

Diseases of field & horticultural crops

BANANA

Symptoms

- 1) yellowing of lower leaves starting from margin to midrib of leaves
- 2) leaves break near the base & hang down
- 3) longitudinal splitting of pseudostem
- 4) fungus spreads through use of syringe or microscope

Disease cycle

Pathogen -

- * *Mycetium* in septate, ligulate & branched
- * Fungus produce \rightarrow microconidia \rightarrow macroconidia \rightarrow chlamydospores
- * Microconidia - single celled \rightarrow side shape
- * Macroconidia - thick walled, spherical to oval, ligulate, slightly yellow colour.

Management

- 1) Avoid growing susceptible cultivars like Rasthali, Mardan, Virbakhvi.
- 2) grow resistant cultivars like Luthiav, Rike, Povan, Carevishl varieties (dwarf cardfish).
- 3) Corn injection if 3rd of 8% carbendazim by making a hole to depth of 10cm with 45° angle on 5th & 6th month.
- 4) Propericide spray during humidity to avoid up
- 5) spraying of severely infected plants & spray bromel
- 6) Mancozeb fungicide (protectant) @ 0.2-2% with seacon.
- 7) Propiconazole + carbendazim 0.1-1%.

fav. condn

- saturated poorly drained heavy soil
- infection by burrowing nematode.

Survival & spread

Primary \rightarrow soil borne disease

Secondary \rightarrow micro & macro conidia through irrigation water

Chlamydospores survive in soil for \rightarrow long period

fav. condn

- rainfall
- high RH
- long temp (23-25°C)
- closer spacing, weeds, shade, frequent irrigation.
- humid tropics & coastal regions.

Survival & spread

Primary by acoospores (soil) & rhizoids

Secondary by conidia (wind or rain)

Causal organism

1) *Panama Fusarium oxysporum* var. cubense

* 1st reported from Australia in 1876.

* Cacthrava susceptible are \rightarrow Rasthali (Amritapuri), Gms nichel, Karpovavalli cacthrava

* Chlamydospores survive in soil for \rightarrow long period

* 1st observed in Java in 1902

* epidemia in 1913 in sigatoka valley in Fiji

* Black sigatoka \rightarrow not prevalent in India

* Andia serious threat in Assam, AP, Karnataka, TN

* considered in many countries except Egypt & Israel

2) *Sigatoka M. fijiensis* leaf spot *Mycophaeella musicola*

1) *On leaves* \rightarrow small light yellow or brown green narrow streaks appear

2) They enlarge in size because linear, oblong, brown to black spot.

3) Black spots of fungus fruitification appear in the affected leaves.

4) Rapid drying & defoliation of leaves.

5) Native lesion produces sexual structures.

6) Fungus produce thin brownish streaks that darken & expand into large areas of necrotic tissue.

7) Propericide spray during humidity to avoid up

8) spraying of severely infected plants & spray bromel

9) Mancozeb fungicide (protectant) @ 0.2-2% with seacon.

10) Propiconazole + carbendazim 0.1-1%

11) Avoid growing susceptible cultivars like Rasthali, Mardan, Virbakhvi.

12) grow resistant cultivars like Luthiav, Rike, Povan, Carevishl varieties (dwarf cardfish).

13) Corn injection if 3rd of 8% carbendazim by making a hole to depth of 10cm with 45° angle on 5th & 6th month.

14) Propericide spray during humidity to avoid up

15) spraying of severely infected plants & spray bromel

16) Mancozeb fungicide (protectant) @ 0.2-2% with seacon.

17) Propiconazole + carbendazim 0.1-1%

18) Avoid growing susceptible cultivars like Rasthali, Mardan, Virbakhvi.

19) grow resistant cultivars like Luthiav, Rike, Povan, Carevishl varieties (dwarf cardfish).

20) Corn injection if 3rd of 8% carbendazim by making a hole to depth of 10cm with 45° angle on 5th & 6th month.

21) Propericide spray during humidity to avoid up

22) spraying of severely infected plants & spray bromel

23) Mancozeb fungicide (protectant) @ 0.2-2% with seacon.

24) Propiconazole + carbendazim 0.1-1%

Disease

causal organism

for India

① Anthracnose

Collectotrichum

glae sporides
glae sporoides

② Papaya mosaic

Papaya ring spot virus (PRSV)

Papaya Ring Spot

OR

mosaic/Papaya

leaf distortion

1st time reported in

India, 1948.

from Maharashtra.

③ Leaf curl

1st reported in

Tamil Nadu,

1939.

PAPAYA

Symptoms

- Insects asymmetrically
- develop prominent mosaic & chlorosis in leaf lamina
- water soaked oily shears on petiole & upper part of trunk.
- Tree not as injected at a young stage remain stunted and will not produce an economical crop.

Curling & distortion of leaves.

- reduction of leaf lamina
- inward & downward rolling of leaf margin in the form of an inverted cup & thickening of veins.

Disease cycle

- virus transmitted by non-persistent aphid vectors
- disease cycle starts with aphid feeding on infected papaya for an little as 15 seconds and subsequently feeding on healthy plant.

Management

- Aphids controlled by application of carbaryl 1kg a/ha. in nursery at sowing
- 2-3 foliar sprays of Phosphamidon (0.5%) interval of 10 days from 15-20 days after sowing.

GUAVA

Disease causal organism

fav. condition

symptoms

Disease cycle

Management

① Wilt Fusarium spp.
1st reported 1935 in Allahabad

• 76% RK
• High rainfall (July - Sep)

• yellow colour leaves
• leaf curling at terminal branches
• Turgor in injected plants become leafless

• soil borne, spreads through soil
• Stagnation of H₂O in guava field for long duration initiates infection

1) rain water irrigation H₂O not allow to stand at base of trunk
2) pruning of infected parts of shoot with 2:2:250 Bordeaux
3) cultural methods
(4) 0.2% Bavistin 4 times a year with spray Netoxystox twice

hola Ministry
Anubel - Feb-Mar
Mingal - May - July
Nante - October
3 times fruiting

fruiting quality poor
July - Sep
Nov - Jan
Feb - April good
max. temp 31.3 to 33.5°C
min temp 23 - 25°C

• Bristles with masses of white to pink colour spores develop in dead wood bark

• High rainfall during July - Sep
31.3 - 33.5°C & minimum temp 23 - 25°C

(4) 0.2% Bavistin 4 times a year with spray Netoxystox twice

② Anthraxnose Colletotrichum gloeosporoides

↓
Severe disease

• 10-35°C temp
but at 24-28°C

• symptoms on all parts of tree except root
• growing tips → dark brown color

• fungus infects budra seeds
• seed infection occurs when fungus penetrates to fruits upto seed cavity

• closer planting without canopy management favors disease

• high RK
• high rainfall
• close planting

• causes die back symptom due to black necrotic areas extending backwards

• closer planting without canopy management favors disease

• Immature fruits → small, swollen, dark black color spots coalesce, leads to rotting of fruits.

• dense, rain encourage spore formation & dispersal around canopy

CUCIFERAE

Synptoms

- pathogen affect leaves, stem, pod, seeds
- symptoms first appear on leaves → small, yellow, slightly raised lesions / spot.
- spot later appears on stem & seed pods.
- infection spreads rapidly during rainy weather.

Disease cycle

- conidia are 70-115 μ m
- ~~14-18~~ 14-18 micron size
- conidia are 70-115 x 14-18 micron size → pathogen
- seed borne
- fungi subsist as mycelium in infected plant.
- they also survive in susceptible weeds or perennial crops.

Management

Spray with Mancozeb 0.25%

1. White Rust
Albugo candida

Disease caused crop: Albugo candida leaf spot Albugo candida leaf blight

for condition high rainfall

- attacks leaves & flowering shoots
- affected shoots get deformed & bear malformed flower
- powdery substance in patches on under surface of leaves.

mode of spread & survival

- over wintering may be through spores in plants, debris in soil & mixed with seeds and perennial mycelium in weed host are primary source of inoculum.

Regular spray Mancozeb 0.25%

- spread & survival

Disease

Causal org.

Par. cond'n

Symptoms

Disease cycle

Management

③ ~~White rot~~

Black rot

rot of cabbage

Xanthomonas

causative

• serious bacterial disease of cabbage & other cruciferous crops.

• may infect any stage of plant growth

• 1st infect seedling

• then bacteria pass to young leaves & stems.

• It is recognised by the presence of yellow, V-shaped or U-shaped area

extending inward from margin to leaf.

• Veins discoloration progress towards base of leaf. as bacteria spread to leaf veins.

• When affected stem cut in cross-section, a black vascular ring may be evident as the bacteria move into water conducting tissues (stem discoloration)

• Lower leaf if infected may become yellow and drop off.