DISEASES OF BLACK GRAM (Vigna mungo) AND GREEN GRAM (Vigna radiata)
## MAJOR DISEASES BLACK GRAM AND GREEN GRAM

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| ANTHRACNOSE                  | *Colletotrichum lindemuthianum*  
|                              | *Glomerella lindemuthiana* |
| VIRAL DISEASE                |                  |
| LEAF CRINKLE                 | *Leaf crinkle virus* |
| YELLOW MOSAIC                | *Mungbean yellow mosaic virus* |
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 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)

DRIY 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.
- They pycnidiospores (conidia) are thin walled, hyaline, single celled and elliptical.

DISEASE CYCLE
- The fungus survives in the infected debris and also as 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 spreads is through pycnidiospores which are air-borne.

FAVOURABLE CONDITIONS
- Day temperature of 300C 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 Pseudonomas 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 x 15 cm) for every 15 rows of black gram or green gram.
- Grow seven rows of sorghum as border crop
- Treat seeds with Imidacloprid 70 Wetable Sulphure @ 5ml/kg to control vector.
- Give one foliar spray of systemic insecticide (Dimethoate @ 750 ml/ha) on 30 days after sowing.