with a focus on climate-smart and nutrition-sensitive practices.
- Mainstream gender and youth inclusion: women and youth farmers will have equal access to training, inputs, and protective equipment.
- Strictly prohibit children under 18 from handling pesticides, in line with Liberia's Children's Act (2011).1).

5.0 Grievance Mechanism

- Farmers and workers can report pesticide misuse or exposure incidents through the GRM project, which is integrated with the LMP system. The GRM handles GBV/SEA/SH complaints related to pesticide handling confidentially through survivor-centered pathways.

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- The GRM will ensure timely logging, investigation, and resolution of complaints, with escalation to the PIU or relevant authorities where necessary. All beneficiaries, including women, youth, and persons with disabilities, will have equal access to the mechanism.

6. Monitoring and Reporting

Indicators:

- % of farmers trained in IPM (target: 7,500 women/youth).
- Reduction in chemical pesticide use (baseline TBD, target 50% reduction).
- Adoption of organic/bio-pesticide practices (target: 60% of cooperatives).

Reports are integrated into SUPAWEP's M&E framework and tracked through the Geo-Enabling Initiative for Monitoring and Supervision (GEMS).

7. Budget

Costs are integrated into Component 3 (Project Management). The budget includes dedicated lines for training, PPE, safe storage facilities, awareness campaigns, and monitoring.

8.0 INSTITUTIONAL ARRANGEMENTS

MoA/PIU leads implementation, supported by EPA, CARI, NAIDAL, CDA, and community garden groups. Roles include training, monitoring, regulation, and coordination of safe disposal.

Institution	Role in SUPAWEP Pest Management
MoA / PIU (SUPAWEP)	Overall responsibility for IPMP implementation; PIU Agribusiness Specialist and Environmental Specialist to coordinate IPM training, monitoring and reporting, supported by county Focal Persons.
MoA Department of Technical Services / Plant Quarantine	Technical advice on pest identification, phytosanitary matters, and liaison on permits for agro-chemical importation used in project gardens.
Environmental Protection Agency (EPA)	Screening and, where triggered, environmental compliance oversight of community garden subprojects; enforcement of agro-chemical import and use controls.
Central Agricultural Research Institute (CARI)	Technical backstopping on IPM techniques for vegetable crops; potential host for pesticide waste disposal infrastructure serving RETRAP and SUPAWEP alike.
National Agro-Inputs Dealers Association of Liberia (NAIDAL)	Engagement of agro-dealers supplying SUPAWEP garden members, to encourage registered, correctly labelled products and safe-use training for dealers. . In addition, NAIDAL-affiliated dealers will be required to provide proof of valid registration, intact labels, batch numbers, and expiry dates. The PIU, in collaboration with EPA and MoA Plant Protection Services, will conduct random product-quality checks to detect adulterated or counterfeit products. Only dealers meeting these verification criteria will be authorized to supply inputs to SUPAWEP garden groups.

Commented [JN1]: The plan acknowledges adulterated products and weak regulations, but its only response is "engagement" with agro-dealers. It has no verification, product-quality checks, or sourcing criteria.

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Cooperatives Development Agency (CDA)	Support for organizing garden groups and FBOs, including channelling IPM training and monitoring through cooperative structures.
Community Garden Groups / FBOs	Primary implementers of IPM at plot level; responsible for pest scouting, recordkeeping of pesticide use, and safe storage and disposal practices within the garden.

9.0 PROJECT INTEGRATED PEST MANAGEMENT MEASURES

9.1 Key Principles

Grow healthy crops, manage ecosystems to keep pests below thresholds, and reserve chemical control as a last resort:

- Grow a healthy crop: prioritize cultural practices, resistant or tolerant varieties, and sound soil, nutrient and water management (supported directly by Component 1 irrigation and fertigation investments) to reduce the underlying susceptibility of the crop to pests and disease;
- Manage the garden agro-ecosystem so that pests remain below economically damaging levels, rather than seeking eradication; prevention and encouragement of natural pest mortality is the first line of defense;
- Reserve external inputs, including bio-pesticides and, as a last resort, chemical pesticides, for situations where monitoring indicates pest incidence has crossed an agreed action threshold.

9.2 Preventive and Cultural Measures

Resistant varieties, crop rotation, sanitation, staggered planting, physical barriers, and safe disposal of diseased plants:

- Removal and safe disposal (burning or burial away from water sources) of diseased plants and crop residues;
- Use of pest- and disease-resistant or tolerant vegetable varieties and certified, disease-free seed and seedlings;
- Crop rotation and intercropping within garden plots to break pest and disease cycles;
- Staggered planting dates to reduce synchrony with peak pest emergence;
- Field and nursery-bed sanitation, and proper water/irrigation management to avoid waterlogging that favors fungal disease;
- Use of physical barriers (chain-link perimeter fencing financed under Component 1, insect nets, shade nets) to exclude vertebrate pests and reduce insect pressure;
- Hand-picking of pests and hand-weeding, and use of traps or trap crops.

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9.3 Biological Control and Bio-Pesticides

Preferred first line of defense. Includes Neem-based extracts and conservation of natural predators.
Consistent with the project's own design emphasis, biological control and bio-pesticides will be the preferred first line of active pest control under SUPAWEP, ahead of synthetic chemical pesticides. This includes conservation of natural predator populations through judicious, targeted (rather than blanket) spraying; use of Neem-based botanical extracts, which the RETRAP IPMP documents as effective against a wide range of insect pests and several fungal pathogens affecting vegetables, with the added advantage that Neem residues are not toxic to humans or animals unlike most chemical insecticides; and support, under Component 1 training activities, for enterprising women and youth to establish input-supply and service centres offering bio-pesticides, bio-fertilizers and improved seed as an alternative to synthetic agro-chemical outlets.

9.4 Chemical Control and Decision Threshold

Use chemical pesticides only when thresholds are crossed, following a structured decision sequence.
Only registered, non-banned products acceptable under ESS3 may be used.

9.5 Specific Criteria for Selecting a Pest Management Method

Consider site conditions, health and environmental impacts, cost, and compliance with GLOBALGAP standards:
Garden groups, extension staff and the PIU will consider, at minimum, the following factors before selecting a pest management method or product: the nature of the garden site (soil type, drainage, proximity to surface water, wells or residential areas, given the urban and peri-urban setting of most SUPAWEP gardens); possible health and safety effects to the applicator and nearby residents; possible environmental effects, including on pollinators, non-target organisms and any nearby water bodies; cost, including application and labor costs relative to the value of the crop protected; and product-specific characteristics, including target pest, residual activity, pre-harvest interval, and compatibility with GLOBALGAP and other food-safety requirements that Component 2 will help garden groups pursue.

10.0 SAFE USE, HANDLING, STORAGE AND DISPOSAL OF PESTICIDES

10.1 Personal Protective Equipment and Label Compliance

Mandatory PPE use; training on label interpretation and REI/PHI compliance:
All garden members and extension staff involved in mixing or applying pesticides, including bio-pesticides carrying any hazard labelling, will be trained and required to use, at minimum: a long-sleeved shirt and long trousers or coveralls; boots (preferably rubber or impermeable); gloves (preferably rubber or impermeable); eye protection (goggles or face shield); and a dust mask or respiratory protector for dry formulations, consistent with the WHO/FAO guidance reproduced in the

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RETRAP IPMP. Garden groups will be trained to read and follow product labels, including the WHO hazard color-coding system (red for Class Ia/Ib extremely and highly hazardous products, through green for products unlikely to present acute hazard), and to observe stated re-entry intervals (REI) and pre-harvest intervals (PHI). Where garden members cannot read the label, they will be required to obtain assistance from a trained extension worker or literate group member before handling the product.

10.2 Storage, Transport and Distribution

Locked, dedicated facilities; original containers; safe transport; purchase only from registered dealers:

- Pesticides will be stored in a locked, dedicated facility, separate from food, seed and household items, out of direct sun and away from water sources, wells and residential dwellings, consistent with the multipurpose shed and storage provisions financeable under Component 1;
- Products will remain in their original, labelled containers at all times;
- Pesticides will not be transported in the same vehicle as food products, animal feed or passengers;
- Garden groups will be trained to purchase only from registered NAIDAL-affiliated or otherwise licensed dealers, and to check for intact labels, valid registration and expiry dates, given the documented prevalence of adulterated and mislabeled products in the national supply chain.

10.3 Disposal of Pesticide Waste and Containers

Triple-rinse, puncture, and dispose via PIU-coordinated collection or burial pits; no open burning:
Garden groups will be trained never to re-use pesticide containers for food, water or feed storage, which the RETRAP IPMP identifies as among the most hazardous practices associated with pesticide use in Liberia. Empty containers will be triple-rinsed where feasible, punctured to prevent re-use, and disposed of through PIU-coordinated collection arrangements linking to the RETRAP-supported incinerator facility at CARI where available, or through a dedicated burial pit located at least 100 meters from any well, stream or dwelling, in accordance with FAO waste-pesticide disposal guidance. The project will not support on-site open burning of pesticide containers within urban or peri-urban garden sites given proximity to residential populations.

10.4 Fertigation and Solar-Powered Irrigation Systems

Ensure fertigation chemicals are approved, correctly diluted, and kept separate from potable water systems:
Because Component 1 will introduce fertigation and drip-irrigation systems that deliver dissolved nutrients and, potentially, soluble pesticides directly to the root zone, the project will ensure that any chemical injected through these systems is approved for fertigation use, correctly diluted, and that

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system components (tanks, injectors, filters) are clearly labelled and kept separate from potable water storage, to prevent inadvertent contamination of water intended for domestic use at multipurpose shed facilities.

11.0 MONITORING, EVALUATION AND REPORTING

Successful implementation of this IPMP will require regular monitoring of garden-level pest management practices and outcomes. Indicators to be tracked by the PIU, disaggregated by sex and by county, include:

- Number of garden members and FBO leaders trained in IPM and safe pesticide handling;
- Number of garden members applying IPM practices consistent with training;
- Proportion of garden groups maintaining a pesticide-use record (product, quantity, target pest, date of application);
- Number and severity of pesticide-related health incidents reported;
- Trend in the proportion of gardens relying primarily on bio-pesticides and cultural/biological control versus synthetic chemical pesticides;
- Proportion of gardens meeting GLOBALGAP or equivalent food-safety pesticide-residue requirements, linking IPMP performance directly to the Component 2 market-access results chain.

The PIU Environmental and Agribusiness Specialists will report on IPMP implementation as part of routine project progress reporting to MoA and the World Bank, capturing pest and disease incidence trends, IPM adoption, training coverage, and any pesticide-related incidents, alongside lessons learned for adaptive management of the plan.

12.0 GRIEVANCE REDRESS

Concerns related to pesticide use, including alleged misuse, health effects, or improper disposal, may be raised through the same Grievance Redress Mechanism established under the SUPAWEP Stakeholder Engagement Plan and referenced in the SUPAWEP Labor Management Procedures. Grievances will be logged, acknowledged within 24 hours, investigated and, where possible, resolved within five working days, with escalation to the PIU or, where relevant, the EPA or MoA Plant Quarantine Services for more serious or systemic concerns.

13.0 CAPACITY BUILDING

Training will be delivered in a cascade from the PIU and MoA extension staff to county Focal Persons and, in turn, to garden group and FBO leadership, who will support ongoing peer training within their groups. Training content will cover: causes and identification of common vegetable pests and diseases; use of participatory scouting and action thresholds; cultural, biological and host-resistance control methods; safe purchase, handling, storage, application and disposal of pesticides and bio-pesticides;

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and the pesticide-residue and traceability requirements associated with GLOBALGAP and other market-access certifications pursued under Component 2. Where feasible, training will be coordinated with, and build on, the Farmer Field School and IPM training already delivered under RETRAP and by FAO in Liberia, to avoid duplication and reinforce consistent messaging across MoA-supported projects.

14.0 INDICATIVE BUDGET

The following indicative budget for IPMP implementation is presented for inclusion in the overall ESMF implementation budget and will be refined at appraisal once the number and location of community gardens are confirmed.

Item / Activity	Estimated Cost (US$)
Training of garden groups and FBOs in IPM and safe pesticide handling (30 gardens)	45,000
Refresher training for county Focal Persons and MoA extension staff on IPM and ESS3	8,000
Construction/rehabilitation of secure agro-input storage at garden sites (incorporated into multipurpose shed design)	20,000
PPE and first aid / chemical neutralizer kits for garden groups	15,000
Support to pesticide container collection and disposal (linked to CARI incinerator facility)	10,000
Monitoring, reporting and IPMP review	7,000
Total (indicative)	**105,000**

15.0 ANNEX I: WHO HAZARD CLASSIFICATION AND PROHIBITED PESTICIDES

15.1 WHO Hazard Classification

Class	Description
Ia	Extremely hazardous — not financed by the project.
Ib	Highly hazardous — not financed by the project.
II	Moderately hazardous — not financed where distribution and use are unrestricted, or where likely to be used by untrained farmers, which applies to SUPAWEP's beneficiary profile; use effectively excluded absent demonstrated controlled-use conditions.
III	Slightly hazardous — permitted subject to training and label compliance.
U	Unlikely to present acute hazard — preferred category, alongside bio-pesticides.
O	Obsolete as a pesticide — not to be used or retained.

Commented [JN2]: Please Include positive list of permitted products. The annexes list prohibited active ingredients (for example DDT, Lindane and Parathion) and the WHO hazard classification. They give no list of the biopesticides or low-hazard products the project will facilitate. Without one, field staff cannot tell what is acceptable.r

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15.2 Pesticides Prohibited from Use or Financing under the Project

Consistent with Liberia's obligations under the Stockholm Convention and the RETRAP IPMP's Annex 2 list, the following active ingredients are prohibited from use in, or financing by, SUPAWEP: Aldrin, Chlordane, DDT (dichloro-diphenyl-trichloroethane), Dieldrin, Endrin, Heptachlor, Toxaphene, Chlordimeform, mercury compounds, Lindane (other than any narrowly permitted restricted use under Liberian regulation), Parathion, Methyl Parathion, Methyl bromide, and Hexachlorobenzene. This list will be reviewed against the current Liberia EPA/MoA banned-pesticides register and updated as necessary prior to project effectiveness.

ANNEX II: POSITIVE LIST OF PERMITTED PRODUCTS

The following bio-pesticides and low-hazard products (WHO Class III/U) are permitted under SUPAWEP:

• Neem-based botanical extracts (effective against aphids, leaf-miners, mealybugs, beetles, nematodes, mites, caterpillars, and fungal pathogens)

• Bacillus thuringiensis (Bt) formulations (biological control of caterpillars and moth larvae)

• Beauveria bassiana (fungal biocontrol agent targeting whiteflies, thrips, and aphids)

• Trichoderma spp. (fungal antagonists effective against soil-borne pathogens such as Fusarium and Pythium)

• Mineral oils and insecticidal soaps (low-hazard products for soft-bodied insects)

• Garlic and chili extracts (botanical deterrents for sucking and chewing insects)

• Azadirachtin-based formulations (derived from Neem, widely recognized as safe and effective)

This list will be updated periodically by the PIU in consultation with CARI and EPA, ensuring field staff can clearly identify acceptable products."

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