

Sunflower

Red Rust

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Identification and Life Cycle

Sunflower rust is caused by the fungus *Puccinia helianthi*. The disease is common and often damaging to sunflower in the High Plains. The rust pathogen has a complex life cycle, completing five different stages on sunflower. Seedlings or volunteer sunflower plants are infected early in the season by the overwintering stage of the rust fungus. Infection generally occurs late in the season by urediniospores, the most visible and damaging cycle of sunflower rust. Urediniospores can infect sunflower over a range of temperatures (40 to 86°F) when leaves are continually wet for 6 to 10 hours, but occurs optimally near 75°F. Urediniospores can be disseminated long distances by wind. As plants near maturity telia, dark pigmented overwintering spores, develop in uredinia lesions. Telia and teliospores survive in and on infested crop debris.

Plant Response and Damage

Sunflower rust symptoms first appear as inconspicuous small clusters of pale yellow or orange spots called pycnia on upper leaf surfaces. Opposite these pycnia, aceia appear on the lower side of leaves as yellow or orange spots. Uredinia later appear in mid-summer as dark brown, powdery spots on both surfaces of the lower leaves and sometimes stems, petioles, bracts, and receptacles. Uredinia are the most recognizable and damaging stage of the sunflower rust. Lesions turn black as plants senesce as overwintering telia develop. Sunflower rust can reduce seed yield, oil percentage, and size, test weight, and kernel-to-hull ratio.

Management Approaches

Biological Control

No biological control strategies have been developed for rust.

Cultural Control

Plant hybrids resistant to rust. Several races of sunflower rust exist, and resistant varieties may not provide protection against all races of the pathogen. If susceptible hybrids are grown, they should be planted early to avoid severe late season epidemics. Practice a three-year or longer crop rotation between sunflower crops. Destroy volunteer and wild sunflowers in and around fields before sunflower crops emerge in the spring to reduce sources of the pathogen. Avoid dense plantings, high nitrogen fertilization, and excessive irrigation, which increase humidity within the canopy and favor rust epidemics.

Chemical Control

Fungicides are most effective when used in combination with cultural control strategies, and may not be necessary if resistant hybrids are planted. Colorado has supported a Section 18 request for the use of Folicur 3.6F when epidemics threaten the crop.

Product List for Red Rust:

Pesticide	Product per Acre	Application Frequency (days)	Remarks
Pyrachlostrobin			
Headline	6 – 12 fl oz	7-14 days	Maximum of 24 fl oz; rotate with other fungicide chemistry; 21 day PHI
Neem			
Trilogy	2 pt	7-14 days	Maximum of 2 gallons; 0 day PHI

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