

## IDENTIFICATION AND MANAGEMENT OF DOWNY MILDEW AND ANTHRACNOSE OF GRAPES

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The effects of diseases on grape production are found through out the records of viticulture. The diseases affect the quality of the produce, the ultimate yield and thus the economics of production. Diseases of grape which are prevalent in rainy and humid season are Downy mildew caused by *Plasmopara viticola* and Anthracnose / die back caused by *Elsinoe ampelina*.

The downy mildew pathogen *P. viticola* attacks almost all parts of the vine. The foliar infections result in premature defoliation of vines and if the infection reaches the inflorescence, the ultimate yields are affected. The premature defoliation becomes a serious problem because it predisposes the vine to winter injury. The infected leaves develop yellowish - green and translucent oily lesions on the upper surface. The affected areas turn brown and necrotic. On the corresponding under leaf surface a delicate, dense, whitish cottony growth occurs. The affected leaves eventually turn brown, get curled and drop prematurely, exposing the immature berries to direct sunlight. In case the vines shed the leaves before the fruit ripens, the berries do not mature normally and are of inferior quality.

The symptoms of the disease also appear on the shoots and the tendrils. These appear as shiny depressions on which a cottony mass of the disease can be seen. The infected tendrils and shoots become distorted and curl and later turn brown and ultimately die. The infection on the fruits is not observed during the summer months when the weather is hot. But if the infection appears on the fruits when they are pea sized, the young fruits turn light brown and shatter easily. Such fruits show typical cottony growth of the pathogen during damp weather. If the pathogen attacks the fruits in late summer season, then the berries do not show typical downy mildew symptoms, but they become leathery, dull green and get wrinkled and shatter easily leaving a dry stem scar behind



them. The sporangia of the downy mildew infection are usually formed at night and are visible in early morning when the leaves and other plant parts are still damp.

Anthracnose is the other problem of grapes in the rainy season. The pathogen *E. ampelina* attacks all plant parts including shoots, canes, leaves, tendrils and fruits. On leaves small irregular dark brown spots appear which turn grey in the centre and gets surrounded with a border of dark coloured zones. In few cases central tissue of the spot falls out giving a shot hole appearance. Early defoliation occurs if the attack is severe. Dark brown sunken spots with raised margins develop on new shoots / canes leading to their death from the tip backwards. When the weather remains favourable, dark brown depressed spots appear on berries also.

Management of Downy Mildew and Grape Anthracnose:

- The shoots and canes should be pruned during January – February and sprayed with Bordeaux mixture (2:2:250) using 125 litres of water per acre.

- Again spray Bordeaux mixture (2:2:250) in the last week of March using 250 litres of water per acre.

- Spray Bavistin 50 WP @ 500 g/acre in last week of April using 500 litres of water.

- Spray Bordeaux mixture (2:2:250) in the last week of May in 500 litres of water /acre.

- Spray Bavistin 50 WP @ 500 g/acre in mid – July using 500 litres of water.

- Spray Bordeaux mixture (2:2:250) in mid - August 500 litres of water /acre.

- Spray Bavistin 50 WP @ 500 g/acre in the first week of September using 500 litres of water.

- For the management of Downy mildew give one additional spray of Bordeaux mixture (2:2:250) in mid – September using 500 litres of water /acre along with the spray schedule mentioned above.

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