ANNEX 12

IPAC INTEGRATED PEST MANAGEMENT FRAMEWORK

A. Introduction

The IPAC Project basically aims to enhance access to markets and competitiveness of ARCs smallholder farmers and landless farmers in the targeted ARC clusters. It also seeks to increase access of ARBs, smallholder farmers and farmers' organizations to appropriate and sustainable production, post-harvest and processing technology and agri-extension, among others.

IPAC will build the technical know-how, entrepreneurial capacities and competitiveness of FOs by providing support to the Extension and Business Development Services under the project's Component 1, the Support Services for Enhanced Market Linkages

Extension services will cover training, extension and implementation of productivity enhancement activities including improvement in production systems for collective farming, quality improvement, standardization, and post-harvest operation. These extension services will be provided through Farmer's Field Schools and Farmer-to-Farmer Extension.

The Farmer Field School (FFS) is a participatory approach to extension, whereby farmers learn about agro-ecosystem management and makes use of the crop field as a field laboratory where FFS participants learn about the ecology of the crop through regular observation and experiment with new production options.

In line with the National Pest Management Program of the government, the IPAC Project will adopt the Integrated Pest Management (IPM) as a strategy to promote crop protection using non-pesticide methods through the conduct of the IPM – FFS for the farmer organizations and their members in the target ARC clusters.

B. Framework Objectives

The IPAC Integrated Pest Management Framework aims to improve farm productivity and reduce production costs and losses due to pest by providing the small farmer's organizations and their farmer members with knowledge and skills in improved crop production and protection technologies. It also seeks to reduce pesticide-related health hazards to farmers and help them adapt to changing climate conditions by adopting an integrated crop protection strategy.

C. Definition

The Food and Agriculture Organization (FAO) of the United Nations (2002) defines Integrated Pest Management as: "IPM means the careful consideration of all available pest control techniques and subsequent integration of appropriate measures that discourage the development of pest populations and keep pesticides and other interventions to levels that are economically justified and reduce or minimize risks to human health and the environment. IPM emphasizes the growth of a healthy crop with the least possible disruption of agro-ecosystems and encourages natural pest control mechanisms."

The IPM generally involves the use of non-chemical methods of pest control as follows[1]:

1. Biological controls: use of the natural enemies of crop pests, often called beneficials, which include parasites, predators, and insect pathogens;
2. Cultural control and crop or livestock management: tissue culture, disease-free seed, trap crops, cross-protection, cultivation techniques, refuge management, mulching, field sanitation, crop rotations, grazing rotations, and intercropping;
3. Strategic control: variety selection, planting location, timing of planting, and timing of harvest; and
4. Genetically based controls: insect- and disease-resistant root stock and varieties, developed through classical and modern molecular breeding.

D. Legal Bases for Integrated Pest Management Framework.

The IPAC Project policy objectives and guidelines supporting Integrated Pest Management are based on the following national/sectoral, World Bank policies and relevant internationally-accepted standards:

1. **Memorandum Order No. 126, s. 1993,** which requires the implementation of Kasaganaan ng Sakahan at Kalikasan (KASAKALIKASAN), the National Pest Management Program, with the long term goal of making integrated pest management (IPM) the standard approach to crop husbandry and pest management in rice, corn, and vegetable production in the country.

2. **World Bank Operational Policy (OP) 4.09** which supports the use of integrated pest management as a strategy that promotes the use of biological or environmental control methods and reduces reliance on synthetic chemical pesticides by bank borrowers/proponents to manage pests that affect either agriculture or public health. It also provides that Bank-financed agriculture operations may support the purchase of pesticides when their use is justified under an IPM approach and requires that any pesticides it finances be manufactured, packaged, labeled, handled, stored, disposed of, and applied according to standards acceptable to the Bank.

   This policy is triggered since the project will finance agriculture operations that could raise potential pest or disease vector management issues and require for the increase usage of pesticides under the project. The screening procedures include the scanning of pest management concerns. The ESMF is complemented by an Integrated Pest Management Framework (IPMF) that provides the scope and coverage in the preparation and implementation of a Pest Management Plan (PMP) to address pest management issues. In sub-projects that require an EA, the ESMP will be accompanied by a PMP. Where pest management concerns are present, even if the sub-project does not require an EA, a PMP will still be prepared to adequately prescribe the appropriate alternative technologies or mitigating measures. The EA will be presented in a public consultation and disclosed. The PMP is based on on-site evaluations of local conditions conducted by appropriate technical specialists with experience in participatory integrated pest management (IPM). IPM training will be conducted as part of the project to educate the agricultural workers and farm organizations. The IPM approaches include certified pesticides,

[1] Schillhorn van Veen, T., Forno, D., Joffe, S., Umali-Deininger, D. and Cooke, S. (1997) Integrated pest management: Strategies and policies for effective implementation. *Environmentally sustainable development studies and monographs,* No. 13. World Bank, Washington, DC.

its proper application and handling, as well as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pests. In case the need to procure chemical-based fertilizers and pesticides arises, the proponent will indicate how the list of pest control products was developed and agree this with the Bank before the list is authorized for procurement.

3. **WHO Recommended Classification of Pesticides by Hazards and Guidelines to Classification 2009 by International Programme on Chemical Safety (IPCS)** distinguishes between the more and the less hazardous forms of each pesticide in that it is based on the toxicity of the technical compound and on its formulations.

   The WHO Recommended Classification of Pesticides by Hazard was approved by the 28th World Health Assembly in 1975 and has since gained wide acceptance. In December, 2002 the United Nations Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals (UNCETDG/GHS) approved a document called "The Globally Harmonized System of Classification and Labelling of Chemicals" with the intent to provide a globally-harmonized system1 (GHS) to address classification of chemicals, labels, and safety data sheets. The GHS (with subsequent revisions) is now being widely used for the classification and labeling of chemicals worldwide. For this revision of the Classification the WHO Hazard Classes have been aligned in an appropriate way with the GHS Acute Toxicity Hazard Categories for acute oral or dermal toxicity as the starting point for allocating pesticides to a WHO Hazard Class (with adjustments for individual pesticides where required).

E. Integrated Pest Management Guiding Principles

The IPAC Project adopts the following principles for the implementation of the Integrated Pest Management in Components 1: Support Services for Enhanced Market Linkages and Component 2: Investments in Productive Partnerships (refer to Section E):

a) IPM as an ecological approach. It builds on biological control as its foundation. Farm analysis and action revolved around : i) growing a healthy crop through the use of resistant varieties, better land preparation and water management, ii) conserved natural enemies; iii) visit field regularly, and make farmers as good decision maker.

b) IPM as a human resource development strategy. The sustainability of IPM is insured by farmers becoming experts in their own field. Future gains in yields, profits and sustainability will be the result of farmers making better use of available technologies and limited resources. IPM implemented by farmers emphasizes the ability of farmers in making decisions, increasing their own efficiency and becoming better managers.

F. Adoption of Integrated Pest Management (IPM) Approach for Support Services for Enhanced Market Linkages Component (Component I)

The following guidelines shall be adopted in the conduct of the IPM-FFS roll-out in the ARC cluster under Component I:

- The project through the DAR Provincial Project Office (DAR PPO) in partnership with the Agricultural Training Institute (ATI-DA), concerned non-government organizations, government institutions and other IPM practitioners will conduct training on IPM-FFS.

- About 650 farmers' organizations (FOs) in the 50 ARC clusters covered by the project will be trained on the IPM – FFS covering at least 20 participants per FO or a total of 13,000 individual farmers.

- The project will promote the adoption of IPM among farmers involve in irrigated/organic rice production, corn, vegetables and other high value crops production through direct farmers training and season-long farmers field school (FFS).

- The FFS will meet once a week for the duration of the cropping season, from fourteen to sixteen weeks. A weekly session of an FFS usually last for half day or a five hour session. The typical day for the FFS is divided into three parts: 1) agro-ecosystem analysis and its relevance to the different stages of growth of the rice crop, 2) group dynamic activity, 3) special topic related to barangay level condition or problem. The farmer participants will be divided into working groups, each group will work as a team in all FFS activities.

- The project will conduct IPM promotion support activities among the local government officials, farmers' organizations, other stakeholders and local media. This activity is aimed at generating political support and commitment in the development and implementation of local policies promoting IPM and other sustainable agricultural practices.

- The project will also develop IEC materials to encourage the adoption of IPM as a mechanism for sustainable agricultural production.

- The project will also support the provision of extension workers who will be responsible for the provision of technical assistance to FOs and their respective members who have already completed their season long IPM-FFS.

- The DAR Provincial Environmental Specialist with assistance from the Regional Environmental Specialist will be responsible for the overall coordination, supervision and management of the IPM-FFS at the provincial level while the Environmental Specialist at the Central Project Management will oversee, monitor and evaluate the conduct and implementation of the IPM- FFS at the national level.

G. Adoption of Integrated Pest Management (IPM) Approach for Investments in Productive Partnerships Component (Component II)

The following guidelines shall be adopted in the conduct of the IPM-FFS roll-out in the ARC cluster under Component II:

- Proponents of qualified agribusiness proposal with pest management concerns will be required to prepare and submit a Pest Management Plan (PMP) even if the subproject does not require an environmental assessment (EA). The PMP should be based on on-site evaluation of ARC cluster area conducted by IPM practitioners and specialist.

- For sub-projects that require an environmental assessment (EA), the ESMP will be accompanied by a PMP.

- The project through the DAR Provincial Project Office (DAR PPO) in partnership with the Agricultural Training Institute (ATI-DA), concerned non-government organizations, government institutions and other IPM practitioners will conduct training on IPM-FFS for farmer organizations and their members who are recipient of Matching Grant Program.

- The project will also support the provision of extension workers who will be responsible for the provision of technical assistance to matching grant recipient FOs and their respective members who have already completed their season long IPM-FFS.

- In case a successful agribusiness proposal calls for the improvement and upscaling of production systems involving the use of chemical-based fertilizers and pesticides, the farmer organization/proponent will provide the list of required pest control products to the CPO for NOL of the Bank before this is approved for procurement.

H. Budget and Financing

Funding support for the conduct of IPM-FFS in the 50 ARC clusters is included in the budget allocation for Component I, Support Services for Enhanced Market Linkages.

I. Outline of a Pest Management Plan

Proponents of agribusiness proposals with pest management concern should prepare a Pest Management Plan using the outline shown below.

OUTLINE OF A PEST MANAGEMENT PLAN

Purpose of the Pest Management Plan

The purpose of the Pest Management Plan (PMP), which is in accordance with the Integrated Pest Management Framework (IPMF) of the ESMF, is to provide guidance to Matching Grant-recipient farmers' organizations/proponent in the use of environmentally sensitive pest management strategies to enhance the health and safety of farmers and protect the environment.

Objectives

The objectives of the IPAC Pest Management Plan (PMP):

1. Protect human health and the surrounding environment by employing a range of preventative strategies and using least-toxic products for pest control and eradication.
2. Inspect and monitor pest populations and locations to enhance control strategies.
3. Avoid the use of chemical-based pesticides. Minimize the quantity and toxicity of alternative measures used for pest management.
4. Minimize environmental impacts by using species-specific pesticides and targeting application areas carefully.
5. Establish clear criteria for acceptable circumstances in which using a pesticide other than a least-toxic pesticide is necessary; toxic pesticides shall only be used when there is a threat to public health and safety, or to prevent economic or environmental damage, and only after other alternatives have been implemented and are shown to be ineffective.

PMP Principles

IPM promotes the use of a range of non-chemical approaches to control pest populations. If an infestation with unacceptable impacts occurs, thereby warranting additional treatment, IPM favors the use of least-toxic pesticides. The targeted application of a toxic pesticide is allowed only after all other reasonable non-toxic options are exhausted. This plan outlines crop protection strategies approved for use at IPAC-covered ARC Clusters. Provisions for the use of least-toxic pesticides, and toxic chemicals when necessary, are also included should a pest infestation occur. In addition, the matrix below provides a framework for the dealing of pests as they occur on site.

Template of PMP:

The preparation of a PMP is to be required as part of the project proposal for agri-production support to be submitted by proponent FOs. The proponent will follow the format below for subproject proposals requiring a PMP.

1. Basic Information

A. Baseline on pest issues

   1. Types of pests which affected production for the last 5 years
   2. Adverse effects on productivity

B. Pesticide usage

1. Types and names of pesticides being used by farmers
2. Common practice on the application of pesticides
   a) quantities
   b) timing and how often
   c) effects
3. Knowledge of farmers on health hazards and risks involved in using the pesticides
4. Knowledge of farmers on banned pesticides

C. Farmers knowledge on IPM
1. Training on IPM attended by farmers on IPM, (title of training, purpose, date and duration, who conducted, how many participants)
2. No. Of farmers trained who are adopting IPM)
3. No. Of farmers with training on IPM vs. total number of farmer members in the coop or the community

D. Pesticide handling and management
1. Practices in the proper storage of pesticides
2. Knowledge of farmers on safety measures in handling and using pesticides as part of good agricultural practices

2. **PMP Matrix**

(refer to next page)

PEST MANAGEMENT PLAN (PMP) MATRIX

PMP RESPONSE FOR:								
This pest is a:	**Application Area**	**Actions to be taken to control the pest problem**						
		Type of pests	**Treatment scheme**	**Pest control measures**	**Trainings**	**Operations and Maintenance**	**Monitoring for effectiveness**	**Follow-up**
Health Concern								
Safety Issue								
Nuisance								
Other:								

The following considerations should be made in the preparation of a PMP:

1. Monitoring the pest populations and other relevant factors
2. Accurate identification of the pest
3. Determining action levels that trigger treatments
4. Timing treatments to the best advantage
5. Spot treating the pest (to minimize human and other non-target organism exposure to pesticides)
6. Selecting least disruptive tactics
7. Evaluating the effectiveness of treatments to fine tune future actions
8. Educating farmers involved with the pest problem

The Decision Making Process

1. The Pest management process begins with the assessment of the potential pest problem. Certain pests may pose a greater potential threat in small numbers or may become threatening only in large numbers. Once assessment has been made, further actions can be ascertained for the required treatment protocols on a pest specific basis.

2. If treatment action is necessary, it is important to thoroughly survey the area to determine the best place to treat in order to solve the pest problem. Treatment should be applied where actions will have the greatest effect.

3. The timing of treatments should take into consideration the optimal times during the pest's life cycle when treatment would have the greatest effect and the times when treatment could prove to be ineffective or even worsen the problem.

4. There are three guiding principles to use when choosing treatments: conserve and enhance naturally occurring biological controls; use a multi-tactic approach; and view each pest problem in its larger context.

Criteria for Selecting Treatment Strategies

Once the IPM decision making process is in place and monitoring indicates that pest treatment is needed, the choice of specific strategies can be made. Choose strategies that are:

- Least hazardous to human health
- Least disruptive of natural controls in landscape situations
- Least toxic to non-target organisms other than natural controls
- Most likely to be permanent and prevent recurrence of the pest problem
- Easiest to carry out safely and effectively
- Most cost effective in the short and long term
- Appropriate to the site and maintenance system

Treatment Option

1. Education is a cost effective pest management strategy. Information that will help change people's behaviors, including proper disposal of waste will play a part in managing certain pests.

2. Habitat modification such as redesign of structures and landscape plantings, improved sanitation, eliminating water sources for pests; and eliminating the pest habitat will help reduce the resources pests need to flourish.

3. Physical controls or direct removal of pests from an environment.

4. A biological control uses a pest's natural enemies to attack and control the pest. Biological control strategies include conservation (conserving the biological control application) and augmentation (artificially increasing the number of biological controls in a given area).

5. Least toxic pesticides are those which are effective against the target pest, have a low acute and chronic toxicity to mammals, biodegrade rapidly, kill a narrow range of target pests and have little or no impact on non-target organisms. These include materials such as the following:
   - Pheromones and other attractants
   - Insect growth regulators
   - Repellents
   - Desiccating dusts
   - Pesticidal soaps and oils
   - Some botanical pesticides

Criteria in selecting a pesticide:
- Safety
- Species specificity
- Effectiveness
- Endurance
- Speed
- Repellency
- Cost

Scope

This PMP applies to the operations of agriculture enterprise funded by Matching Grant Program. Farmers' organizations which are recipients of funding support under Component II are expected to ensure that provisions in this plan area adopted.

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Monitoring

Monitoring the effectiveness of the PMP over time requires diligent tracking of several items: pest populations and locations; management strategies employed; quantities and types of chemicals and products used; and the outcome of pest management activities. The FO/proponent is responsible for maintaining records that include the information below:

1. Target pest
2. Prevention and other non-chemical methods of control used
3. Type and quantity of pesticide used
4. Location of the pesticide application
5. Date of pesticide application
6. Name of the pesticide applicator
7. Application equipment used
8. Summary of results