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IMPORTANCE AND ROLE OF PREDATORS IN AGRO- ECOSYSTEM IN BIOLOGICAL CONTROL OF INSECTS' PEST

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Abstract

Insect predators preying on agriculture insects' pest are found in all crop plants including the parts below ground as well as in nearby shrubs and trees. Insect predators include beetles, bugs, lacewings, flies, midges, spiders, wasps, and predatory mites. Some are specific in their choice of prey while others are generalists attacking diversity of insects. Predators can be found in almost all agricultural and natural habitats. Each group may have a different habits and life cycle. Although the life cycle of some common predators is well defined earlier, information on the augmentation and conservation of many predatory species is missing (Hoffmann, M.P. and Frodsham, A.C., 1993)

Key words : Predators, Insects' pest, Bio-control.

There are many insects known to feed on other insects and are described as insect predators in agro ecosystem. They generally check the insect pest of crops from reaching out break levels and usually kept the pest population below ETL. These insects are known as bio agents or bio control agents and such phenomenon of insect pests controlled by them is known as bio control or biological control. Bio control is one of the key components in IPM practices, which stands as the most excellent, effectively successful and eco friendly alternative option for controlling the introduced and indigenous insects' pest in current agricultural practices. Development of pest resistance to insecticides and other environmental hazards due to insecticidal residues continues to be a great threat and problem for environment as well as human beings by using insecticides alone in pest management. Insect predators are those insects that naturally kill and eat other insect pests in agro ecosystem. Those predators generally look for pests in the fields to get their prey. Predators are usually larger than their prey and can kill and consume the pest. They can attack the pest at any stage as they are often generalists rather than specialists to prey.

Insect predators are reported in nearly 167 insect families belonging to 14 orders of insecta class (Sathe & Bhosale, 2001) and some of them are long horned grasshoppers, earwigs, lacewigs (*Mallada basalis* and *Chrysoperla carnea*), praying mantids, lady bird beetles (*Coccinella septempunctata, Cheilomenes sexmaculata* and *Coccinella transversalis*) hover flies, coccinellids (*Stethorus punctillum, Cryptolaemus montrouzieri*), staphylinid beetle (*Oligota* spp.), cecidomyiid flies (*Anthrocnodax occidentalis*), gall midge (*Feltiella minuta*), anthocorid bugs (*Orius* spp.) etc. Apart from class insecta predators are also observed in mites (*Amblyseius alstoniae*, *A. womersleyi, A. fallacies* and *Phytoseiulus persimilis*) and spiders which are considered to be effective in prey attack.

Predators stood as the principal agents in bio control as they can survive even when there are no insect pests to prey. When more number of insects is obtained for predators to prey, their population multiplies quickly by laying more eggs due to abundant availability of food. Both adults and larvae/nymphs can be predators. They can feed on various different species of insects. Hence

they are commonly considered to be the first crop defenders against insect pests in agro eco system. With no predators in the fields, insects can easily multiply their number and attack the crops at all stages due to lack of natural suppression. Current studies specify that insects' populations in agriculture are naturally declining due to a range of their natural enemies. By creating habitat, foraging and overwintering sites to predators, they can be conserved that helps and supports potential predators to keep the pest below ETL. For effective using of predators in pest management, they should be well identified and mass multiplied in the laboratories for releasing in the fields. Farmers also must be aware with respect to the stage of crop and the time at which insect predators has to be released in the fields for effective pest control.

Conclusion

Nearly more than 10% of the world's insects are found in India with high diversity. In spite of this, brief systematic studies on the role of beneficial insects in agro-ecosystem is much lacking in India due to keen shortage of taxonomic knowledge for efficient groups of beneficial insects. There are several predators that live in fields, actively hunting down various sucking pests in agricultural. They often form the first line of defense against pest attack, helping to check pest outbreaks and reducing the need for insecticides. Many number of insects' predators are playing a significant role in controlling the pest in the fields. In spite of their major role in managing the pest, not many of them are utilizing in applied biological control programmes due to lake of mass production in large scale in India. If considerable amount of work has been done on the predators' behavioral aspects and host range, it would gather the information about the level of management obtained from the predators as there is lot of scope for biological control in IPM. As they are necessary in agriculture, keeping the fact in mind, the predators should be protected, conserved and promoted for achieving the target of suppressing the insect pest in the fields in a safer and economic manner.

References

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