JUST AGRICULTURE
multidisciplinary e-Newsletter

Integrated Pest Management: Scope and Advantages in Agriculture

Viswanadha Raghuteja Puvvala*[1], N. Emmanuel[2] and C. P. Viji[3]
[1]Ph.D. Scholar, Department of Entomology,
[1]Dr. Y.S.R. Horticultural University, Venkataramannagudem.
[2&3.]Associate Professor, Department of Entomology,
Dr. Y.S.R. Horticultural University, Venkataramannagudem.

ARTICLE ID: 048

Abstract

Integrated Pest Management (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties.

Key Words: Integrated Pest Management (IPM), Eco-friendly management, Principles, Tools and Limitations

Introduction

Integrated Pest Management (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties.It is an approach to control the pest in an integrated way. Under this method, pesticides are only used according to standard established guidelines and treatment is done with a goal of removing only the target organisms.

IPM is an effective, environmentally safe approach to pest management as it provides protection for beneficial insects as well as prevention of secondary pest outbreaks and resurgence (Preety and Bharucha, 2015). IPM incorporates several biological, ecological, physical and chemical strategies for controlling the pest problems. IPM programs use information on the life cycles of pests and their interaction with the environment. This information is then used to manage pest damage. Pest management is an ecological matter. The size of a pest population and the damage it inflicts is, to a great extent, a reflection of the design and management of a particular agricultural ecosystem.

Scope of Bio-intensive IPM Programmes

JUST AGRICULTURE
multidisciplinary e-Newsletter

Integrated Pest Management (IPM) is an ecologically based strategy that focuses on long-term solution of the pests through a combination of various techniques. Embracing a single tactic to control a specific organism does not constitute IPM, even if the tactic is an essential element of the IPM system. Integration of multiple pest suppression techniques has the highest probability of sustaining long term crop protection. Pesticides may be used to remove/prevent the target organism, but only when assessment with the help of monitoring and scouting indicates that they are needed to prevent economic damage.

Integrated Pest Management (IPM) technology can provide green and eco-friendly alternatives for environment and agricultural management without harming the nature by the help of pest controlling methods.Many case studies concluded that Benefit Cost Ratio (B: C Ratio) was more for IPM farm, compared to Non-IPM farms. Research is obviously needed to develop and evaluate IPM concepts and practices in developing countries, but it is useless without companion efforts in extension and training.IPM programs are functioning in more than 60 developing and developed countries (FAO, 2011). In India, the first IPM programme was the Operational Research Project (ORP) during 1974–75 (Swaminathan, 1975) in cotton and rice.

The Directorate of Plant Protection and Quarantine, Ministry of Agriculture, Government of India, has evolved location-specific IPM packages for both the *Kharif* and *Rabi* crops in consultation with IPM experts from the Indian 3 Council of Agricultural Research, State Agricultural Universities, and the State Departments of Agriculture. Available Technologies Research has generated new technologies using naturally occurring enemies of insect pests (parasitoids, predators and pathogens) for use in IPM. Some important commercially available products include *Trichogramma, Bracons, Crysoperlacarnea, Crytaemusmontrouzieri, Bacillus thuringiensis, Bacillus sphaericus*, Nuclearpolyhedrosis viruses (NPV) and *Trichoderma*. In the last twenty years or so, IPM programs have been developed for important pests.

Advantages of IPM

- **Lower cost intervention**: - Traditionally, the use of the pesticides to control the pest invasion would account to lots of cost. Also, these pesticides need to be imported as well. The application of IPM would lessen the financial burden. Moreover, different techniques involved in IPM are more sustainable with long lasting benefits.

JUST AGRICULTURE
multidisciplinary e-Newsletter

- **Benefits to the environment**: - Use of the pesticides is often linked degradation of the environment causing some more additional problems. IPM is an eco-friendly approach and the effects on the environment are always considered before the application of any interventions. Less use of pesticides won't affect the fertility of soil.
- **Minimizes residue hazards of pesticides**: - It is obvious that in an IPM schedule the use of pesticides will be considerably reduced, hence the pesticide residue hazards will also get automatically minimized.
- **Anti-Resistance**:- The IPM model in itself is the anti-resistant mode for pest control. It discourages the use of chemicals and thus creates less cases of anti-resistance. Pesticides are used only when the other alternatives are not satisfying.
- **Useful and best intervention for the general public**: - Assurance of safe, reliable and low-cost pest control. The pest control will not affect the crops. Moreover, it is safe and affordable for the general public as well.

Conclusion

India has successfully reduced pesticide consumption without adversely affecting the agricultural productivity. This was facilitated by appropriate policies that discouraged pesticide use, and favoured IPM application. Despite it, adoption of IPM is low owing to a number of socio-economic, institutional and policy constraints. On the supply side, lack of commercial availability of bio pesticides and inappropriate institutional technology transfer mechanisms are the critical impediments to increased application of IPM. The presence of private sector in bio pesticide production and marketing is marginal and needs to be improved through economic incentives. On the demand side, farmers though are aware of technological failure of pesticides to control pests, and their negative externalities to environment and human health, pest risk is too high to experiment with newer approaches to pest management.

IPM is a complex process and farmers lack understanding of biological processes of pests and their predators and methods of application of new technology components. The socio-economic environment of farming is also an important factor in adoption of IPM. There are a number of IPM practices that work best when applied by the entire community and in a synchronized mode. This is unlikely to happen without demonstrating benefits of group approach, and external motivation and support to the farmers. Though many technology

JUST AGRICULTURE
multidisciplinary e-Newsletter

programs are based on community approach, they do not have any proper exit policy to sustain the group approach. The IPM policy should also provide incentives to farmers to adopt IPM as a cardinal principle of plant protection.

References:

FAO. Save and Grow. Food and agriculture organization.2011; The FAO online catalogue: http://www.fao.org/docrep/014/i221 5e/i2215e.pdf. Accessed 21 Dec 2012.

Preety, J and Bharucha, Z. P. 2015.Integrated pest management for sustainable intensification of agriculture in Asia and Africa.*Insects.*6 (1): 152-82.