



Beneficial Insects: Predators and Parasitoides

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In general terms we consider insects as pest, but the truth is insects get the label of pest only if they cause deleterious damage to human and their belongings. Besides causing harm to people, plants and animals there are some insects which cause benefits to environment directly and indirectly. It is interesting to know that out of all known species of the insect only few say around 3% are considered as pests. The rest all are that can cause benefits to the environment. Most importantly these beneficial insects are of highly importance in the agriculture, as they may help in pollination, and act as natural enemies to suppress the population of the damage causing insect pest and somehow reducing the environmental crises by acting as natural agents for crop protection by minimising the use of chemicals, that almost degrade our natural ecosystem. In general we have so many types of insects and they are helping us in numerous following ways:

By acting as pollinators: This category of insects includes the bees, butterflies, honeybees and moth. They help the plants in pollination by dropping pollens from one plant to other and plays significant role in pollination. With the help of these pollinators the farmers can increase their incomes and this also improves the quality of crop yields and leads to the healthy landscape with higher profits.

By acting as predators: Beetles, flies and bugs etc, are considered as the predators of the insects that cause damage to the crop plants. The predators are bigger in size than the insects they are attacking or their prey. Predators are found to feed on variety of insect pest and can control the damage causing insects naturally in farms. They can prey upto hundreds to insects and their larvae in a single day, hence they are the most important component of the integrated pest management.

By acting as Parasitoides: Parasitic insect like small wasps, they lay their insects in the other insects or in their eggs and can help in decreasing the population of those insects on which they parasitoids.

Beneficial Insects in Agriculture

Whenever farmer observe insect in his field the first thought he get is insect might cause damage to his/her crop, because he is unaware of the beneficial insects that may act as predator or parasitoid and help him in managing his crop from damage causing insects in a natural way as these beneficial insects are the roots of the biological management. There is no

doubt that insects are causing damage to the crop and eating crops gregariously but on the other hand they are saving our environment by helping in pollination that is wholly depends upon the pollinators, suppressing the damage causing insect pest population not only this but they are also helping in improving the farmers income by producing some economical products such as lac, silk, honey and their value added products whose value is increasing in markets day by day.

There are around 95 per cent insects that do not cause trouble and can actually help us out in numerous ways such as if we grow variety of plants around the main crop this might attract several insects that act as natural enemies for those causing damage to our main crop. We can use them as a source to eradicate and suppress the insect pest in natural ways. In case of small scale agriculture planting us can practice inter cropping that gave double positive results one by attracting few natural enemies and second intercrop provides nutrients to main crop and can also suppress the growth of insect pest, also doubles the profit of farmers.

Difference between predator and parasitoid

| S. No. | Predators | Parasitoides |
|--------|---|--|
| 1. | Free living insects that feed on their prey, they devour their prey completely. | These insect feeds on the body of other insect during the immature stage of their life cycle and adult is free- living insect. |
| 2. | Large in size | Small in size |
| 3. | Their life cycle is long | Their life cycle is short |
| 4. | They feed on varied insects in a single day | They Complete their life cycle on one single insect |
| 5. | Active throughout their life | They are sluggish type of insects |
| 6. | Their body well developed | Their body is not well developed an sometimes has reduced organs |
| 7. | They sometimes live in the same habitat of their prey | They tends to survive in all the favourable habitats of the host |
| 8. | They attack ojn their prey in more casual manner | They attack in well planned manner |
| 9. | They are developed with cryptic colourations and have destructive markings | No such characters found in them |
| 10. | Some important predators are: dragonflies, ant lions, praying mantis and lacewings etc. | Some important parasitoides are: <i>Bracon</i> sp., <i>Apanteles</i> sp. And <i>Trichogramma</i> spp. etc |

How to Conserve?

- Providing alternate hosts for natural enemies
- Provide pollen and nectar for adult natural enemies
- Use selective insecticides which do not cause any harm to the natural enemies
- Go for those cultural practices which are less harmful to the natural enemies
- Cultivation of those varieties that favours the natural enemies
- Preserve inactive stages of natural enemies

*Fig:* Ladybird beetle*Fig:* Hover fly*Fig:* Lacewings

Some common beneficial insects in crop management:

| S. No. | Beneficial insects | Prey on |
|--------|--------------------|---|
| 1. | Ladybird beetle | Aphids, Whiteflies, Colorado potato beetle |
| 2. | Minute pirate bug | Aphids, Thrips, Caterpillars |
| 3. | Ground beetles | Slugs, Caterpillars, Colorado potato beetles and cutworms |
| 4. | Braconid wasps | Caterpillars and Aphids |
| 5. | Praying Mantis | Beetles, Caterpillars, Crickets, and Moths |
| 6. | Hover fly | Aphids, Caterpillars |
| 7. | Green Lacewing | Aphid, Leafhopper, Mealy bugs and Whitefly |
| 8. | Aphid Midges | Aphids |
| 9. | Tachinid Fly | Gypsy moth, Cutworms, Squash bugs |
| 10. | Damsel bug | Aphids, Cabbage worms, Mites |