

Papaya

Diseases

Powdery Mildew (*Oidium indicum*, *Oidium caricae*) :

The development of powdery mildew in papaya is promoted by high humidity (80-85%) and a temperature range of 24-26°C. The disease appears as on the foliage and pods. Infection is first apparent on the leaves as small slightly darkened areas, which later become white powdery spots. These spots enlarge and cover the entire leaf area. Severely infected leaves may become chlorotic and distorted before falling. Affected fruits are small in size and malformed.

Control : As soon as the disease symptoms are observed dusting Sulphur (30 g/10 litres of water) or spraying Calixin 75 EC (5 ml/10 litres of water) at 15 days interval helps to control the disease.

Leaf- Blight (*Corynespora cassiicola*) :

The disease causes severe damage to leaves. The disease first appears as small, discoloured lesions, which are irregularly scattered on the leaves. These spots become irregular in shape, then increase in size, and appear brown to grey in colour. A light yellow zone surrounds the spots. Several lesions coalesce to cover large areas of the leaf and in severe infections the whole leaf dies. A considerable reduction in the yield is observed.

Control : Disease can be controlled by spraying of Dithane M-45 (0.2%) starting from the appearance of the disease symptoms.

Damping-Off (*Rhizoctonia solani*) :

This is a disease of young seedlings. Lesions are seen on the stem at or just above soil level. The stem becomes watery and shrinks, followed by death of the plant.

Control : Well-drained soil should be used for planting and the crop should not be excessively irrigated. Before sowing the seeds should be treated with fungal culture of *Trichoderma viride* (3-4 g/kg of seed) or Captan (3 g/kg of seed) to protect the newly emerging seedlings.

Foot Rot of Papaya (*Pythium aphanidermatum*) :

It is a severe disease of papaya. It is characterized by the appearance of water-soaked patches on the stem near the ground level. These patches enlarge rapidly and girdle the stem, causing rotting of the tissues, which then turn dark brown or black. Such affected plants withstand strong wind and topple over and die. If the disease attack is mild, only one side of the stem rots and the plants remain stunted. Fruit if formed are shriveled and malformed. Gradually the plant dies.

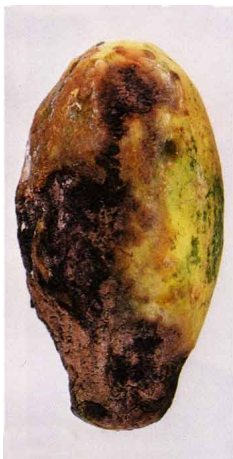
Control : Application of *Trichoderma viride* (15 g/plant) mixed in well-decomposed FYM should be applied around the root zone of the plants at the time of planting. The crop should be irrigated by adopting the ring method of irrigation so that the water does not come in direct contact with the stem.

In the case of new plantings, preventing water logging of the soil may control the disease. The soil should be drenched with 2-3 litres of Copper Oxychloride (3 g per litre of water). The application should be carried out regularly at 15 days interval from the time of planting. During fruit formation, the plant should be sprayed with the same solution at the same time interval. Alternately, Mancozeb (2.5 g/ litre of water) may also be applied.

In the case of disease attack in existing crops, the rotted portion of the plant should be scraped and Copper Oxychloride or Bordeaux paste should be applied. The paste can be prepared by dissolving one kg of Copper Sulphate and lime separately in ten litres of water each. The two solutions should be mixed and shaken to form a paste.

The base of the plant should be drenched with three litres of Copper Oxychloride (3g/litre). The plant should be drenched during fruit formation with Copper Oxychloride or Mancozeb at the earlier mentioned concentrations twice at 15 days interval.

Anthracnose (*Colletotrichum gloeosporioides*) :



The disease prominently appears on green immature fruits. The disease symptoms are in the form of brown to black depressed spots on the fruits.

The initial symptoms are water-soaked, sunken spots on the fruit. The centers of these spots later turn black and then pink when the fungus produces spores. The flesh beneath the spots becomes soft and watery, which spreads to the entire fruit. Small, irregular-shaped water-soaked spots on leaves may also be seen. These spots eventually turn brown.

On the fruits, the symptoms appear only upon ripening and may not be apparent at the time of harvest. Brown sunken spots develop on the fruit surface, which later on enlarge to form water soaked lesions. The flesh beneath the affected portion becomes soft and begins to rot.

Control : The affected fruits should be remove and destroyed. The fruits should be harvested as soon as they mature. Spaying with Copper Oxychloride (3 g/litre of water) or Carbendazim (1 g/litre of water) or Thiophanate Methyl (1 g/litre of water) at 15 days interval effectively controls the disease. Fruits for exports should be subjected to hot water treatment or a fungicidal wax treatment.

Papaya Mosaic :

The disease attacks the papaya plants of all age groups, but is most serious on young plants. The aphids are responsible for transmitting the disease. The disease symptoms appear on the top young leaves of the plants. The leaves are reduced in size and show blister like patches of dark-green tissue, alternating with yellowish-green lamina. The leaf petiole is reduced in length and the top leaves assume an upright position. The infected plants show a marked reduction in growth. The fruits borne on disease plants develop water soaked lesions with a central solid spot. Such fruits are elongated and reduced in size.

Control : Good field sanitation such as removal and destruction of affected plant reduce the spread of the disease. Also, losses can be minimised controlling the population of aphid. Application of Carbofuran (1 kg a.i./ha) at the time of sowing seeds followed by 2-3 foliar sprays of Phosphamidon (0.05%) at an interval of 10 days starting from 15-20 days after sowing effectively checks the population of aphids.

Leaf Curl of Papaya :

The disease is transmitted by the vector white fly (*Bemisia tabaci*). Severe curling, crinkling and deformation of the leaves characterize the disease. Mostly the young leaves are affected. Apart from curling the leaves also exhibit vein clearing and thickening of the veins. Sometimes the petioles are twisted. In severe cases complete defoliation of the affected plant is observed. The affected plants show a stunted growth with reduce fruit yield.

Control : Removal and destruction of the affected plants is the only control measure to reduce the spread of the disease. Checking the population of white flies also can reduce the infection severity. Soil application of Carbofuran (1 kg a.i./ha) at the time of sowing and 4-5 foliar sprays of Dimethoate (0.05%) or Metasystox (0.02%) or Nuvacron (0.05%) at an interval of 10 days effectively controls the whitefly population.

Papaya Ring Spot Virus :

The virus is spread from plant to plant by aphids. The earliest symptoms on papaya are a yellowing and vein-clearing of the young leaves. This is followed by a very conspicuous yellow mottling of the leaves and sometimes severe blistering and leaf distortion. Dark-green streaks and rings also appear in the leafstalks and stems.

The disease derives its name from the striking symptoms that develop on fruit. These consist of concentric rings and spots or C-shaped markings, a darker green than the background-green fruit colour. Symptoms persist on the ripe fruit as darker orange-brown rings. Vigour of trees and fruit set is usually reduced depending on the age of the plant when infected. Fruit quality, particularly flavour, is also adversely affected.

Control : Early detection of infected plants and prompt removal can check the spread of the disease. Aphids can be controlled by application of Carbofuran (1 kg a.i./ha) in the nursery bed at the time of sowing seeds followed by 2-3 foliar sprays of Phosphamidon (0.05%) at an interval of 10 days starting from 15-20 days after sowing.