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Types of Damages to Plants by Different Insects

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SUMMARY

Insects cause enormous damage to forests, agricultural crops as well as stored agricultural commodities. Insects and other pests commonly attack crops because of their liking and to complete their life cycle. Insects damage the plants and their parts by chewing leaves, stems, roots, sucking juices, egg laying and transmitting bacterial, fungal and viral diseases. Several hundred diseases of plants are known to be transmitted by insects. Thus insects effecting plant vigor resulting severe crop losses. Pest problem is one of the major constraints for achieving higher production. The factors that decide the importance of an insect as a pest species are the susceptibility of the crop and the nature of damage inflicted by insect to the crop. Insects inflict injury to plants either directly or indirectly in their attempts to secure food and almost all the portions viz. roots, stems, barks, shoots, leaves, buds, flowers and fruits of plants are attacked and damaged by insects. Thus insects effecting plant vigor resulting severe crop losses. Pest problem is one of the major constraints for achieving higher production. So increase in crop productivity without adequate crop protection does not make sense, because an increase in attainable yield is often associated with an increased vulnerability to damage inflicted by pests. Insect management is important to keep the pests from spreading to other crops. The mechanical, cultural, physical, chemical, biological and IPM methods which can be used to control pests.

INTRODUCTION

Insects cause enormous damage to forests, agricultural crops as well as stored agricultural commodities. Insects and other pests commonly attack crops because of their liking and to complete their life cycle. Insects inflict injury to plants either directly or indirectly in their attempts to secure food. Insects damage the plants and their parts by chewing leaves, stems, roots, sucking juices, egg laying and transmitting bacterial, fungal and viral diseases. Several hundred diseases of plants are known to be transmitted by insects. Thus insects effecting plant vigor resulting severe crop losses. Pest problem is one of the major constraints for achieving higher production.

Types of Damage :

Direct effects of feeding :

Injury by chewing insects :

Insects which chew off external plant parts grind them up and swallow them, possess biting type of mouth parts and cause damage as detailed below.

- Feed on the leaves and defoliate the plants causing reduction in assimilative leaf area and thus hinder growth. *eg.* The semilooper caterpillar on castor, the red headed hairy caterpillar on groundnut and the slug caterpillar on mango and castor.
- Notch the edge of leaves. *eg*. Ash weevils, *Myllocerus spp*. Feeding on variey of crops like drum stick, brinjal, cotton, *etc*. the grasshoppers, *Hieroglyphus banian* and *Oxya spp*. Feeding on rice and sugarcane.
- Make small holes in the leaves by feeding *eg*. Flea beetle on radish and sunhemp.
- Feed on a layer of surface tissue of leaf. *eg*. Larvae of the diamond back moth on cabbage and cauliflower, or superficially on the surface tissue. *eg*. Grubs and adults of the beeles, *Epilachna spp*. On brinjal and bitter gourd.
- Roll up the leaves and feed within *eg*. Larvae of *Sylepta derogata* on cotton.
- Larvae feed on the plants or trees while being concealed in a protective covering like frass and excreta woven into a silken gallery *eg*. Bark eating caterpillar, *Inderbela tetrraonis*, on moringa, curry leaf, rain tree etc.
- Cut the stem of tender plants at the time of germination. *eg*. surface weevil, *Attractogastor finitimus.*
- Feed on the flower buds and flowers and cause reduction in yield. *eg*. Larva of *Maruca testulalis*, web the flower buds and flowers on redgram and feed on them.
- The adults feed on the flower buds and petals. *eg*.- blister beetle on red gram and sesbanna and cetoniid beetele on rose.

- Nibble and cut-off erheads. *eg*. Rice grasshoppers.
- Eat partially on the grains and give chalky appearance. *eg*. Damage inflicted by the larvae of *Helicoverpa armigera* to the ears of sorghum and finger millet.

Injury by internal feeders :

The internal feeders cause damage by remaining within the plant tissues during a part of all of their destructive stages. This is accomplished by the adult thrusting their eggs into the tissue by their ovipositor or by the larvae eating their way- in after they hatch from the eggs. The internal feeders may be grouped as borers, worms or weevils, leaf miners and gall insects.

- Borers *Eg*. Cotton spotted bolloworm, *Earias* spp.
- Worms or weevils – they are borers of flower buds and fruits including nuts and seeds. The larvae bore into flower buds cause shedding. Such larvae are usually called budworms. *Eg*. Jasmine budworm.
- Leaf miners – The larvae, which are very small, live in between the two epidermal layers of the leaves and feed on the food material inside, are referred to as leaf miners. *Eg*. Citrus leaf miner, *Phyllocnistis citrella*, serpentine leaf miner, *Lyriomyza trifolii.*
- Galls – In their immature or adult stages, certain insects are known to be responsible for the formation of special plant. Deformities to be responsible for the formation of special plant deformities known as galls. These galls provide shelter and food to the insects. *Eg*. Psyllid bugs, Cecidomiid galls, aphid galls and gingelly fruit galls.

Injury by piercing and sucking Insects :

These insects remain outside and with their mouthparts pierce through the epidermis and suck the sap. The following symptoms or kinds of damage are caused by this mode of feeding. Many of the sucking insects at the time of feeding inject their salivary secretions that due to presence of certain toxins damage the plant tissues further.

- Most sucking insects attack the leaves of plants. A general chlorosis is caused by aphids and many of them cause ultimate withering and drying of the affected portions. *Eg.* The lab-lab aphid, *Aphis craccivora* which occurs on lab-lab, groundnut and glyricidia cause similar damage. Small chlorotic areas near the midrib is a typical damage caused by mirid bug.
- Premature shedding of developing fruits or drying of shoots. *Eg.* Scales and mealy bugs like the san jose scale on apple and grape mealy bug.
- Distortion of foliage and clustering of terminal shoots. *Eg.* Mealy bug infestation on tender shoots of *Glyricidia maculate*.
- Crinkling and curling of leaves. *Eg.* Insects like aphids, thrips and leafhoppers.
- Hopper butn or necrotic brown lesion. *Eg*. the typical injury produced by leafhoppers of cotton and castor.
- Silvering or whitening of leaf surface due to removal of cell contents below the epidermis *Eg*. Typical damage caused by thrips in crops like onion, groundnut, etc. and feeding spots caused by tingid bugs like *stephenitis typicus* on coconut and banana.
- Faint yellow specking of leaves may be produced due to feeding *Eg*. Castor whitefly and the coconut scale.
- Premature fall of fruits *Eg*. Citrus fruit drop caused by the fruit sucking moths which pierce the rind of fruits.

Injury by subterranean insects :

Insects which are found in the soil live by feeding on the roots of plants and trees by chewing or boring or sucking the sap or forming galls. *Eg*. Wireworms, chafers, cut worms, flea beetles, weevil grubs, root aphids and wooly aphids.

Injury to stored products :

In three ways insects attack the stored products.

- It may be a continuation of a field attack. *Eg*. Sweet potato weevil, *Cylas formicarius* and potato tuber moth *Phthorimoea operculella*.
- The eggs may be laid in the field itself and the damage may occur in storage. *Eg*. Redgram infested by the bruchid beetles, *Callosobruchus chinensis*.

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Indirect effects of feeding :

Making the harvest more difficult :

Heavy incidence of some pests on crop makes the harvest of the crop more difficult. *Eg*. Cabbage and lab-lab pods infested heavily with aphids and kapas from cotton bolls damage by bollworms.

Causing contamination and loss of quality of product :

Due to insect attack, the final produce may show loss of quality by reducing the nutritional value or marketability *Eg*. Cardamom capsules infested by thrips, *Sciothirps cardomon*, sweet potato tubers riddled with holes by the weevil, *Cylas formicarius*, brinjal fruits bored by larvae of *Leucinodes orbonalis*, amaranthus leaves skeletonised by larvae of *Hymenia recurvalis* and cabbage riddled with shot holes by the semilooper, *Trichoplusia ni*.

Disseminate plant diseases :

Insects are responsible for spreading many plant disease caused by bacteria, fungi and virus.

Injury by other method :

Injury by egg laying:

Insects take a great deal of care in laying their eggs at the right place so that the young one will have enough food material for its development and thus survive. *Eg*. Periodical cicada, cow bugs and the grape wine stem girdler.

Use of plant parts for making nests :

Sometimes parts of plants are removed by insects for the construction of their nests though they do not feed on them *Eg*. leaf cutter bee *Megachila sp*. Tropical leaf cutting ants, *Atta spp*. and red ants, *Oecophilla smaragdina*.

Injurious insects being carried from one plant to another :

Ants and some other kinds of Insects though they are not injurious to crop by themselves often carry to other plants such injurious insects as aphids, mealy bugs etc.

REFERENCES

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