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Black Gram Pests And Disease Management

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Introduction

Black gram (*Vigna mungo* L.) is a vital pulse crop in India, contributing significantly to the country's agriculture economy and dietary protein intake. Black gram is a highly nutritious and protein rich (22-26%) pulse crucial for human diets and soil health, fixing atmospheric nitrogen to reduce fertilizer dependency.

Major Insect Pests of black gram (Urd bean)

Aphids:

Scientific Name: *Aphid craccivora*

Identification and symptoms: Small, soft- bodied green or black insects. Colonies on tender shoots, leaves and flowers. **Crop stage affected:** Seedling to flowering stage. **Economic Threshold Level (ETL):** 10 - 15 aphids per top 10 cm shoot.

Integrated Management:

Cultural methods: Avoid excess irrigation, Early sowing, balanced fertilization.

Mechanical method: Yellow sticky traps (10-12/acre).

Biological control: Ladybird beetle (*Coccinella spp*) Lacewings (*Chrysoperla carnea*)

Chemical control: Imidacloprid 17.8 SL @ 0.3 ml /L.Thiamethoxam 25 WG @ 0.25 g /L

Resistance Management: Avoid repeated spraying of neonicotinoids. Rotate with different insecticide group.

White fly

Scientific Name: *Bemisia tabaci*

Symptoms: Yellowing and curling of leaves. Transmission of Yellow Mosaic Virus (YMV). **Crop stage:** Seedling to pod formation. **Economic Threshold Level (ETL): 5 -10 per plant**

Integrated Management:

Cultural: Use healthy seeds, remove weed hosts.

Mechanical: yellow sticky traps.

Biological: *Encarsia* parasitoids.

Chemical: Acetamiprid 20 SP @ 0.2 g /L.Flonicamid 50 WG @ 0.3 g /L

Thrips

Scientific Name: *Thrips tabaci*

Symptoms: Silver streaks on leaves, Leaf curling and drying. **Economic Threshold Level(ETL) 8-10** thrips per leaf.

Management: Neem oil 3% @ 3 ml /L

Spinosad 45 SC @ 0.3 ml/ L

Leaf hopper (Jassids)

Scientific Name: *Empoasca kerri*

Symptoms: Tender leaves turn yellow, leaf margins curl downward. In severe cases leaves turn bronze, dry up and fall off, and causing stunted growth (Hopper Burn).

Integrated Management:

Cultural: Avoid excess nitrogen fertilizer.

Biological control: Release parasites like ***Trichogramma spp***. at 20,000/acre.

Botanical control: Apply 5% neem oil / neem seed kernal extract (NSKE) before egg laying.

Chemical control: Spray Imidacloprid 17.8 SL at 0.5 ml / L.

Quinalphos 3ml/lit, Profenophos 2ml /lit are also recommended.

Tobacco caterpillar

Scientific Name: *Spodopthera litura*

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Symptoms: Skeletonization of leaves, severe Defoliation. **Economic Threshold Level (ETL):** 1 egg mass per meter square.

Integrated Management: Deep summer ploughing Pheromone traps (5/acre), NPV @ 250 LE /acre, Emamectin benzoate 5 SG @ 0.4 g / L

Pod borer

Scientific Name: ***Helicoverpa armigera***

Symptoms: Bores into pods. Feeds on developing seeds. **Economic Threshold Level (ETL) : 1 larva per plant**

Management:

Cultural: Planting 3 rows of sorghum or maize around the field acting as a barrier.

Mechanical control: Use pheromone traps @12/ha to monitor adult months.

Chemical control: Chlorantraniliprole 18.5 SC @ 0.3 g / Lindoxacarb 14.5 SC @ 1 ml / L

Hairy Caterpillar

Scientific Name: ***Amsacta albistriga***

Symptoms: The larvae covered in long yellow - black - hairs cause significant leaf loss with up to 82% damage during peak infestation (April - May).

Management:

Cultural control:

Light traps Deep summer ploughing to expose pupae, early sowing, maintaining optimum plant spacing.

Chemical control: Lambda cyhalothrin 5 EC @ 1 ml / L.

Stem fly

Scientific Name: ***Ophiomyia phaseoli***

Symptoms: Wilting of Seedling Tunneling inside stem.

Management: Seed treatment with Imidacloprid 600 FS @ 5 ml /kg seed .

Major Diseases of black gram (Urad)

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Yellow Mosaic Virus (YMV):

Causal agent: Virus transmitted by white fly

Symptoms: Initially small yellow spots on young leaves, progressing to yellow mosaic pattern. Older leaves turn almost completely yellow. Plants show severely reduced growth (stunting) and reduce pod formation.

Integrated Disease Management:

Resistant varieties - PU 31, LBG 623.

Early sowing, Vector control, Rouge infected plants.

Powdery Mildew

Causal Organism: *Erysiphe polygoni*

Symptoms: White, superficial, powdery spots appear on the leaves and progress to petioles, stems and pods. Infected plants may become stunted, pods are often small and malformed with fewer seeds.

Management:

Utilize resistant cultivars, avoid late sowing and remove infected plant debris to reduce inoculum.

Wettable Sulphur 80 WP @ 2 g / L.

Hexaconazole 5 EC @ 1 ml /L.

Cercospora leaf spot:

Causal Organism: ***Cercospora canescens***

Symptoms: Small brown circular spots with greyish white centres on the leaves and pods, often leading to severe defoliation and premature drying.

Management: Mancozeb 75 WP @ 2.5 g /L.Carbendazim 50 WP @ 1 g /L.

Anthracnose

Causal Organism: ***Colletotrichum lindemuthianum***

Symptoms: Dark sunken lesions on pods.Seed discoloration**.**

Management: Seed treatment with Carbendazim @ 2 g / kg seed.

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Root rot & Collar rot:

Causal Organism: Rhizoctonia, Fusarium

Management: Well drained soils, seed treatment with Trichoderma @ 4 g/ kg seed.

Leaf Crinkle Disease:

Symptoms: Thickened, Crinkled leaves, Deformed flowers.

Management: Use disease- free seeds, Vector control, Field sanitation.

Conclusion: Effective management of black gram pest and disease requires a holistic IPM and IDM approach rather than sole dependence on chemicals. Adoption of resistant varieties, biological control, cultural practices and need based pesticide application can significantly reduce crop losses, input costs and environmental hazards.

Sustainable black gram production is possible only through Eco - friendly, economical, scientifically planned crop protection strategies.

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