

Canker a serious threat to citrus fruits

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Citrus stands as the second most important fruits worldwide in terms of area and production. India ranks sixth in the production of citrus fruit in the world. Although



citrus is very popular, its present status is threatened by a number of problems including low production due to pests. Of all the agricultural pests and diseases that threaten citrus

crops, citrus canker is one of the most widespread and serious diseases of citrus in India. This disease is a major constraint in citrus, especially in acid lime (*nimboo*) cultivation. Sometimes, it becomes difficult to locate acid lime orchard completely free from canker infection. Canker causes fruit losses from abscission and non-marketable quality due to lesions. In fact, the canker-affected fruits do not attract the consumers on large scale and fetch very little price in the fresh market.

Cause and symptoms : The disease is caused by the bacteria *Xanthomonas axonopodis* pv. Citri (= *X. Campestris* pv. Citri) occurs in large area of the citrus growing regions. It is a short, rod shaped, motile and gram negative bacterium. This disease causes extensive damage to the fruit. The severity of the infection varies with different species and varieties and the prevailing climatic conditions. The disease appears on leaves, twigs, petioles, branches, fruit stalks, fruits and thorns. Canker lesions appear as yellowish spots which gradually enlarge 2 to 4 mm in diameter and appear as raised rough brownish pustules. These pustules are surrounded by a characteristic yellow halo (that may disappear) and a sunken centre. Sunken craters are especially noticeable on fruit, but the lesions do not penetrate far into the rind. Severe infection results in defoliation, dieback and premature fruit drop.

Disease cycle and epidemiology: The bacteria survive in lesions in leaves, twigs and branches which constitute the source of inoculum to spread the disease from season to season. Bacteria from the canker lesions are disseminated mostly by wind splashed rains. Other means of short distance dissemination include insects (e.g. leaf miner), contaminated pruning and harvesting tools. The long-distance dissemination takes place through diseased planting material. Infection by the bacteria occurs primarily through stomata, other natural openings and would formed due to strong winds and insects.

The disease is most severe in hot, wet cloudy climate,

particularly during rainy season. Temperature between 25-30°C with evenly distributed rains is most suitable for the disease.

Control : Canker is endemic in India. The weather conditions are favourable during the major part of the year. Hence, effective control of this disease depends on the continuous attention on the part of the grower. The only method of tackling the disease would be to prevent or reduce its incidence by :-

- Using canker resistant varieties.
- Use of canker free nursery tree.
- The infected twigs should be pruned and emerging flushes should be sprayed with one per cent Bordeaux mixture or streptomycin should be applied at 20-25 days interval. Antibiotics like agrimycin and streptomycin may also be used.

- Spraying neem cake solution (50 g/litre water) during rainy season at 15 days interval reduces the disease incidence of leaf miner, which is involved in spreading of the disease, should essentially be checked by means of insecticides.

- In case of sweet orange, three sprayings at monthly interval should be carried out of, streptomycin 100 ppm (*i.e.* 100 parts per million, *i.e.* 1 g of chemical in 10 litres of water) or 0.2% Mancozeb (2 g of Mancozeb/litre of water) in combination with 0.3% copper joxychloride (3 g of oxychloride / litre of water). The first spray should be done when the fruits are marble-sized irrespective of the appearance of the symptoms.

- In case of acid lime, the spraying should be done four times at monthly interval in the rainy season and after the dead twigs have been pruned.

Precautions:

- After pruning, the tools (secateur etc.) should be disinfested with 1.5% Sodium hypochlorite solution or 5% Formalin.

- Pruned twigs should be burnt immediately.
- New flush of the tree should be sprayed properly.
- Sanitary measures like cutting of grasses, clean cultivation should be undertaken.

- Additional spray should be given during unseasonal, intermittent rains.

- There should be restricted movement of plant material from canker-infested to non-infested areas.

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