



## Damping-off Disease in Vegetable Crops and Its Management

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Damping-off is a serious disease of vegetable crops that mainly affects seeds and young seedlings in nurseries. It causes poor germination and death of seedlings, leading to heavy losses. The disease is caused by soil-borne pathogens such as *Pythium*, *Phytophthora*, *Rhizoctonia solani*, and *Fusarium*. These organisms thrive in moist, poorly drained soils.

### Types of Damping-off

#### Pre-emergence damping-off

- Occurs before seedlings emerge from the soil.
- Seeds rot or fail to germinate.
- Results in poor plant population.

#### Post-emergence damping-off

- Occurs after seedlings emerge.
- Stem near soil surface becomes weak and shrinks.
- Seedlings collapse and die.

### Symptoms

- Poor or uneven germination.
- Water-soaked lesions at stem base.
- Seedlings appear thin and weak.
- Sudden falling and death of young plants.

### Favorable Conditions

- Excess soil moisture and poor drainage.
- High humidity and low aeration.
- Dense sowing of seeds.
- Low temperature and excess nitrogen.

### Management

#### Cultural Practices

- Use well-drained, sterilized soil.
- Prepare raised nursery beds.
- Avoid overcrowding of seedlings.
- Use healthy, certified seeds.
- Provide proper irrigation (avoid overwatering).
- Remove and destroy infected seedlings.

#### Biological Control

- Apply *Trichoderma* or *Pseudomonas fluorescens* to seeds or soil.
- These agents suppress harmful pathogens.

**Chemical Control**

- Treat seeds with fungicides like thiram or carbendazim.
- Soil drenching with metalaxyl or copper fungicides when needed.

**Integrated Management**

- Combine cultural, biological, and chemical methods.
- Maintain proper hygiene and regular monitoring.

**Affected Crops**

Commonly seen in tomato, chilli, brinjal, cabbage, cauliflower, and cucurbits.

**Conclusion**

Damping-off is a major problem in vegetable nurseries, but it can be effectively controlled through proper management practices. Maintaining good drainage, using healthy seeds, and adopting integrated control methods are key to preventing losses and ensuring healthy crop growth.