

1. Disease: Rust (Yellow/Brown/Black)

Symptoms: Small pustules appear on leaves, stems, and sometimes grains. Yellow, brown, or black pustules rupture to release spores that spread rapidly in humid conditions. Severely affected plants show reduced photosynthesis, shriveled grains, and stunted growth. Yield loss can be substantial if not controlled early.

Pest: Termites (*Odontotermes spp.*) – attack plant roots and basal stems, causing weakening, wilting, and lodging. Although not the direct cause of rust, termite infestation exacerbates disease impact by stressing plants.

Crop: Wheat

2. Disease: Karnal Bunt

Symptoms: Grains turn dark and develop black powdery spores inside. Infected grains emit a characteristic fishy odor. Kernels are shriveled and poorly filled. Severe infection can affect germination and market value, though it rarely kills the plant.

Pest: None (caused by the fungal pathogen *Tilletia indica*).

Crop: Wheat

3. Disease: Bacterial Leaf Blight (BLB)

Symptoms: Begins as yellowish stripes from the leaf tip that gradually extend downwards. Leaves eventually dry and become papery. Infected plants may show reduced tillering, stunted growth, and decreased grain yield. Spread is rapid under warm, humid conditions.

Pest: None (caused by bacterium *Xanthomonas oryzae*).

Crop: Rice

4. Disease: Rice Blast

Symptoms: Gray to diamond-shaped lesions appear on leaves, reducing photosynthetic area. Neck blast affects panicles, leading to empty or malformed grains. Severe infection can destroy entire fields. Fungus spreads via wind, water splashes, and infected debris.

Pest: None (fungus *Magnaporthe oryzae*).

Crop: Rice

5. Disease: Brown Planthopper Infestation

Symptoms: Plants show “hopper burn,” where leaves turn yellowish-brown and dry. Severe infestations cause stunted growth and plant death. They also transmit grassy stunt and ragged stunt viruses, compounding yield losses.

Pest: Brown Planthopper (*Nilaparvata lugens*) – sap-sucking insect. Feeds on phloem, weakening plants, causing drying, and transmitting viruses. Population increases rapidly in warm, humid conditions.

Crop: Rice

6. Disease: Leaf Curl Virus

Symptoms: Leaves curl upwards or downwards, veins thicken, and leaves may become distorted. Growth is stunted, flowers may drop, and fruit yield is significantly reduced. Symptoms worsen under high pest pressure.

Pest: Whitefly (*Bemisia tabaci*) – acts as a vector, transmitting the virus while feeding on sap. Also secretes honeydew, promoting sooty mold that reduces photosynthesis.

Crop: Cotton

7. Disease: Root Rot

Symptoms: Roots appear blackened, soft, and decayed. Plants show wilting, chlorosis (yellowing), and stunted growth. Infection is more severe in waterlogged or poorly drained soils. Can lead to complete plant death if untreated.

Pest: None (fungus *Rhizoctonia bataticola*).

Crop: Cotton

8. Disease: Pink Bollworm Infestation

Symptoms: Larvae bore into bolls and flowers, leaving tunnels and frass (insect waste). Infested bolls remain small and may fail to open. Lint yield is reduced, and quality is compromised. Heavy infestations can destroy significant portions of the crop.

Pest: Pink Bollworm (*Pectinophora gossypiella*) – larval stage is the damaging stage.

Adults are small moths; females lay eggs on developing bolls.

Crop: Cotton

9. Disease: Red Rot

Symptoms: Internal tissues of the stem turn reddish-brown and emit a foul odor. Leaves may yellow and die prematurely. Severe infection can rot the stem, reduce juice quality, and drastically cut yield. Fungus survives in crop residues and spreads via water and tools.

Pest: None (fungus *Colletotrichum falcatum*).

Crop: Sugarcane

10. Disease: Smut

Symptoms: Black, whip-like structures emerge from top shoots. Infected shoots are deformed, bolls are reduced, and overall yield drops. Spores spread easily via wind and water.

Pest: None (fungus *Sporisorium scitamineum*).

Crop: Sugarcane

11. Disease: Early Shoot Borer Infestation

Symptoms: Young shoots die in the center (“dead hearts”), leaving external leaves intact. Larvae bore into shoots, leaving tunnels and frass. Plant growth is stunted, and cane development is affected.

Pest: Early Shoot Borer (*Chilo infuscatellus*) – larvae feed internally, making detection difficult until damage is visible.

Crop: Sugarcane

12. Disease: Late Blight

Symptoms: Dark brown or black lesions develop on leaves, stems, and tubers. Lesions expand under wet conditions, causing rotting tissue. Plants may die quickly if infection spreads rapidly. Tubers are often destroyed in storage, causing post-harvest losses.

Pest: None (fungus *Phytophthora infestans*).

Crop: Potato

13. Disease: Tomato Leaf Curl Virus

Symptoms: Leaves curl and thicken, yellowing occurs along veins, plant growth is stunted, and fruit yield is reduced. Flower drop may occur, leading to significant losses.

Pest: Whitefly (*Bemisia tabaci*) – vector that spreads the virus during sap feeding. High whitefly populations intensify infection.

Crop: Tomato