

# Grapes

## Pests

### **Flea Beetles** (*Scelodonta strigicollis*) :

The adult beetles scrap the sprouting buds after each pruning. Damaged buds fail to sprout. The beetles also feed on tender shoots and leaves, and tendrils causing substantial damage. The tender shoots may wither and drop down. The losses are heavy when the sprouting buds are damaged after forward pruning.

**Control :** Removal of loose bark of the stem and applying paste of Copper Oxychloride and Carbaryl 50% WP after forward pruning to exposes and kills the beetles. Spraying of insecticides like Carbaryl (0.15%) or Quinalphos (0.05%) from the fourth day after pruning at an interval of 3-5 days until the emergence of the leaves is effective in protecting the sprouting bud from the attack. The spraying should preferably be carried out in the evening.

### **Thrips** (*Rhipiphorothrips cruentavis*) :

Thrips are oval, black coloured tiny insects which deposit eggs on the underside of the leaves. Both the nymphs and adults suck cell sap from the lower surface of the leaf. The injured surface is marked by a number of minute spots thereby producing a speckled silvery effect, which can be detected from a distance. In case of heavy incidence, the leaves may dry up and drop off the vine.



Thrips also attack blossoms and newly set berries. The affected berries develop a corky layer and become brown on maturity. Fruit setting is poor and yield is considerably reduced.

**Control :** Alternate spraying of insecticides like Phosphamidon (0.05%) or Monocrotophos (0.1%) or Malathion (0.05%) offer a good control over the pest. Prophylactic sprays immediately after flowering and during fruit set is essential.

### **Scale Insects** (*Aspidiotus lataniae*; *A. cydoniae*) :

It is the most common pest found in the vineyards of Punjab. The adult female lays eggs in the crevices or loose bark of the vine, trunk and its arms. These insects suck the cell sap from the leaves, petioles, main veins and tender shoots of the grapevine.

Weak shoot growth with appearance of golden-yellow leaves indicates the advanced stage of pest attack. As the arms become dry, wood-boring insects may cause further damage. Frequent attack in subsequent years leads to the death of the vine.

**Control :** The loose bark should be removed at the time of pruning. The encrustations should be scraped and the vine should be sprayed with Trithion (0.05%). Cuttings free from the infestation of the pest should be used for planting. Ants which act as carrier of the scales should be controlled to check the spread of the disease.

### **Leaf Hopper** (*Arboridia viniferata*; *Typhalocyba* sp.; *Empoasca* sp.; *Chlorita lybica*) :

It is mostly found on grapevines in north India. The pest is most active during June-August. The nymphs and adults suck sap from the underside of the leaves. The damage first appears as a scattering of small white spots. With severe infestation and continuous characteristic greyish speckling of the leaves is observed. The leaf colour changes from yellow to brown before it dries up and drops off.

**Control** : Insecticides like Quinalphos (0.05%) and Monocrotophos (0.1%) are sprayed as soon as the infestation of the pest is observed.

### **Mealy Bugs** (*Maconellicoccus hirsutus*) :

Mealy bug is a soft insect with oval shaped flat body. The nymphs of mealy bugs generally referred, as crawlers are pink to light orange in colour. They are found to be active from June-August and again from November-March under peninsular India conditions.



Nymphs and adults of mealy bugs suck sap from the leaves, tender shoots, and the fruits. Leaves show characteristic curling symptoms similar to that of a virus. A heavy black sooty mould may develop on the honeydew like droplets secreted by mealy bugs. If the flower blooms are attacked the fruit set is affected. When the fruits are infested they can be entirely covered with the mealy bug. The infestation may lead to fruit drop or the fruits remain on the shoots in a dried and shriveled condition. Various species of ants feed on the honeydew. Ants drive away the natural enemies and act as carriers of bugs.

**Control** : An integrated approach is followed for successful control of the pest. The plants in the vicinity of the vineyard serving as alternate hosts for the mealy bugs should be destroyed. Removal of the loose bark on the stem and pasting it with a mixture of Copper Oxychloride and Carbaryl after October pruning helps to minimize the pest population. Pasting a grease band of 5cm width on the main stem of vine at 150 cm from the ground after forward pruning prevents the crawlers from reaching the bunch. Unlike the adults, the crawlers are free from waxy coating and therefore the crawler stage is the most effective for spraying pesticides. Spraying of insecticides like Dichlorvos (0.02%) or Chlorpyrifos (0.05%) with fish oil rosin soap was found to control the insect population. Spraying Nuvan (2.5ml/litre of water) controls the ants. Release of the predator *Cryptolaemus montrozeiri* @1500 beetles at fortnightly intervals for 4-5 times from the time of October pruning offer an economical and effective control measure over the mealy bugs. To ensure the best effectiveness of predator beetles they should be released in spots having adequate mealy bug population. Spraying of insecticides lethal to the predators should be avoided

### **Grape Leaf Roller** (*Sylepta lunalis*) :

This is a serious pest in South India, which is most active in the months of August-November. Yellowish-green caterpillars roll the leaves from the edges towards the midrib and feed within. In case of severe infestation complete defoliation is observed.

**Control** : A simple method to control the pest population is to collect and burn the infested leaves. Spraying of Malathion (0.05%) or Endosulphan (0.05%) have been recommended for effective control of the pest.

### **Stem- Borer (*Celosterna scabrator*) :**

The adult beetles lays eggs on the trunk, branches or the stem and the grubs, which hatch, bore into the stem directly. Wood dust and faecal matter at the base of the vine is indication of the borer activity. The adults feed on the outer bark of the vine by scraping. The portion of vines above the damaged part has a sticky appearance. The leaves turn yellow in patches that resemble micronutrient deficiency, which ultimately dry and drop down.



**Control :** Sanitation in the orchard, removal of dead woods and loose barks regularly help in preventing the infection. The eggs can be eradicated by removing the bark of the infested vines and applying

paste of Carbaryl (50WP) 6g + Copper Oxychloride 3ml + Dichlorvos 3ml + neutral pH sticker soap 1ml. Injecting Dichlorvos solution into the hole followed by sealing with mud or cow dung mixed with Copper Oxychloride in 1:3 ratio is also effective. The spread of the infection can be controlled by spraying the entire orchard with Quinalphos (0.06%) + Dichlorvos (0.08%).

### **Tobacco Caterpillar (*Spodoptera litura*) :**

This pest is of common occurrence in Maharashtra and Hyderabad. The adult moth lays eggs on the lower side of the leaves. Young larvae feed on the lower epidermal layer of the underside of the leaf and make the leaf surface papery. The larvae of the pest also feed on the leaves and inflorescence. They cut down the rachis of the grape bunches. The adult moths are most active during August-September.

**Control :** Caterpillars can be effectively controlled by spraying of Chlorpyrifos (0.08%) or Carbaryl (0.125%) or Dichlorvos (0.1%). A mixture of Methomyl (0.05%) and Wettable Sulphur (0.2%) is effective to control the larvae in its young stage of growth. Use of pheromone trap is effective in catching the adult moths and also to know the population built up of the pest.

### **Stem Girdler (*Sthenias grisator*) :**

The adult beetles girdle around the main stem 15 cm above the ground level at night. They also girdle the young green branches, which later dry up. The adult beetle lays eggs in the girdled portion. After the hatching of the eggs the grubs tunnel into the dry wood. Girdling results in considerable damage to the plant. During the day the adults hide on the lower side of the leaves or under the forking of the branches, but actively move about at night avoiding the light.

**Control :** Hand picking of the adults at night with the help of torchlight is effective. The beetles should be hand picked and killed as and when noticed. Since the eggs are also laid in the bark of the girdled branches which get dried up very soon, collection and burning away of such dried twigs from vineyards would be a good check against future outbreak of the pest. A piece of cloth is soaked in an insecticide solution like Chlorpyrifos and then wrapped around the stem. Spraying of Chlorpyrifos (0.1%) is also effective.

**Reniform Nematode (*Rotylenchulus reniformis*) :**

The nematodes mostly damage the secondary and the feeder roots. The affected roots show brownish discoloration. The affected portions rot and get sloughed off. As a result the nutrient uptake is affected and the vine appears sick.

**Control :** Soil application of Carbofuran (2.5kg a.i. /ha) or neem cake (1t/ha) helps to control the reniform nematode. Application of organic manures reduces the nematode population when applied to grapevines.

**Root-knot Nematode (*Meloidogyne* sp.) :**

The affected roots exhibit severe galling. Galling is the result of the proliferation of cells of the affected roots. The vines show stunting and poor growth. Young shoots remain short and chlorotic. In severe attack, the vines get defoliated.

**Control :** Soil application of Carbofuran (2.5kg a.i. /ha) or neem cake (1t/ha) helps to control the root knot nematode. Application of organic manures reduces the nematode population when applied to grapevines.