Introduction

At present, agricultural development is an area of top priority in Ethiopia, as is demonstrated in the Government’s commitment to attain self-sufficiency in crop production, so as to sustainably ensure food security for the ever-increasing population of the country, and to ensure that food security efforts are made to intensify grain production through the utilization of agricultural input such as high yielding crop varieties, fertilizers and irrigation. Moreover, recognizing the intolerable magnitude of losses due to pests and the need to introduce ecologically preferable, socially acceptable, cost effective, rational and sustainable pest management technologies to farmers, IPM has been accepted as a strategy for tackling the problem.

Principles of IPM Implementation in Ethiopia

1. The basic need for IPM implementation in the country is to increase yields in a sustainable manner, and attain clean environment, safe food and healthy citizens.
2. The emphasis of IPM programme is on the reduction of or wherever possible, the elimination of the use of pesticides to avoid the misuse of pesticides and to prevent or at least to delay the breakdown of the agro-ecosystem through good crop management decisions. This condition will enable the prevention of unnecessary stockpiling of pesticides and their inevitable consequences of accumulating obsolete pesticides. Implementation of IPM also helps the country to produce acceptable products for the international market.

3. The basis of good crop management decisions is a better understanding of the crop ecosystem including that of pests, their natural enemies and the surrounding environment.

4. Traditional and indigenous crop protection methods that encourage the building up of natural enemies, such as crop rotation, intercropping, host plant resistance, appropriate planting time and planting density, use of local botanicals are highly encouraged.

5. Pesticides should be used only as a last resort.

6. Where pesticide use is unavoidable, it is desirable to select locally registered pesticides which are both effective at controlling pests and cause minimal damage to the environment.

7. The registered pesticide should be used according to Good Agricultural Practice (GAP) only when absolutely necessary for the right crop at recommended dose and at the right time.

8. Farmer should use pesticide safety gear whenever they apply pesticides.

9. Farmers should get training on safe use, handling and proper storage of pesticides.

10. Creating awareness among the general public about the potential risks associated with pesticide use is highly essential.
Contents of an IPM Plan

In order to ensure that the above principles are followed, each small-scale irrigation scheme should have an IPM Plan.

The IPM Plan may form part of the Irrigation Project Document.

The IPM Plan should, at a minimum, contain the following components and activities:

1. *Technical Assistance*: The Wereda Crop Production and Protection Expert contacts the Plant Health Clinic/Crop Protection Section of the Regional Bureau of Agriculture and Rural Development (BoARD) for technical assistance;

2. *Training and Awareness-Creation*: The Crop Protection Section of the Regional BoARD arranges an IPM Training and Awareness-Creation workshop for the members of the scheme, incorporating the above-mentioned principles;

3. *Pest-Resistant Varieties*: The Development Agent (DA) and wereda Crop Production and Protection Expert provide advice to the members on pest-resistant crop varieties based on expertise and knowledge at regional, zone and wereda levels;

4. *Supervision*: During scheme operations, the DA visits the members, on at least a weekly basis, to ensure that the scheme is being operated as intended, to monitor the presence or absence of pests, and provide advice on the management options. Management should be in accordance with the IPM components favouring traditional and indigenous pest management practices and conservation of natural enemies.

5. *Technical Information*: The DA ensures that information is made available to the members regarding the management of pests expected in the location concerned. In the event that the need for pesticides arises, the DA provides advice on the recommended pesticides and their usage, within the list of allowable pesticides as established by the *Pesticides Registration and Control Decree No. 20/1990* of Ethiopia, and any other relevant legislation or regulations.
6. Safety and Storage of Pesticides: The DA and Wereda Crop Production and Protection Expert will develop and implement arrangements for the safe use, handling and storage of pesticides, and the proper use, maintenance and storage of pesticide spraying equipment. Storage should follow the instructions provided. Pesticides should be kept separately, away from humans and animals in a closed, dry and secure place. Any surplus or unwanted pesticides should be reported to the DA for disposal.

7. Regular Monitoring: The Wereda team of Experts will conduct monthly visits to the scheme, to monitor as follows:

<table>
<thead>
<tr>
<th>Expert Responsible</th>
<th>Indicators Monitored</th>
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<tbody>
<tr>
<td>Crop Production and Protection</td>
<td>Compliance with IPM good practice guidelines</td>
</tr>
<tr>
<td>Natural Resources, in conjunction with the Regional Environmental Protection Authority (EPA)</td>
<td>Environmental impacts including human health, soil and water pollution</td>
</tr>
<tr>
<td>Livestock</td>
<td>Hazards to animals, bees and aquatic life, etc.</td>
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8. Reporting: The Wereda team will report to the Regional BoARD (in some regions, reporting will be to the Zonal office), which will take action, if required, to rectify any shortcomings arising from the use of pesticides.