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DISEASE

Any abnormality or deviation from normal life

> DISEASE

Any disturbance brought about by a pathogen or an environmental factor which interferes with manufacture, translocation, or utilization of food, mineral nutrients and water in such a way that the affected plant changes in appearance and or yield less than a normal, healthy plant of same variety.

Non-Infectious Infectious Diseases Diseases

> Excess or deficiency of > Fungi

macro or micro nutrients > Bacteria

- >Excess of water
- >Drought
- >Environmental factors

- ≻Virus ≻Nematode
- ≻Mycoplasma

MAJOR DISEASES OF MUNGBEAN & MASHBEAN >ANTHRACNOSE >MACROPHOMINA ROT **ROOT ROT** >WILT **CERCOSPORA LEAF SPOT** >LEAF CRINKLE >YELLOW MOSAIC

ANTHRACNOSE



Casual Organism

colletrotrichum lindemuthinum

Favorable temperature

> 20-80 % yield loss

18-26°C

SYMPTOMS

The fungus attacks all aerial plant parts at any stage of plant growth. Characteristic symptoms are circular, black, sunken spots with dark center and bright red orange margins on leaves and pods.



In severe infections, the affected parts wither off. Seedlings get blighted due to infection soon after seed germination.



Pre disposing factors

- Cool-wet weather.
- The temperature range for infection is 18-26° C
- High relative humidity (>90%).

Disease cycle

Colletotrichum lindemuthianum overwinters in crop debris or seed as acervuli and hence, soil and seed borne. Conidia spread through wind and rain. The temperature range for infection is 18-26°C and high relative humidity (>90%) is also required.

MANAGEMENT STRATEGY

- Grow disease-resistant cultivars
- Use certified disease free seed
- Crop rotation with wheat or corn
- Seed treatment-Hot water (52° C for11minutes) or Carbendazim
- @ 2 g/kg
- Spray mancozeb or carbendazim @ 0.50% at 10 and 15 days intervals.

MACROPHOMINA ROT



Casual organism

Macrophomina phaseolina

Favorable temperature 25–35°C

> yield loss

Up to 100%

SYMPTOMS

- In pre-emergence stage, the fungus causes seed rot and also rotting of germinating seedlings
- In post-emergence stage, seedlings get blighted due to soil or seed borne infection.

- Decay of secondary roots and shredding of the cortex region of the tap root are symptoms.
- Small, circular, brown spots appear on the cotyledons or on young leaves.

- At pod formation stage, some of the veins in the leaf develop copperry colour.
- As the severity increases, drooping of leaves occurs due to weakening and breakage of the veins. Such leaves droop, dry and shed.

Pre disposing factors

- Warm -humid condition.
- High crop densities impact disease severity.
- Drought Stress favors disease
 development

Disease cycle

The pathogen can survive in seed, soil, diseased plant parts and collateral host plants. Fungus survives in upper layers of the soil and enters plant through root and stem.

The severity of the disease increases

with the increase in temperature.

MANAGEMENT STRATEGY

- Host resistance: Grow Resistant varieties.
 - Biological control: Trichoderma bioformulations-through seed dressing and soil application
- Cultural control:

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- Deep ploughing
- Clean cultivation
- Crop rotation with a non pulse crop.

Chemical control Seed treatment with carbendazim

ROOT ROT

Casual organism

Rhizoctonia solani

> Favorable temperature

>grain yield loss

Up to 33 to 40 %

15-20°C

SYMPTOMS

- The pathogens cause seed decay, root rot, damping-off, seedling blight, stem canker and leaf blight.
- The disease occurs commonly at podding stage.

- In the initial stages, the fungus causes seed rot, seedling blight and root rot symptoms.
- The affected leaves turn yellow in colour and brown irregular lesions appear on leaves.
- On coalescence of such lesions, big blotches are formed and the affected leaves start drying prematurely.

- Roots and basal portion of the stem become black in colour and the bark peels off easily.
- The affected plants dry up gradually.
- When the tap root of the affected plant is split open, reddening of internal tissues is visible

Pre disposing factors

- Warm -humid conditions.
- Water logged conditions.
- High crop densities

Disease cycle

Rhizoctonia solani survives in the soil and on infected crop debris. Sclerotia are known to survive for several years in the soil. The fungi spread by water, irrigation, movement of contaminated soil and plant debris. At the onset of the growing season, in response to favorable humidity and temperatures (15 to 20°C), fungal growth is attracted to freshly planted host crops by chemical stimulants released by growing plant cells. The fungi infect plants, leading to characteristic symptoms on the stem, sheaths, leaves and ears. The fungi overwinter as sclerotia or in infected plant tissues

MANAGEMENT STRATEGY

Host resistance: Grow Resistant varieties. Biological control: Trichoderma bioformulations-throughseed dressing and soil application

Cultural control: Fields should be well drained prior to planting

WILT

Casual organism

Fusarium oxysporum

Favorable temperature

yield loss

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20-35°C

10-40%

SYMPTOMS

- Withering (Drying up) of plant occurs at two stages of crop growthseedling and flowering or adult stage.
- Vascular discoloration is observed on longitudinal splitting of stem.
- Partial wilt also happens when only a few branches are affected.

Pre disposing factors

- High soil temperature
- High soil moisture
- Monoculture
- Presence of weed host

Disease cycle

The fungus may be seed-borne and survives in infected plant debris in soil in the form of chlamydospores or macro and micro-conidia. The primary infection is through chlamydospores in soil, which remain viable upto next crop season. The weed hosts also serve as a source of inoculum. The secondary spread is through irrigation

water, cultural operations and implements.

MANAGEMENT STRATEGY

- Grow resistant varieties.
- Treat the seeds with Carbendazim @ 2 g/kg seeds or with Trichoderma harzianum at 4 g/kg of seed.
- Apply heavy doses of organic manure or green manure.
- Crop rotation with non-host crops.

CERCOSPORA LEAF SPOT

Casual organism

Cercospora canescens

> Favorable temperature

yield loss

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25-30°C

Up to 23%

SYMPTOMS

- Small, circular spots develop on the leaves with grey center and reddish brown margins.
- The several spots coalesce to form brown irregular lesions.

- Under favorable environmental conditions, severe leaf spotting and defoliation occurs at the time of flowering and pod formation.
- The brown lesions may be seen on petioles, branches and pods in severe cases.

Pre disposing factors

- Cool-Humid weather
- Dense plant population

Disease cycle

The fungus survives on diseased plant debris in soil and on seeds. The secondary spread is by airborne conidia

MANAGEMENT STRATEGY

- Remove and burn infected plant debris.
- Spray Mancozeb@0.50% or Carbendazim @ 0.25%.
- Grow disease tolerant varieties
- Proper plant to plant and row to row distance

Yellow mosaic

Casual organism

Mungbean yellow mosaic virus

SYMPTOMS

Initially irregular yellow and green patches alternating with each other. The yellow discoloration slowly increases and newly formed leaves may completely turn yellow. Infected leaves also show necrotic symptoms and infected plants normally mature late and bear a very few flowers and pods. The pods are small and distorted.

Pre disposing factors

- Summer sown crops are highly susceptible
- The presence of alternate hosts
- Vector population
- Susceptible varieties

Disease cycle

The virus survives in the weed hosts and other legume crops. The disease spreads through white fly, Bemisia tabaci.

MANAGEMENT STRATEGY

- Remove the weed hosts
- Grow resistant varieties
- Vector management

LEAF CRINKLE

Casual organism

Urdbean Leaf crinkle virus

Favorable temperature

25-37°C

35 to 81%

SYMPTOMS

The symptom appears initially in young leaves. The enlargement of 4th or 5th leaf is seen four or five weeks after sowing. Later crinkling and curling of the tips of leaflets are seen. The petioles as well as internodes are shortened. The infected plant gives a stunted and bushy appearance. Inflorescence, if formed, is malformed and turns with small size flower buds fails to open.

Pre disposing factors

- The presence of weed hosts like Aristolochia bracteata and Digera arvensis.
- Kharif season crop is highly susceptible.
- Continuous cropping of other legumes also harbour the virus.

Disease cycle

The virus is seed-borne and primary

infection occurs through infected seeds.

White fly, Bemisia tabaci, helps in the secondary spread.

The virus is also transmissible through aphids and Epilachna beetles

MANAGEMENT STRATEGY

- Resistant varieties.
- Vector management
- Removal of diseased plants
- Remove weed hosts periodically

