Mango

Pests

Hopper (*Idioscopus clypealis, Idioscopus nitidulus* and *Amritodus atkinson*) :

Of all the mango pests, hoppers are considered as the most serious and widespread pest throughout the country. Large number of nymphs and adult insects puncture and suck the sap of tender parts, thereby reducing the vigour of the plants. Heavy puncturing and continuous draining of the sap causes curling and drying of the infested tissue. They also damage the crop by secreting a sweet sticky substance which facilitate the development of the fungus *Maliola managiferae,* commonly known as sooty mould affecting adversely the photosynthetic activities of the leaves. Hopper population shoots up in February-April and June-August.

Control : Three sprays of 0.15% Carbaryl or 0.04% Monocrotophos or 0.05% Phosphamidon or 0.05% Methyl Parathion are effective in controlling the hoppers. First spray should be given at the early stage of panicle formation. The second spray at full-length stage of panicles but before full bloom and the third spray after the fruits set at pea size stage are recommended.

Biological control agents such as the predators *Mallada boninensis* and *Chrysopa lacciperda,* the egg parasite *Polynema* sp. and a preparation of the fungus *Beauveria bassiana* are important and useful in controlling this pest.

Mealy Bugs (*Drosicha mangiferae*) :

Nymphs and adults suck the plant sap and reduce the vigour of the plant. Excessive and continuous draining of plant sap causes wilting and finally drying of infested tissue. They also secrete honey dew, a sticky substance, which facilitate the development of the fungus *Maliola mangiferae* (sooty mould). The female adult crawls down the tree in the month of April-May and enter in the cracks in the soil for laying eggs. Just after hatching, the minute newly hatched pink to brown coloured nymphs crawl up the tree. After climbing up the tree, they start sucking the sap of tender plant parts. They are considered more important because they infest the crop during the flowering season.

Control : Flooding of orchards with water in the month of October kills the eggs. Ploughing the orchards in the month of November exposes the eggs to suns heat. Polythene bands of 400 gauge and 25 cm width fastened around the tree trunk have been found effective barrier to stop the ascent of nymphs to the trees. The band should be fastened well in advance before the hatching of eggs, i.e., during November- December.

Application of 250 g per tree of Methyl Parathion 2% dust in soil around the trunk kills the newly hatched nymphs.

Spraying of 0.05% Monocrotophos or 0.2% Carbaryl or 0.05% Methyl Parathion is useful in controlling young nymphs of the mealy bug. The entomogenous fungus Beauveria bassiana is found to be an effective bioagent in controlling the nymphs of this pest.

Inflorescence Midge (*Erosomyia indica*) **:**

The midge infests and damages the crop in three different stages. The first attack is at the floral bud burst stage. The eggs are laid on newly emerging inflorescence; the larvae tunnel the axis and thus destroy the inflorescence completely. The mature larvae make small exit holes in the axis of the inflorescence and slip down into the soil for pupation. When the tender fruits are attacked they slowly turn yellow and finally drop. The third attack is on tender new leaves encircling the inflorescence. The most damaging one is the first attack in which the entire inflorescence is destroyed even before flowering and fruiting. The inflorescence shows stunted growth and its axis bends at the entrance point of the larvae.

Control : As the larvae pupate in the soil, ploughing of the orchard expose pupating larvae to sun helps in killing them. Soil application of Heptachlor or Methyl Parathion @ 25 to 30 kg/ha kills pupating larvae in the soil. Spraying of 0.05% Fenetrothion or 0.045% Dimethoate at the bud burst stage of the inflorescence is effective.

Fruitfly (*Daccus dorsalis;, D. zonatus* and *D. correctus*) :

The oriental fruitfly is one of the most serious pests of mango in the country, which has created problem in the export of fresh fruits. The female punctures the outer wall of the mature fruits with the help of its pointed ovipositor and insert eggs in small clusters inside the mesocarp of mature fruits. After hatching, the larva feeds on the pulp of fruit which appears normal from outside, but drops down finally. The mature maggots fall down into the soil for pupation. The emergence of fruitfly starts from April onwards and the maximum population is recorded during May-July, which coincides with fruit maturity. The population declines slowly from August to September after that it is non-existent up to March.

Control :

Bait sprays of Carbaryl (0.2%)+protein hydrolysate (0.1%) or molasses starting at first week of April and repeated once after 21 days or hanging traps containing 100 ml water emulsion of Methyl Euginol (0.1%) + Malathion (0.1%) during fruiting is effective. As per the experiments conducted in IIHR, Bangalore against fruit fly, hot water treatment at 48^0C for one hour gave total control in Alphonso and Totapuri.

Scale Insects : (*Pulvinanapolygonata, Aspidiotus destructor, Ceroplastis* sp. and *Rastococcus* sp) :

The nymphs and adult scales suck the sap of the leaves and other tender parts and reduce the vigour of the plants. They also secrete honeydew, which helps in the development of sooty mould on leaves and other tender parts of the tree. In case of severe scale infestation, growth and fruit bearing capacity of the tree is affected adversely.

Control : Pruning of the heavily infested plant parts and their immediate destruction followed by two sprays of Monocrotophos (0.04%) or Dimethoate (0.06%) at an interval of 20 days is very effective in controlling the scale population.

Shoot Borer *(Chlumetia transversa) :*

This pest is found all over the country. Larvae of this moth bore into the young shoot resulting in dropping of leaves and wilting of shoots. Larvae also bore into the inflorescence stalk. Female moths lay egg on tender leaves. After hatching, young larvae enter the midrib of leaves and then enter into young shoots through the growing points by tunneling downwards.

Control : The attacked shoots may be clipped off and destroyed. Spraying of Carbaryl (0.2%) or Quinalphos (0.5%) or Monocrotophos (0.04%) at fortnightly intervals from the commencement of new flush gives effective control of the pest. A total of 2 to 3 sprays may be given depending on the intensity of infestation.

Bark Eating Caterpillar *(Indarbella* quadrinotata) :

The old, shady and neglected orchards are more prone to attack by this pest. Larvae of this moth feed on the bark and weaken the tree. A single female lays about 300-400 eggs in batches on the bark. The caterpillar spins brown silken web on the tree, which consists of their excreta and wood particles. Larvae also make shelter tunnels inside the stem in which they rest. Larvae generally feed from April to December.

Control : Removal of the webs from tree trunks and injecting emulsion of Monocrotophos (0.05%) or DDVP (0.05%) in each hole and plugging them with mud can control the pest.

Stem Borer *(Batocera rufomaculata) :*

The grub of this beetle causes damage as it feeds inside the stems, boring upward resulting in drying of branches and in severe cases attacked stem is killed. Eggs are laid either in the slits of tree trunk or in the cavities in main branches and stems covered with a viscous fluid. Pupation takes place within the stem. Beetle emerges in July-August

Control : Cleaning the tunnel with a hard wire, pouring kerosene oil, creosote, petrol, crude oil or formalin and subsequently closing entrance of the tunnel with mud or plugging it with cotton wool soaked in any of the above substances kills the grub.

Shoot Gall Psylla *(Apsylla cistellata) :*

It is a very serious pest of mango in many parts of India, particularly in Tarai region of U.P., north Bihar and West Bengal. This pest creates green conical galls in leaf axis. The activity of the pest starts from August. The galls dry out after emergence of adults in March. The adult females lay eggs in the midribs as well as in lateral axis of new leaves. Nymphs emerge from eggs during August-September and crawl to the adjacent buds to suck cell sap. As a result of feeding, the buds develop into hard conical green galls. The galls are usually seen during September-October. Consequently, there is no fruit set.

Control : The galls with nymphs inside should be collected and destroyed to prevent carryover of the pest. The pest can effectively be controlled by spraying of Monocrotophos (0.05%), Parathion (0.04%), Metasystox (0.1%) or Quinalphos (0.05%) at 2 week intervals starting from the middle of August. Repeated use of same chemical for every spray should be avoided.

Leaf Webber *(Ortbaga euadrusalis) :*

The infestation starts from the month of April and continues up to December. Eggs are laid singly or in clusters within silken webbings on leaves. Upon hatching, the caterpillars feed on leaf surface by scrapping. Later, they make web on tender shoots and leaves together and feed within. Old orchards with lesser space between tree canopy have more infestation than open orchards.

Control : Pruning of infested shoots and their burning in the month of April to July is found effective. Raking of the soil around the base of the trees in January, after the last generation has pupated, helps in checking the pest population. Three sprays starting from the last week of July at 15 days interval with Carbaryl (0.2%) or Monocrotophos (0.05%) or Quinalphos (0.05%) effectively controls the pest.

Stone Weevil *(Sternochetus mangiferae) :*

It is a common pest of mango in southern India. Varieties with high TSS and sugar such as Alphonso, Bangalora, Neelum, etc. are more prone to attack by this pest.

Female lay eggs under the rind of ripening fruits. Newly emerged grubs bore through the pulp, feed on seed coat and later cause damage to cotyledons. Pupation takes place inside the seed. Pulp is discoloured around the affected portion.

Control : The pest population can be kept under check by destroying the affected fruits and exposing the hibernating weevils by digging the soil.

Spraying the trees with Fenthion (0.01%) is found effective.

In Alphonso and Banganapalli, a single spray of Monocrotophos 36 EC 1.5ml/litre of water at marble stage gave 100% and 97.5% control of stone weevil respectively. In Totapuri, Carbaryl 50 % WDP @ 4 g/ litre of water is effective in controlling stone weevil.