

Papaya: - Pests and Diseases Management

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Introduction

Insect and Diseases are a significant limiting factor for papaya production. The nature and frequency of these insect and diseases depend on local conditions and effective management depends on a thorough knowledge of the Insect, pathogen, host plant, environment, and their interaction. The specific identity of the causal agent is of paramount importance, and pest & disease management options must be economical. Insecticide and Fungicides used to control many of the insect and diseases described in this article. The information collected has from the available scientific literature and the authors' experience, and we hope that this article will provide a helpful recommendation to growers, students, and professionals working with papaya.

PRSV and Leaf curl management in papaya

Comprehensive production practice involving

- Sanitation,
- Removal of weeds
- Raising nursery in insect proof nets
- Raising maize or sorghum and sesbania or castor as border crop one month before planting in main field
- Spraying insecticide (dimethoate @ 1.5 ml /L (or), Acephate @ 1.25 g/L or Neem soap or Pongamia soap @ 10 g/L at 2-3 wks interval starting from 15 days after transplanting till 8 months
- Spraying nutrient solution comprising 2% urea, 2% Zinc sulphate and 0.1% soluble boron at 15 days interval to reduce PRSV infection till first six months without affecting the fruit setting



Anthracnose

- *Colletotrichum gloeosporioides* (Penz) Penz. and Sacc.
- Other fungi are *Colletotrichum capsici*, *Gloeosporium* sp.
- One of the most important postharvest diseases in most tropical and subtropical countries
- Disease is prevalent whenever papaya is grown
- Attacks fruits, petioles, leaves, floral parts, etc.

Symptoms

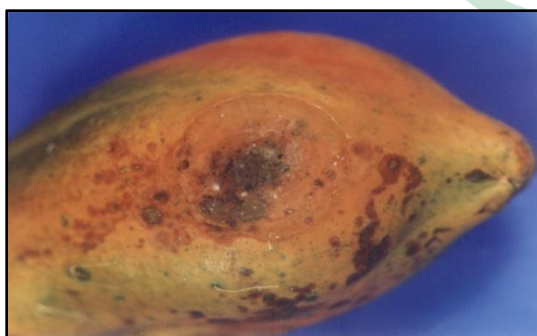
- Round, water-soaked, sunken spots on the surface of ripening fruit
- Black dot-like acervuli frequently produced in a concentric ring pattern
- Greyish white spore mass is seen on such acervuli
- Other symptom is the depressed chocolate-colored spots with water-soaked margins

- Insuchspots, pinkish orange conidial masses cover the lesioncenter



Management

- Removal of infected leaves
- Spraying of
 - ✓ Chlorothalonil (0.2%)
 - ✓ Thiophanate methyl(0.2%)
 - ✓ Bavistin (0.2%)
 - ✓ Prochloraz (0.1%)
 - ✓ Tricyclazole (0.1%)
- Hot water double dip treatment 30 min at 42⁰C followed by 20 min at 49⁰C (in Hawaii)



Symptoms

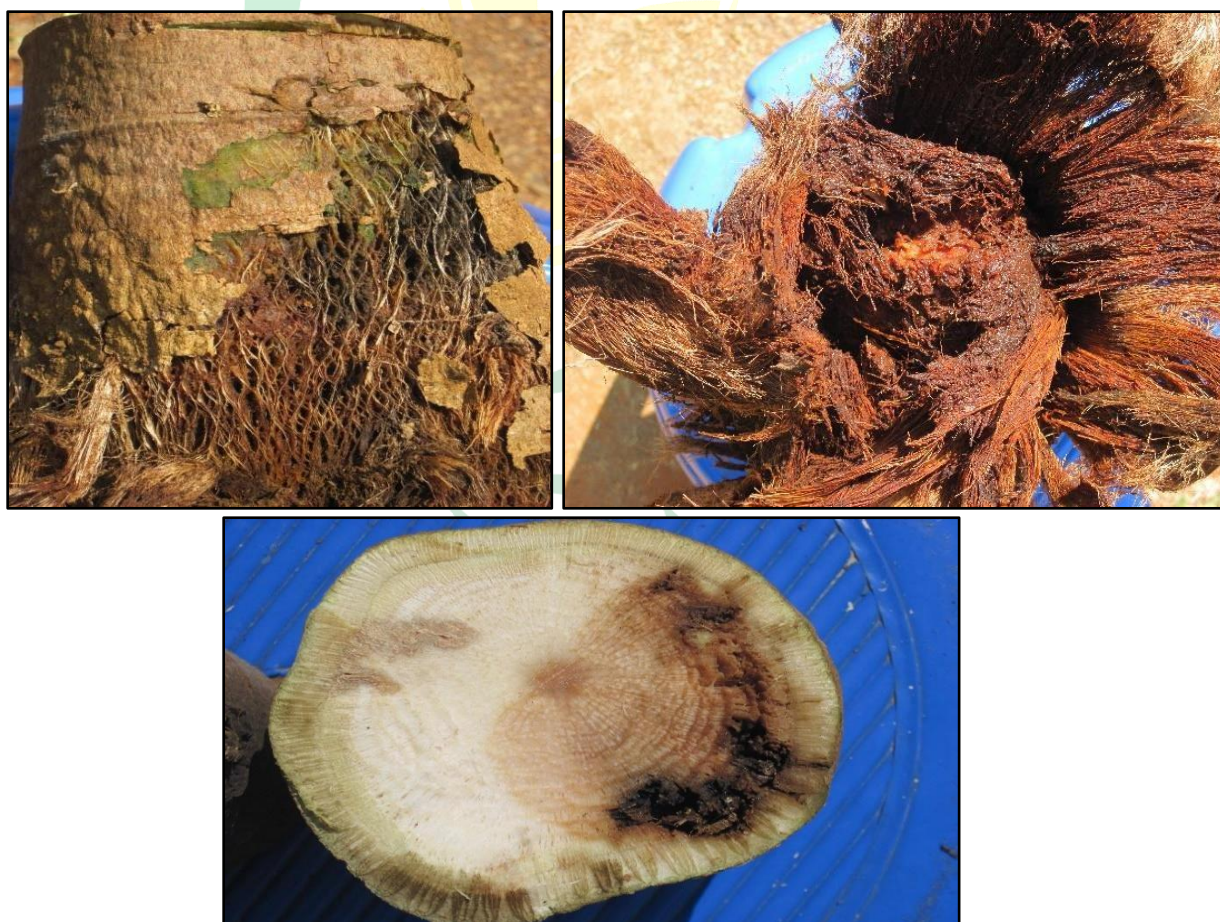
- On leaves, light brown to dark brown zonate spots are prominent
- Sometimes young growing crown gets infected and the plant dies on fruits depressed, circular to oval lesions are seen
- As fungus sporulate, spots turn to black
- Lesions restricted to the surface of the fruit
- Do not cause rotting of the flesh
- Lesions may coalesce and can cover entire fruit surface



Management

- Spraying of
 - ✓ Chlorothalonil (0.2%)
 - ✓ Zineb (0.2%)
 - ✓ Iprodion (0.2%)
 - ✓ Propineb (0.2%)at biweekly intervals
- Postharvest hot water dip (48⁰ C for 20 min)

Foot rot of papaya caused by *Phytophthora palmivora* and *Pythium aphanidermatum*



Management

- Application on of bioagents enriched FYM (Trichoderma spp.) 1 kg formulation +100 kg FYM
- In serve case application of Ridomil 1.5 g/ lit

Mealybugs



Papaya Mealy Bug *Paracoccus Marginatus*

Management

- Several insecticides were evaluated against the mealy bug but al these insecticides provided only temporary relief.
- Insecticides dimethoate, acetomipride, profenofos, chlopyriphos, and imidacloprid reduced the mealybug population to some extent upon spray. However, the mealy bug was found to reappear on the plant once the residual effect decreased.
- Under natural conditions, *Spalgis epeus* (Westwood), *Scymnus* sp and *C. montrouzieri* have been. But never gave satisfactory control of *P. marginatus*.
- The exotic parasitoid *A. papayae* offered excellent control wherever it was

released Larvae of *Mallada boninensis* (Okamoto), *S.epius* and *C. montrouzieri* have been found actively feeding on the Jack Beardsley mealy bug on many papaya gardens in Tamil Nadu. All the above three predators are generalists known to feed on several mealy bug species infesting different host plants

Aphid (*Acerophagus papaya*)



Pre-release precaution

- Identify the mealy bug whether it is *P. marginatus*
- Assess the extent of spread and level of infestation of mealy bug in the orchard
- Stop all insecticidal application immediately
- If sprayed long back, then minimum a gap of 21 days is required before release of parasitoid

Release of parasitoid:

- Obtain at least 100 - 500 parasitoids for release depending upon the extent of cultivation, degree of infestation and spread of infestation within the orchard
- Release the adults near the mealy bugs (preferably smaller sized-II stage nymph) on fruits
- Release parasitoid at four to five points in the orchard for easy spread

Post release precaution

- Do not undertake any chemical spray until entire mealy bug population is controlled
- Control of mealy bugs will be visible from 45 days onwards.

MITES

- The red spider mites *Tetranychus urticae* Koch and *T. cinnabarinus* (Boisduval) attack were observed on the lower surface of the leaf and affects fruit development. Cluster of yellow spots may be observed on dorsal surface of leaves. The larvae, nymphs and adults suck the cell sap from plant tissues



Management

- Minor incidence of mite may be ignored. However, either of the following acaricides such as propargite 57% EC (Omite) 2ml/L, fenazaquin 10% EC (Magister) 1.5ml/L, flufenoxuron 10DC (Cascade) 0.75ml/L and daifenturon 50SC (Polo) 0.6ml/L Dicophol @ 2.5 ml/l may used for successful control of mites.