Agnote

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Bacterial Black Spot of Mangoes

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Bacterial black spot was first recorded in the NT in 1981 in the Darwin area. Since then it has appeared in most areas in the Top End where mangoes are grown.

The bacterium that causes black spot is called *Xanthomonas campestris* pv. *mangiferae-indicae*. It can attack leaves, twigs and fruit.

Generally, bacterial black spot does not cause severe losses in the NT but under certain conditions, it can. There is a definite seasonal variation in disease severity. This agrees with reports from Queensland where the disease is most severe in southern areas but losses can occur in the north when unseasonal wet conditions occur during fruit development. Mango growing areas in the NT are fortunate in having no or little rain during fruit development.

SYMPTOMS

Leaf spots are black and raised. They tend to be angular in shape because they are confined by the larger veins.

Twig and stem lesions are black and cracked and can be an important means of survival for the black spot bacterium.

Black scabby spots are formed on fruit, often with star shaped cracks within them. The spots have water-soaked margins.

SURVIVAL AND SPREAD OF THE BACTERIA

The bacteria are harboured in stem lesions (cankers) on seedlings and on bud wood which act as reservoirs from which the disease can spread to leaves and fruit. The bacteria may be present without visible symptoms and may not be detected until the mango plant has grown. It is in this form that the bacterium is most likely to be introduced into new areas.

The disease can spread from tree to tree in the field by wind-driven rain or through implements used for management activities such as pruning. Infection is favoured by warm humid conditions with intermittent rain. It is reported that infection can be initiated through natural openings in leaves, fruit and stems. The reason for this appears to be that wind damage, such as abrasions, provides additional entry points for infection. It is known that protection of mango trees by windbreaks reduces the incidence and severity of bacterial black spot. It is assumed windbreaks reduce wind velocity at tree height and thereby reduce the dispersal of the bacteria by wind.

CONTROL

Several copper spray formulations are registered in the NT and recommended for the control of mango bacterial black spot. For example, a 500 g/kg formulation of copper oxychloride is applied at the rate of 250 g/100 L (or 4 kg/ha) *or* a 400 g/L formulation of copper oxide is applied at the rate of 300-400 mL/100 L. Either formulation is applied every four weeks from flowering to fruit-set. Both have a withholding period of one day.

Other copper formulations may be suitable and can be used if they are registered. Refer to the label.

Chemical control should be used in conjunction with the following management practices which will help to keep the pathogen away, prevent its dispersal or minimise the initiation of infection:

- Use disease-free planting stock.
- Prune to remove infected branches (sources of inoculum) and to improve aeration within the tree.
- Practise hygiene such as sterilisation of pruning and harvesting implements.
- Provide windbreaks to minimise wind damage (creation of infection sites) and the spread of the bacterium by wind.
- Use resistant cultivars where possible. Unfortunately Kensington Pride, the cultivar in highest demand in the market, is relatively susceptible.

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