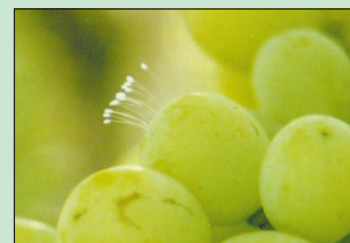


Thrips infected with *V. lecaniiti*Eggs of *Chrysopa*

Different neem formulations (EC based) depending upon the strength of botanical viz., 1% @ 2.5 ml and 5% @ 0.5 ml/l can be sprayed like insecticide @ 400 litre spray solution per acre.

#### Chemical Control

Effective management of thrips on grapes relies primarily on the use of insecticides. The chemicals should be applied at critical growth stages like new flush, flowering and berry developing stages. Indiscriminate use of chemicals leads to pesticide residue problem in the fruits and therefore Pre harvest interval (PHI) should be taken into consideration before spraying these insecticides.

**Table 1.** List of insecticides recommended to control thrips

Insecticide	Dose	PHI (Days)
Dimethoate 30 EC	1.00 mL/L	100
Imidacloprid 200 SL	0.30 g/L	60
Clothianidin 50% WDG	0.12 g/L	40
Thiamethoxam 25 WG	0.25 g/L	40
Lambda-cyhalothrin 5EC/CS	0.50 ml/L	30
Spinosad 45 SC	0.25 mL/L	28
Emamectin benzoate 05 SG	0.20 g/mL/L	25

#### Note :

- All the doses mentioned above are for high volume sprayers, where normal spray volume is 1000 litres/ha.
- Recommendation of insecticide for the management of thrips along with their dose, PHI values are of advisory nature for the good viticulture practices and therefore, not covered under any legal scrutiny.

#### Extension Folder No. 13

#### Prepared by :

Dr. N.S. Kulkarni, Dr. M. Mani and Dr. K. Banerjee  
National Research Centre for Grapes, Pune-412 307

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For further details contact :

#### NATIONAL RESEARCH CENTRE FOR GRAPES

P.B. No.3, Manjri Farm P.O., Solapur Road  
Pune - 412 307, Maharashtra, India  
Tel. : 020-26914245 / 5573 / 5574  
Fax : 020-26914246  
Email : nrcgrape.mah@nic.in

## Management of Thrips on Grapes



### National Research Centre for Grapes

P.B. No.3, Manjri Farm P.O., Solapur Road  
Pune - 412 307, Maharashtra, India  
Tel. : 020-26914245 / 5573 / 5574 • Fax : 020-26914246  
Email : nrcgrape.mah@nic.in

Thrips pose an increasing threat to grape cultivation in all the grape growing areas in India by causing scab formation on berries and resulting in heavy loss in the vineyards.

### THRIPS SPECIES

Three species namely *Scirtothrips dorsalis*, *Thrips hawaiiensis* and *Rhipiphorothrips cruentatus* are found causing damage to grapevine.



*Scirtothrips dorsalis*



*Thrips hawaiiensis*

### LIFE CYCLE

The adults are very small, elongated and fast moving measuring 2 mm in length with four narrow fringed wings. The female thrips produces 50-100 eggs. Eggs are very small and inserted in the tender tissue on the underside of the leaves. Hatching takes place in 5-8 days. Life cycle of thrips comprises four immature stages namely first instar and second instar larvae (Nymphs), pre-pupa and pupa. Nymphs move down to the soil and pupate in the top 8-18 cm. The life cycle is completed in about 15 days. Nymphs are similar to adults but are without wings. Adult thrips live for about 10 days.

### NATURE OF DAMAGE

Damage is caused both by nymphs and adults by rasping the lower surface of the leaf with their stylets and sucking the oozing cell sap. The injured surface is marked by the number of minute spots thereby producing a speckled silvery effect, which can be detected from a distance. They feed in groups, generally on the underside of the leaves. Curling of the leaves is observed in case of heavy incidence.

The thrips also attack blossoms and developing berries. Fruit setting is poor and yield is considerably reduced. The thrips are also responsible for the scab formation on the berries. The affected berries develop a corky layer and become brown. Fruits

obtained from seriously attacked plants are of poor quality and fetches low price in the market.



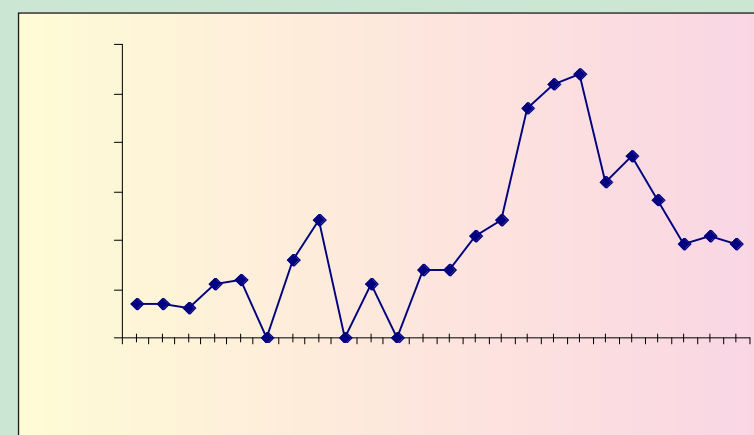
Thrips affected leaves



Fruit scarring by thrips

### SEASONAL DEVELOPMENT

Thrips population was observed through out the year. They cause damage to the new leaves in any part of the year. Peak population coincides with flowering. A maximum of 8-10 thrips/shoot is observed in November and December months. Temperature and relative humidity are negatively correlated with thrips population. During these months maximum temperature ranges from 30-33°C and minimum temperature from 6°C to 12°C and relative humidity from 60% to 70%.



Seasonal incidence of thrips on grapes

### CROP SCOUTING AND TRAPPING

Regular scouting is necessary to detect early infestations and also monitor the efficacy of control measures. A crop scouting program includes both sticky trap cards and visual inspection. Scouting should be done once a week. A gentle tapping of the blossoms and growing points aids in visual inspection. Install 4-5 blue/yellow sticky coloured traps per acre.



Yellow sticky traps

### MANAGEMENT

#### Sanitation

Sanitation is to be maintained for eliminating the sources of thrips infestation. Keep the garden clean by removing weeds. Plant debris from previous crops is also a source of both immature and adult thrips, and they should be destroyed.

#### Cultural method

Deep ploughing in summer after April pruning or exposure / raking of soil in vineyards helps to destroy its pupal stages and minimizing the incidence.

#### Biological Control

The green lacewing *Chrysoperla carnea* is commonly associated predator with insect pests in the vineyards. Spraying of fungal pathogens namely *Verticillium lecanii* or *Beauveria bassiana* @ 5 mL or 5 g/L helps in reducing thrips population in cold and humid climate especially when the temperatures are between 20-25°C and humidity of above 80%.