

**LEC.9 CITRUS – NUTRIENT DEFICIENCIES, CORRECTIVE MEASURES,
PHYSIOLOGICAL DISORDERS, PESTS AND DISEASES AND
INTEGRATED MANAGEMENT PRACTICES**

CITRUS

Fruit cracking

- It is due to sudden changes in temperature and also due to moisture stress condition.
- Cracking of fruits may be radial or transverse.
- Secondary infection is also possible due to *Aspergillus*, *Fusarium* or *Alternaria*

Management

- Apply light irrigation at frequent intervals.
- Application of potassium during fruit development.

Granulation

- The juice vesicles become hard, enlarged and turn opaque grayish in colour.
- The density of pulp is increased, juice contains increased minerals (Calcium, sodium, potassium) and decreased carbohydrate and organic acid.
- It results in lignification of juice cells that leads to formation of sclerenchyma
- High humidity and fluctuation in temperature are the major factors.
- Young trees are more prone to granulation than older trees.
- Application of more nitrogen, excess irrigation, large size of fruits, rootstocks are also a cause.
- Mandarins on jattikhatti rootstock are more susceptible than sweet orange .

Management

- Avoid excess moisture
- Spray lime @ 20kg in 450 l of water.
- Spray zinc (0.5%) and copper (0.5%).

Sunburn or sunscald

- The portion that is exposed to sun develops yellow patches which turn brown and become hard.
- The inner portion becomes dessicated and discoloured.
- Affected fruits are malformed and have low juice content.

- Severely affected fruits drop off and leaves turn brown.

Management

- Spraying lime solution @ 20g/l before summer.
- Regulation of irrigation to reduce the temperature.
- Mulching the tree basins.

Citrus Decline

- Also known as citrus dieback.
- Growth becomes stunted, mottling of leaves, turn yellow and are shed.
- There is excess flowering and poor fruit set.
- Affected fruits are subjected sun blotching.
- Presence of calcium carbonate or clay is harmful and leads to decline.
- Incompatibility of rootstock and scion, salinity, water logging and mismanagement of citrus orchard are causes to citrus decline.

Management

- Provide proper drainage
- Proper management of the orchard
- Use of resistant rootstocks and disease free bud wood.

ACID LIME

Plant protection

Leaf mine

2 ml/l dimethoate + neem oil 3%

Leaf caterpillar

Endosulfan – 2 ml/l when infestation is moderate to severe.

Sucking pest

White fly : Spray quinalphos – 2 ml/lit

Nematodes : Carbofuran – 75 g/tree

P. fluroscens – 20 g

Diseases

Twig blight: Dried twigs are pruned and sprayed with 0.3% Cu oxy chloride.

Scab: Spray 1% BM

Tristeza virus : Remove the infected trees and destroy. Spray monocrotophos - @ 1ml/lit to control the aphids which spread the disease. Use pre immunized acid lime seedling for planting.

Harvest: Starts bearing from 3rd year after planting.

Though harvested throughout the year, the main crop is harvested during different periods in different parts of the country. The average yield is 20-25 kg/tree/year.

Post harvest treatment

Treating the fruits with 4% wax emulsion followed by pre-packing in 200 gauge polythene bags with 1% ventilation improves the shelf life for more than 10 days. Limes can be stored at 18°C. At HC & RI, PKM a low cost storage tank has been developed with double layer brickwork, the interspace filled with sand which is kept wet by periodical watering.