

## Major Diseases of Groundnut and Their Management

\*Govind Junjadia, Dr J.R. Verma and Surjeet

College of Agriculture, Agriculture University, Jodhpur, Rajasthan, India

\*Corresponding Author's email: [govindchoudhary1644@gmail.com](mailto:govindchoudhary1644@gmail.com)

Groundnut (*Arachis hypogaea*) commonly known as peanut, is a vital oilseed and food legume crop cultivated extensively in tropical and subtropical regions, including India, China, Africa and parts of the Americas. It serves as a significant source of edible oil, protein, and fodder, contributing substantially to the livelihoods of millions of smallholder farmers. However, groundnut cultivation faces considerable challenges due to various biotic stresses, particularly diseases that can severely impact yield and quality.

Among the myriad diseases affecting groundnut, foliar fungal diseases such as early leaf spot (*Cercospora arachidicola*), late leaf spot (*Phaeoisariopsis personata*), and rust (*Puccinia arachidis*) are predominant. These diseases can lead to significant defoliation, reducing photosynthetic capacity and ultimately diminishing pod yield. Soil-borne pathogens like *Sclerotium rolfsii* (stem rot) and *Macrophomina phaseolina* (charcoal rot) cause wilting and plant death, especially under drought conditions. Additionally, viral diseases such as bud necrosis disease and groundnut rosette virus, transmitted by insect vectors like thrips and aphids, pose substantial threats, particularly in Sub-Saharan Africa. Effective management of these diseases is crucial for sustainable groundnut production. Integrated Disease Management (IDM) strategies, which combine cultural practices, resistant cultivars, biological control agents, and judicious use of fungicides, have proven effective in mitigating disease impact. For instance, seed treatment with biocontrol agents like *Trichoderma viride*, application of neem-based products, and timely fungicide sprays can significantly reduce disease incidence. Moreover, adopting crop rotations, maintaining field sanitation, and monitoring vector populations are essential components of a holistic disease management approach.

### 1. Early Leaf Spot

- **Causal Agent:** *Cercospora arachidicola*
- **Symptoms:** Small chlorotic spots on leaflets that enlarge and turn brown to black, often with a yellow halo. Lesions may also appear on petioles, stems, and stipules.
- **Favorable Conditions:** High humidity, temperatures around 25°C, and prolonged leaf wetness.
- **Management:**
  - ✓ Seed treatment with carbendazim (2 g/kg).
  - ✓ Foliar sprays of carbendazim (0.1%), mancozeb (0.2%), or chlorothalonil (0.2%) at 15-day intervals.
  - ✓ Use of resistant varieties and crop rotation with cereals.



### 2. Late Leaf Spot

- **Causal Agent:** *Phaeoisariopsis personata*
- **Symptoms:** Black, nearly circular spots on the lower leaf surface; lesions may coalesce, leading to premature leaf drop.

**Favorable Conditions:** Temperatures between 18–30°C, high humidity, and magnesium deficiency.

- **Management:**

- ✓ Similar fungicide applications as for early leaf spot.
- ✓ Intercropping with pearl millet or sorghum (1:3 ratio) to reduce disease intensity.
- ✓ Removal of volunteer groundnut plants and crop debris.



### 3. Rust

- **Causal Agent:** *Puccinia arachidis*

- **Symptoms:** Orange-colored pustules on the lower leaf surface that rupture to release reddish-brown spores; severe infections cause leaf necrosis and desiccation.

- **Favorable Conditions:** Wet weather with temperatures between 22–25°C.

- **Management:**

- ✓ Sprays of chlorothalonil (0.2%), mancozeb (0.25%), or systemic fungicides like hexaconazole.
- ✓ Foliar application of aqueous neem leaf extract (2–5%) as an economical control measure.
- ✓ Use of resistant cultivars and destruction of volunteer plants.



### 4. Stem Rot

- **Causal Agent:** *Sclerotium rolfsii*

- **Symptoms:** Sudden wilting of branches in contact with soil; white mycelial growth at the stem base; bluish-grey discoloration of seeds in infected pods.

- **Favorable Conditions:** Alternating wet and dry soil conditions.

- **Management:**

- ✓ Seed treatment with a combination of thiram and carbendazim (3 g/kg).
- ✓ Soil application of *Trichoderma viride* or *T. harzianum* (25–62.5 kg/ha) along with organic amendments like neem cake (500 kg/ha).
- ✓ Crop rotation with non-host crops such as cotton or maize.



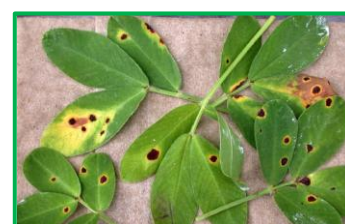
### 5. Alternaria Leaf Blight

- **Causal Agents:** *Alternaria arachidis* and *A. tenuissima*

- **Symptoms:** Brown, irregular lesions with yellow halos; blighting of leaf tips; in severe cases, leaves become brittle and curl inward.

- **Management:**

- ✓ Foliar sprays of mancozeb (0.3%), copper oxychloride (0.3%), or carbendazim (0.1%).
- ✓ Ensure proper field sanitation and avoid overhead irrigation.



### 6. Charcoal Rot

- **Causal Agent:** *Macrophomina phaseolina*

- **Symptoms:** Water-soaked lesions on stems near the soil line; lesions turn brown and girdle the stem, leading to plant wilting and death; roots become blackened and shriveled.

- **Favorable Conditions:** High soil temperatures and drought stress.

- **Management:**

- ✓ Seed treatment with thiram (4 g/kg) or carbendazim (2 g/kg).
- ✓ Soil application of *Trichoderma* spp. (2.5 kg/ha) combined with organic manures.
- ✓ Maintain adequate soil moisture through timely irrigation.

**7. Crown Rot**

- **Causal Agent:** *Aspergillus niger*
- **Symptoms:** Pre- and post-emergence seedling death; dark brown, shredded collar region; black fungal spores on infected tissues.
- **Management:**
  - ✓ Avoid deep sowing and mechanical injury to seedlings.
  - ✓ Seed treatment with carbendazim (2 g/kg) and *Trichoderma* spp. (4 g/kg).
  - ✓ Crop rotation with cereals and destruction of plant debris.

**8. Bud Necrosis Disease (PBND)**

- **Causal Agent:** Bud necrosis virus (BNV)
- **Symptoms:** Chlorotic spots on young leaves; necrosis of terminal buds; stunted growth with proliferation of axillary shoots.
- **Management:**
  - ✓ Remove and destroy infected plants promptly.
  - ✓ Adopt closer spacing and intercropping with pearl millet or sorghum to reduce vector population.
  - ✓ Control thrips, the vector of BNV, using appropriate insecticides.

**9. Groundnut Rosette Virus**

- **Causal Agent:** Groundnut rosette virus (GRV)
- **Symptoms:** Stunted growth, yellowing, and distortion of leaves; severe yield losses if infection occurs before flowering.
- **Management:**
  - ✓ Timely planting to avoid peak aphid activity.
  - ✓ Spray insecticides like dimethoate 14 days after emergence and at 10-day intervals to control aphid vectors.
  - ✓ Use of resistant varieties and intercropping with beans or sorghum.

