

Citrus

Pests

Citrus Psylla (*Diaphorina citri*) :

Both the adults and nymphs of this pest suck the sap from the tender parts of the buds, leaves, branches and injects a toxic substance into them. In case of severe attack leaves get distorted, curled up and ultimately fall resulting in complete defoliation of the plant. This pest acts as a vector for spreading the 'greening' disease.

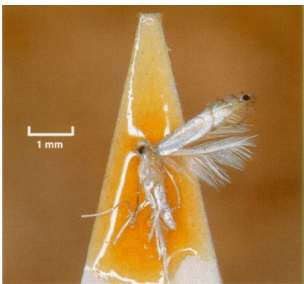
Control : A number of natural enemies such as species of coccinellids and ladybird beetles attack the nymphs of citrus psylla. The pest can be satisfactorily checked by spraying the plants with Phosphamidon (0.025%) and Parathion (0.025%). Also application of Monocrotophos (0.025%) or Malathion (0.03%) or Dimethoate (1.5%) is useful.

Bark Borer (*Inderbela tetraonis*, *Inderbela quadrinotata*) :

The caterpillar makes holes into the branches and weakens the tree. Presence of webby mass of chewed wood particle and excreta of larvae conspicuously plastered on tree trunks is the clear indication of damage by these borers. The feeding of these pests causes interruption in translocation of cell sap, which adversely affect the growth and fruiting of the plant.

Control : The pest is satisfactorily controlled by removing the webbing followed by plugging the holes with Cotton wool soaked in the 2-5ml of Dichlorvos 76EC solution (20ml/10 litres of water). The holes are then sealed with mud. The best time for its control is September-October and the operation should be repeated in January-February.

Citrus Leaf Miner (*Phyllocnistis citrella*) :



This pest causes damages both in nursery and in grown up stages of the citrus plant. It the larvae attack tender leaves and feed in the epidermal layers of the leaf by making serpentine mines in which air gets trapped and gives them silvery appearance. The affected leaves turn pale yellow, get distorted and crumpled. Such leaves gradually dry and die away. The attack of this pest also encourages the development of citrus canker disease.

Control : To keep the pest population under check, pruning of all the affected parts during winter should be done. Spraying the plants with Methyl Demeton (0.03%) and Phosphamidon (0.035%) at the emergence of new leaves is highly beneficial. Application of Phorate 10 G (2.5 kg a.i./ha) applied one day before planting is effective in reducing the larval population of leaf miner.

Citrus White Fly/ Citrus Black Fly (*Dialeurodes citri*; *Aleurocanthus woglumi*) :



These insects suck the sap of the plants and during this process, secrete honeydew due to which sooty mould develops on the leaves.

Sometimes, the infestation is so severe that the whole orchard looks black. Fruits turn black in colour and have insipid taste. The attack is more intense on the shady side of the tree.

Drenching the trees with sufficient solution (preferably 8-10 litres for fully-grown tree) of either Monocrotophos (1.5 ml/litre of water) or Phosphamidon (0.7 ml/litre of water) or Acephate (0.8 ml/litre of water) controls the pest effectively.



Aphids (*Toxoptera citricida*) :

The aphids suck the cell sap from the leaves. They also feed on the new shoots and tender fruits. Curling of infested twigs and leaves is a common symptom. The aphids are considered to be significant vectors of *Tristeza* virus.

Control : Population of this pest on citrus can be easily controlled by spraying the plants with Parathion (0.03%) and Malathion (0.03%). Also Monocrotophos (0.025%) or Phosphamidon (0.035%) effectively control this pest. Spraying should be immediately undertaken as soon as the pest is observed.

Citrus or Lemon Butterfly (*Papilio demoleus*) :

It is the most destructive pest in nurseries. The caterpillars feed on the young foliage at the nursery stage and also on young flushes of grown up trees. The caterpillar feed voraciously on leaf lamina leaving behind only the midrib. In case of severe infestation, entire tree is defoliated. The fully grown caterpillars are green in colour.

Control : Hand picking of the larvae and spraying with Endosulphan 35 EC (2ml/10 litres of water) is effective in controlling the pest.

Fruit Sucking Moths :

The moths are nocturnal in habit. During the daytime, they hide in fallen leaves and in weeds and become active at dusk and swarm in large numbers when citrus fruits are about to ripen. The moths continue feeding throughout the night and cause colossal damage. They pierce the ripened fruits and suck the juice from them. Such fruits are exposed to the secondary infections of diseases and infestation of flies. The affected fruit usually falls within a few days.

Control : Elimination of alternate hosts plants from the vicinity of the orchards and collection and destruction of affected fruits reduce the pest population. Uses of poison baits have proved useful. Effective bait may be prepared by mixing 15g lead arsenate and 450g molasses in 10 litres of water. A little vinegar may be added to it and the bait should be suspended from trees in shallow wide-mouthed containers.

Citrus Mite (*Eutetranychus orientalis*) :



The mites damage the fruits by causing russetting and renders the fruits unfit for export. The insects feed on the leaves and produce multiple grey spots. The affected leaves defoliate.

Control : Mites can be controlled by application of Dicofol (1.5 ml/litre of water) or Wettable Sulphur (3.0 g/litre of water) or Monocrotophos (1.5 ml/litre of water).

Scale Insects :

Armoured scales (*Aonidiella aurantii*, *A. citrina*, *A. orientalis*, *Chrysomphalus aonidum*.)

Soft Scales (*Coccus hesperidum*, *C. viridis*).



Citrus scales are of two distinct types-armoured scales, which have hard cover separate from the body providing protection to the body underneath. The soft scales the have no separate cover but sometimes a hard skin or a protective waxy secretion.

The armoured scales damage the fruits and form as blemishes at low levels of infestation and in sever cases, they damage the tree badly. The soft scales secrete honeydew on which sooty mould fungus grows. A soft scale become serious when there is poor light penetration due to over crowding and waterlogged conditions.

Control : Hard armoured scales are difficult to control. However soft scales are effectively controlled by spraying Monocrotophos (0.1%).

Fruit Flies (*Dacus dorsalis*) :

Fruit flies puncture the rind of the fruit at the pre-harvest stage and lays eggs inside the fruit. The maggots hatch from the eggs and feed on the fruit pulp the affected fruits fail to ripen and drop prematurely.

Control : Collection and destruction of infested fruits reduces the insect population. Use of flytraps containing 1% Methyl Eugenol and 0.5% Malathion mixed with sugar syrup two months prior to harvesting is effective.

Citrus Nematode (*Tylenchulus semipenetrans*) :

Infestation of nematodes is one of the main factors responsible for slow decline of citrus. Damage caused by a citrus nematode infestation depends on the age and vigor of the tree, density of the



nematode population, and susceptibility of the rootstock. Mature trees can tolerate a considerable number of these nematodes before showing lack of vigor and decline symptoms. In heavily infested sites, young trees may be stunted or fruit production may be reduced on bearing trees that have susceptible rootstocks. The damage is greater when trees are predisposed by other factors such as *Phytophthora* root rot and water stress.

Symptoms of nematode damage above the ground are lack of vigor, twig dieback, decline in growth, and reduced fruit size and yield. Nematode infestations may occur without inducing any aboveground symptoms. Under ground symptoms of citrus nematode infestation include poor growth of feeder roots and soil adhering to roots giving them a dirty appearance.

Control :Good sanitation practices are essential to avoid nematode infestations. Use certified nematode-free material for planting. Rotation with annual crops for 1 to 3 years before replanting citrus helps to reduce citrus nematode populations. Using a resistant rootstock is recommended whether or not nematodes are present. Trifoliate orange is known to be tolerant to citrus nematode. Soil application of Neem cake and chemicals like Temic 10G (4 kg a.i./ha) are used successfully to control the nematodes. Intercropping of Marigold has repellent action and reduces the population of nematodes in citrus.