

# Alternaria Leaf Spot and Blight

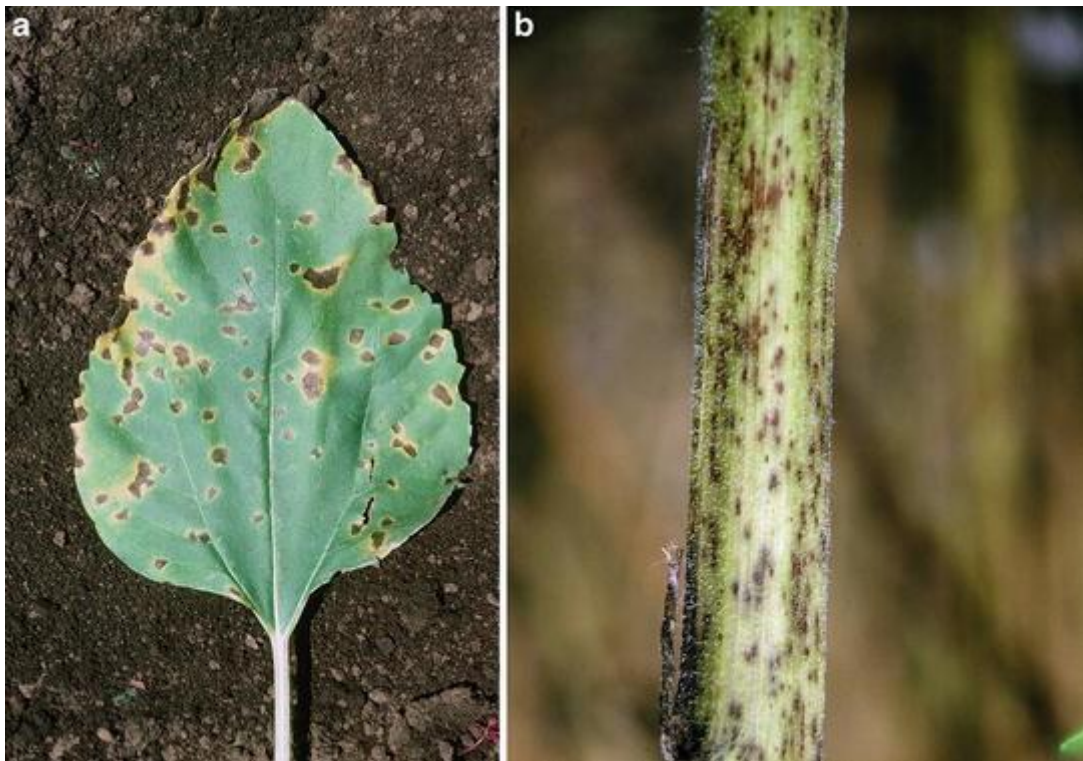
(*Alternaria* spp.)

## Geographic occurrence and impact.

*Alternaria* leaf blight affects sunflower throughout the world and is a major defoliating pathogen in warm, humid climates. The fungus may also cause linear spots on the stems and water-soaked, sunken lesions on the back of sunflower head.

## Symptoms/signs.

Many *Alternaria* species can cause leaf spots on sunflower, but symptoms are similar for all, making field identification impractical. The primary symptom is dark brown lesions on leaves, and also on stems, petioles, and bracts. Initially the leaf spots are small, dark, and angular, but with time, they coalesce into large, necrotic areas resulting in defoliation. Defoliation starts with the lower leaves where the microclimate is most favorable. Stem lesions typically are narrow (1–3 mm) black streaks up to 3 cm long.



(a) *Alternaria* leaf blight lesions. (b) *Alternaria* stem lesions

## Biology and epidemiology.

Although *Alternaria helianthi* (Hansford) Tubaki and Nishihara, now reclassified as *Alternariaster helianthi* (Hansford) Simmons, is the major causal agent, there are eight other species reported on sunflower, including *A. zinniae* Pape, *A. helianthicola* Rao and Rajagopalan, *A. helianthiinficiens* Simmons, Walcz and Roberts, *A. leucanthemii* Nelen (syn. *Teretispora leucanthemii* (Nelen) Simmons), *A. protenta* Simmons, *A. roseogrisea* Roberts, *A. tenuissima* (Nees) Wiltshire, and *A. alternata* (Fries) Keissler. Most of these *Alternaria* spp. are specific for sunflower (except the opportunistic saprophyte *A. alternata*). However, *A. zinniae* has a broad host range that includes several *Asteraceae* genera, including weeds (*Bidens*, *Cardus*, *Eupatorium*, *Xanthium*) and ornamentals (*Aster*, *Calendula*, *Chrysanthemum*, *Dahlia*, *Tagetes*, *Tithonia*, *Zinnia*). Because symptoms caused by the *Alternaria* pathogens look very similar, field identification based on symptoms is difficult and may be inaccurate. Conidial morphology (Simmons [2008](#)) combined with genetic analysis is the only sure means to delineate species.

As *A. helianthi* is the primary causal agent and most widespread, this section addresses just this species (Allen et al. [1983a](#), [b](#), [c](#)). *Alternaria helianthi* overwinters on infected plant residue, but wild or volunteer sunflowers may also serve as reservoirs. All species including *A. helianthi* may also be seedborne. The conidia are windborne and spread by splashing water onto the lower leaves. They germinate best at temperatures >26 °C and require a minimum of 4 h of leaf wetness for sporulation. Disease progress is also heavily dependent on the duration of leaf wetness following initial infection, as the generation of new spores can occur within 2 days. Young seedlings are more susceptible than older plants, but senescing lower leaves on mature plants frequently are defoliated by *Alternaria* spp.

## Management

**Cultural practices** – including removal of wild and volunteer sunflowers, removal or incorporation in the soil of previous sunflower residues, and minimizing extended leaf wetness will all reduce disease potential.

**Fungicides** – Seed treatments (captan, thiram, mancozeb) may offer some control (Jeffrey et al. [1985](#)), but most growers rely upon multiple applications of fungicides containing chlorothalonil, iprodione, procymidone, or vinclozolin. More recent fungicide tests with ornamental sunflowers demonstrated that seed treatments with difenoconazole, prochloraz, pyrifenoxy or triadimenol were effective (Wu and Wu [2003](#)). Consult government fungicide guides for specific products and rates.

**Resistance** – Disease resistance has been found in oilseed sunflower and some attempts have been made to incorporate that into hybrids, but there have been no reports of resistance in ornamental cultivars.