

Important Fungal Diseases of Blackgram and their Management

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Introduction

Blackgram (*Vigna mungo* L.) is one of the most important grain legumes with easily digestible protein and low fat content. It belongs to the family *Fabaceae* with $2n=22$ and is believed to have originated in India (Chatterjee and Bhattacharya, 1986). Blackgram has many common names, viz., urd, urd bean, urad, mash, black maple and klai (Chatterjee and Randhawa, 1952). Sustainable cultivation of black gram has been regularly challenged by various diseases which cause quantitative and qualitative losses in yield. The microorganisms that are present internally or externally cause considerable damage.

1. Anthracnose (*Colletotrichum lindemuthianum*)

The fungus attacks all aerial plant parts and at any stage of plant growth. 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.

Survival and Favourable conditions

- The pathogens survive on seed and plant debris.
- Disease spreads in the field through air-borne conidia.
- The disease is more severe in cool and wet seasons.

Control

- Use disease free seed and follow crop rotation.
- Seed treatment with Carbendazim 2g/kg.
- Remove and destruct of plant debris.
- Apply Hot water treatment at 54 degree centigrade for 10 min.
- Spray mancozeb 0.3% or carbendazim 0.5%/Litre.

2. *Corynespora* Leaf Spot (*Corynespora cassiicola*)

Symptoms of this disease develop on leaves when the crop reaches flowering stage. Lesions begin as dark reddish brown circular spot usually on the upper surface of the leaf and they expand to become larger spots. In advanced stages the spots coalesce to form patches. Shot-holing and severe defoliation is a marked symptom in advanced stages of infection. By this disease yields decrease drastically.

Survival & Favourable Conditions

- The fungus is seed-borne and can survive on host debris for two years.

Control

- Use tolerant varieties LBG 167
- Remove and destruct of infected plant debris
- Deep ploughing in summer and follow crop rotation
- Spot drenching with Carbendazim 1g/lit or *P. fluorescens* / *T. viride* 2.5 kg/ha with 50 kg FYM.

3. *Macrophomina* Blight (*Macrophomina phaseolina*)

In pre-emergence stage, the fungus causes seed rot and 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 podding stage, some of the veins in the leaf develop copper colour. As the severity increases, drooping of leaves occurs due to weakening and breakage of the veins. Such leaves droop, dry and shed.

Survival & Favourable Conditions

- The pathogen can survive through seed, soil, diseased plant parts and host plants.
- The severity of the disease increases with the increase in temperatures.
- Fungus survives in upper layers of the soil and enters plant through stem.

Control

- Deep ploughing and clean cultivation.
- Follow crop rotation with non pulse crop.

- Destroy the diseased plant debris by burning or burying in the soil.
- Seed treatment with carbendazim + Thiram 1:2.

4. Powdery Mildew (*Erysiphe polygoni* DC)

White powdery patches appear on leaves and other green parts which later become dull coloured. These patches gradually increase in size and become circular covering the lower surface also. When the infection is severe, both the surfaces of the leaves are completely covered by whitish powdery growth. Severely affected parts get shrivelled and distorted. In severe infections, foliage becomes yellow causing premature defoliation. The disease also creates forced maturity of the infected plants which results in heavy yield losses.

Survival & Favourable Conditions

- The pathogen has a wide host range and survives in oidial form on various hosts in off-season.
- Secondary spread is through air-borne oidia produced in the season.

Control

- Use resistant varieties
- The seeds must be sown early in the month of June to avoid early incidence of the disease on the crop.
- Powdery mildew could be controlled by spraying Carbendazim (0.05%) and Penconazole (0.05%)
- Two spray of Carbendazim or Thiophanate Methyl 1 g ml or Tridemorph 1 ml per litre, one dose immediately after the disease appearance and the second dose 15 days later effectively manage the disease.

References

Chatterjee, B. N. and Bhattacharya, K K. 1986. *Principles and practices of Grain Legume production*, Oxford and IBH publishing Co., New Delhi.

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