

Pulse Crops

Downy Mildew of Pea

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Identification and Life Cycle

Downy mildew of pea is caused by the fungus-like organism *Peronospora viciae*, and occurs in most regions of the world where pea is grown. The disease is often initiated by soilborne resting structures (oospores), which germinate during cool, moist weather and infect pea locally or systemically. Secondary spread of the disease occurs by asexual spores (sporangia) that are produced on infected leaves, stems, and pods. Sporangial infection can occur over a range of temperatures (34 to 68°F), but infection occurs optimally between 40 to 46°F with at least 12 hours of relative humidity greater than 90% or when free moisture is available. Sporangia survival depends on temperature, but sporangia can survive as long as 31 days at 40°F. The pathogen can be disseminated by windblown sporangia and splashing water, and survives between crops pathogenically on alternate hosts (vetch and broad bean) and as oospores in the soil. Oospores can remain viable in the soil for 10 to 15 years.

Plant Response and Damage

Downy mildew symptoms may be local or systemic. Systemically infected plants are stunted, yellowed, distorted, and often die before flowering; abundant sporulation of the pathogen is evident on plant tissues. Local lesions are greenish yellow to brown blotches of varied shape on the upper surfaces of leaves. Opposite these blotches, fluffy, gray fruiting bodies of the pathogen are evident on the bottom side of the leaf. Leaf infections appear first on older leaves, but progress up the plant. Pods can be infected under severe disease pressure, causing yellow to brown blotches to form and deformation of pods. The disease can be very damaging during cool wet weather, but generally causes little economic damage to pea in the High Plains.

Management Approaches

Biological Control

No biological control practices have been developed for downy mildew of pea.

Cultural Control

Resistant and tolerant pea varieties are available and should be planted if downy mildew becomes a recurrent problem. Long crop rotations (5 years or longer) to nonhosts can provide some disease control, but longer rotations may be necessary if severe infections occur. Deeply incorporate pea residue after harvest to reduce pathogen survival and overwintering. Avoid late season plantings and deep planting depths.

Chemical Control

Chemical controls are most effective when integrated with sound cultural practices. Resistance to common fungicides such as metalaxyl has been reported, and fungicides with different modes of action should be used where resistant strains of the pathogen are present.

Common/ Trade Name	Product per 100 pounds seed	Remarks
Mefenoxam/Metalaxyl		
Allegiance	0.10 – 0.375 fl.oz	Suppression of Pythium sp.
Apron FL	0.75–1.5 lb/100 fl.oz	Suppression of Pythium sp.
Apron XL LS	0.32 – 0.64 fl.oz	Suppression of Pythium sp.
Apron 50W	0.5 – 1.0 oz	Suppression of Pythium sp.
In Furrow Treatments		
Mefenoxam		
Ridomil Gold EC	½ -1 pt per acre in a 7” band	Suppression of Pythium sp.; Incorporate mechanically or by

Pyraclostrobin

Headline

6-9 fl oz / A, 7-14 days

irrigation

Maximum of 18 fl oz; 21 day PHI,
hay may be fed 14 days after last
application

Categories: Pulse Crops, Disease, Downy Mildew, Pea

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