



**DISEASES OF BLACK GRAM**  
*(Vigna mungo)* **AND GREEN GRAM**  
*(Vigna radiata)*

# MAJOR DISEASES BLACK GRAM AND GREEN GRAM

<b>FUNGAL DISEASE</b>	
<b>POWDERY MILDEW</b>	<i>Erysiphe polygoni</i>
<b>RUST</b>	<i>Uromyces phaseoli typica</i> (Syn: <i>U.appendiculatus</i> )
<b>CERCOSPORA LEAF SPOT</b>	<i>Cercospora canescens</i>
<b>WEB BLIGHT</b>	<i>Rhizoctonia bataticola</i>
<b>ANTHRACNOSE</b>	<i>Colletotrichum lindemuthianum</i> <i>Glomerella lindemuthiana</i>
<b>VIRAL DISEASE</b>	
<b>LEAF CRINKLE</b>	<i>Leaf crinkle virus</i>
<b>YELLOW MOSAIC</b>	<i>Mungbean yellow mosaic virus</i>

# CERCOSPORA LEAF SPOT

## ECONOMIC IMPORTANCE

- This is an important disease of black gram and green gram and it usually occurs in a severe form, causing heavy losses in yield particularly when humidity is high.

## SYMPTOMS

- Small, circular spots develop on the leaves with grey centre and reddish brown margin.
- The several spots coalesce to form brown irregular lesions.
- Under favourable 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.
- Powdery growth of the fungus may be seen on the centre of the spots.

## PATHOGEN *Cercospora canescens*

- The fungus produces clusters of dark brown septate conidiophores.
- The conidia are linear, hyaline, thin walled and 5-6 septate.

## DISEASE CYCLE

- The fungus survives on diseased plant debris in soil and on **seeds**.
- **The secondary spread is** by air-borne conidia.

## FAVOURABLE CONDITIONS

- Humid weather and dense plant population favour disease development.

## MANAGEMENT

- Remove and burn infected plant debris.
- Spray Mancozeb@0.25% or Carbendazim@0.1%
- Grow tolerant black gram varieties like UG 135, TPU 4, TPU 5, TPU 11, TPU 12, AKU 4 and SP 21.

# CERCOSPORA LEAF SPOT



# ANTHRACNOSE SYMPTOM

## SYMPTOMS

- The symptom can be observed in all aerial parts of the plants and at any stage of crop growth.
- The fungus produces dark brown to black sunken lesions on the hypocotyl area and cause death of the seedlings.
- Small angular brown lesions appear on leaves, mostly adjacent to veins, which later become greyish white centre with dark brown or reddish margin.
- The lesions may be seen on the petioles and stem.
- The prominent symptom is seen on the pods.
- Minute water soaked lesion appears on the pods initially and becomes brown and enlarges to form circular, depressed spot with dark centre with bright red or yellow margin.
- Several spots join to cause necrotic areas with black dots (Acervuli).
- The infected pods have discolored seeds.

# ANTHRACNOSE





**PATHOGEN: *Colletotrichum lindemuthianum***  
(Sexual stage : *Glomerella lindemuthianum*)

- The fungus mycelium is septate, hyaline and branched.
- Conidia are produced in acervuli, arise from the stroma beneath the epidermis and later rupture to become erumpent.
- A few dark coloured, septate setae are seen in the acervulus.
- The conidiophores are hyaline and short and bear oblong or cylindrical, hyaline, thinwalled, single celled conidia with oil globules.
- The perfect stage of the fungus produces perithecia with limited number of asci, which contain typically 8 ascospores which are one or two celled with a central oil globule.

**FAVOURABLE CONDITIONS**

- High relative humidity (Above 90 per cent), low temperature (15-20OC) and cool rainy days.

**MODE OF SPREAD AND SURVIVAL**

- The fungus is seed-borne and cause primary infection.
- It also lives in the infected plant tissues in soil.
- The secondary spread by air borne conidia produced on infected plant parts.
- Rain splash also helps in dissemination.

**MANAGEMENT**

- Remove and destroy infected plant debris in soil.
- Treat the seeds with Carbendazim at 2 g/kg. Spray Carbendazim 500g or Mancozeb 1 kg/ha soon after the appearance of disease and repeat after 15 days.



# RHIZOCTONIA ROOT ROT (WEB BLIGHT)

## DRY ROOT ROT

### SYMPTOMS

- The disease symptom starts initially with yellowing and drooping of the leaves.
- The leaves later fall off and the plant dies within a week.
- Dark brown lesions are seen on the stem at ground level and bark shows shredding symptom.
- The affected plants can be easily pulled out leaving dried, rotten root portions in the ground.
- The rotten tissues of stem and root contain a large number of black minute sclerotia.

### PATHOGEN: *Rhizoctonia bataticola*

- (**Pycnidial stage** : *Macrophomina phaseolina*)
- The fungus produces dark brown, septate mycelium with constrictions at hyphal branches.
- Minute, dark, round sclerotia are produced in abundance.
- The fungus also produces dark brown, globose ostiolated pycnidia on the host tissues.
- Their pycnidiospores (conidia) are thin walled, hyaline, single celled and elliptical.

### DISEASE CYCLE

- The fungus survives in the infected debris and also as a facultative parasite in soil.
- The primary spread is through seed-borne and soil-borne sclerotia.
- The secondary spread is through seed-borne and soil-borne sclerotia.
- The secondary spread is through pycnidiospores which are air-borne.

### FAVOURABLE CONDITIONS

- Day temperature of 30°C and above and prolonged dry season followed by irrigation.

### MANAGEMENT

- Treat the seeds with Carbendazim or Thiram at 4 g/kg or pellet the seeds with *Trichoderma viride* at 4 g/kg or *Pseudomonas fluorescens* @ 10g/kg of seed.
- Apply farm yard manure or green leaf manure (*Gliricidia maculate*) at 10 t/ha or neemcake at 250 kg/ha.

# DRY ROOT ROT



# **YELLOW MOSAIC**

## ***MUNGBEAN YELLOW MOSAIC VIRUS***

### **ECONOMIC IMPORTANCE**

- The disease is prevalent in black gram and green gram in Andhra Pradesh, T.N., U.P., M.P., Bihar, Punjab, Haryana, Himachal Pradesh, Rajasthan and Orissa.

### **SYMPTOMS**

- Initially small yellow patches or spots appear on young leaves.
- The next trifoliate leaves emerging from the growing apex show 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.
- The infected plants normally mature late and bear a very few flowers and pods.
- The pods are small and distorted.
- The early infection causes death of the plant before seed set.

**PATHOGEN: Mungbean yellow mosaic virus (MYMV)(CONTAIN SSDNA)** (genus: Begomovirus, family: Geminiviridae)

### **DISEASE CYCLE**

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

# YELLOW MOSAIC SYMPTOM



## **FAVOURABLE CONDITIONS**

- Summer sown crops are highly susceptible. The presence of weed hosts viz., *Croton sparsiflorus*, *Acalypha indica*, *Eclipta alba* and *Cosmos pinnatus* and legume hosts.

## **MANAGEMENT**

- Rogue out the diseased plants upto 40 days after sowing.
- Remove the weed hosts periodically.
- Increase the seed rate (25 kg/ha).
- Grow resistant black gram varieties like Teja, LBG 752, Pant-30 and Pant-90.
- Grow resistant green gram varieties like LGG 407 and ML 267.
- Cultivate the crop during rabi season.
- Follow mixed cropping by growing two rows of maize (60 x 30 cm) or sorghum (45 x15 cm) for every 15 rows of black gram or green gram.
- Grow seven rows of sorghum as border crop
- Treat seeds with Imidacloprid 70 Wettable Sulphure @ 5ml/kg to control vector.
- Give one foliar spray of systemic insecticide (Dimethoate @ 750 ml/ha) on 30 days after sowing.