

Safflower

Alternaria Leaf Spot

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Identification and Life Cycle

Various fungi of the genus *Alternaria* can cause Alternaria leaf spot. Stem spotting and a head rot can also occur. *A. carthemi* is the most common pathogen responsible for the disease, but *A. alternata* can occasionally attack safflower near maturity. The disease can be severe during warm, humid weather. Disease occurs when spores (conidia) land on leaves or stems, germinate in the presence of free moisture, and directly penetrate and infect the plant. Plants are most susceptible to infection beginning at flowering and continuing through maturity; plant stress also predisposes plants to the disease. Spores are readily disseminated in and among fields by splashing irrigation water, wind, and perhaps insects. The pathogen survives between safflower crops in and on infested crop debris, as a pathogen on alternate hosts, and on seed.

Plant Response and Damage

Alternaria leaf spot symptoms appear as circular, dark brown to black lesions with concentric rings that resemble a target pattern. Some lesions have distinct yellow halos on young plants. Lesions generally do not cross major leaf veins, and become angular in shape as they age. Under disease favorable conditions lesions can coalesce, leading to necrosis and withering of entire leaves. Stem lesions begin as dark flecks that enlarge to form large elliptical to diamond-shaped sunken lesions. Large, blackened stem lesions can girdle plants and cause stem breakage. High humidity and moderate to warm temperatures favor Alternaria leaf spot. Significant yield losses have been reported from some safflower production regions. In the High Plains, the disease is only of importance during wet years or when safflower is grown under abundant irrigation.

Management Approaches

Biological Control

No biological control strategies have been developed for Alternaria leaf spot.

Cultural Control

Crop rotation and strict sanitation of crop debris effectively manage *Alternaria* leaf spot most years in the High Plains. Moderately resistant varieties such as Morlin and the Montolas lines should be planted if suitable to local production requirements.

Chemical Control

Chemical controls are most effective when applied at or just before the first appearance of lesions, and used in combination with cultural control strategies. A section 18 for Quadris Flowable (azoxystrobin) was issued in North Dakota in 2003, and this fungicide provides excellent disease control.

Product list for Alternaria Leaf Spot:

Pesticide	Product per Acre	Application Frequency (days)	Remarks
Neem			
Trilogy	2 pt	7-14 days	Maximum of 2 gallons; 0 day PHI

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Categories: Safflower, Disease, *Alternaria* Leaf Spot

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