

Important Fungal and Bacterial Diseases of Pea and their Management

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Introduction

Pea (*Pisum sativum* L.) is a valuable vegetable as well as pulse crop all over the world. It belongs to the family *Leguminosae*, self-pollinated crop (Anonymous, 2004). In India, it is cultivated mainly in UP, MP, Bihar, Punjab, Haryana, Delhi etc (Singh and Singh, 2005). The pea has a great agronomic value. In crop rotation, it helps improvement of soil fertility and yield of succeeding crops (Rana and Sharma, 1993). Pea is affected by several plant pathogens includes fungi, viruses and bacteria that causes various serious diseases.

1. Powdery mildew (*Erysiphe polygoni*)

It is characterized by a white powdery growth on the leaves, stems and pods. The initial symptoms consist of tiny slightly discoloured spots on the upper surface of leaves. These spots enlarge and become covered with powdery fungal growth. The tissue beneath affected areas may turn purple and later brown. If infection is severe, affected plants turn brown and die. Affected seeds become brown. Water stress accelerates mildew development. Warm days and cool nights favour disease development. The fungus is air-borne in nature.

Management

- Use certified disease-free seeds
- Treat own seeds by soaking for 30 minutes in 122° F / 500° C
- Plant resistant varieties, if available
- Practice crop rotation with non-legumes
- Plough under crop residues after harvest
- Spray with sulphur products, where local administration permits
- Spray inorganic sulphur 0.25% or Tridemorph 0.1%.

2. Downy mildew (*Peronospora pisi*)



The fungal growth over leaf and pod is the most striking symptom. The fungal growth occurs on the lower leaf surface as well as on pods. Initially it is white but later it changes to a shade of violet and eventually to almost black. The disease may appear on pods even when it is not apparent on leaves. Affected pods show yellowish brown areas. Inside of the affected pods a white fungal growth can be seen. Peas in such pods are small and have brown spots. The disease is favoured by cool and moist conditions.

Management

- Use certified disease-free seeds
- Use resistant varieties, if available
- Practice crop rotation. Rotate with non-legumes.

3. Fusarium wilt (*Fusarium oxysporum* f. sp. *lisi*)

The fungus can attack plants at any stage of development. Distinct symptoms consist of yellowing of foliage and wilting leading to death of affected plants. The disease appears in scattered areas of the field and eventually may cover bigger areas. If stem of diseased plant is split, the pith is brick-red in colour. The disease can be seed-borne.

Management

- Treating the seeds with Carbendazim (2 g/kg of seed) protects the seedlings during the initial stages of growth.
- Soil drenching with Copper oxychloride 0.25%.

4. Bacterial blight (*Pseudomonas syringa*epv. *lisi*)

Blight symptoms can occur on all above-ground plant parts. Infected stems are olive-brown, while stipules and leaflets turn yellowish and/or water-soaked. Affected young pods shrivel or decay. Older pods may show water-soaked spots and may become scalded or cracked. In moist conditions, a white to cream-coloured slimy ooze forms on the spot surfaces. If infection takes place at early growth stages, affected plants wither and die. The disease is seed-borne. High humidity and rains facilitate disease development. The optimum temperature for bacterial growth is about 27.8° C.

Management

- Use resistant varieties, if available

- Use certified disease-free seeds
- Avoid dense planting
- Control weeds
- Use surface irrigation

5. **Rust :*Uromyces fabae***

This often becomes serious in humid regions. The plants dry up quickly and the yield is considerably reduced. The initial symptoms of the rust infection are flecking of the leaves. These flecks soon develop into reddish brown pustules, frequently merging into one another, finally bursting to expose a mass of brown spores. The entire leaf blade and other affected parts give a brownish appearance even from a distance.

Management

- Use resistant varieties, if available
- Fungicidal application using Tridemorph 0.1 % or Mancozeb 0.25% effectively controls the disease.

References

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