

Guide to common foliar diseases of cereal crops in Montana

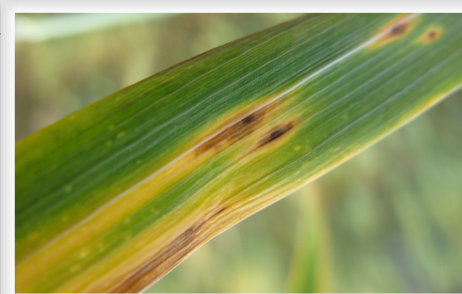
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Tan spot (*Pyrenophora tritici-repentis*) of wheat

Symptoms: Small, yellow spots on the leaves when the fungus first infects the leaf which expand into an 'eye' shape, sometimes with a brown (necrotic) 'pupil' and a yellow halo if there is enough moisture; yellow halo much broader than seen with Septoria; straw will have tiny black, raised structures (pseudothecia); seed can have red smudge

Risk Factors: Continuous wheat production, no-till with wheat residue, irrigation; infection requires 6-24 hours of moisture and moderate temperatures (68-82°F)

Management: Crop rotation, residue reduction, use of best-yielding variety in your region; protect flag leaf area with fungicides



Septoria leaf spot (*Septoria tritici* and *Stagnospora nodorum*) of wheat and barley

Symptoms: Small, yellow spots on the leaves when the fungus first infects the leaf which expand into tan to brown and irregular to lens-shaped lesions with little to no yellow halo; if very moist small black specks (pycnidia) will be formed in the lesion

Risk factors: Continuous cereal production, no-till with cereal residue, irrigation; infection requires 6-24 hours of moisture and moderate temperatures (68-82°F)

Management: Crop rotation, residue reduction, use of best-yielding variety in your region; protect flag leaf area with fungicides

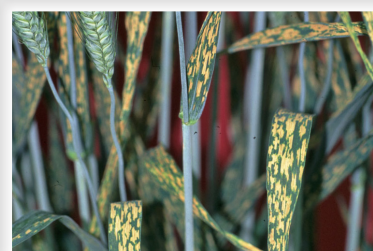


Physiological leaf spot (abiotic disorder) of wheat and barley

Symptoms: Can be confused with tan spot and Septoria leaf spot but symptoms are uniform on leaf and symptoms on all leaves, not just lower leaves; edges of lesions are distinct, not diffuse

Risk factors: High pH soil, variety susceptibility

Management: Variety selection; soil pH modification with potash is limited in effectiveness



Bacterial leaf blight and black chaff (*Xanthomonas translucens* pv. *translucens* and *X. campestris* pv. *vesicatoria*) of wheat and barley

Symptoms: Small, water-soaked spots on leaves which elongate into linear streaks that become necrotic tan or brown; often the tips of the leaves become shredded; leaves feel 'shellaced' or slick; when very wet bacteria ooze from leaves or glumes

Risk factors: Saving seed from a crop infested with bacterial blight or black chaff

Management: Variety selection; use clean seed



Net blotch and spot blotch (*Pyrenophora teres*) and spot blotch (*Bipolaris sorokiniana*) of barley

Symptoms: Small, round to oblong brown spots or netlike necrosis; net blotch can occur in a spot form

Risk factors: Continuous barley; no-till with barley residue, irrigation

Management: Crop rotation, variety selection, irrigation management to reduction of humidity in the canopy, light tillage to reduce residue, and fungicide application.



Scald (*Rhynchosporium secalis*) of barley

Symptoms: Very distinct dark brown ring around a tan center
Risk factors: Continuous barley; no-till with barley residue, irrigation
Management: Crop rotation, variety selection, irrigation management to reduce of humidity in the canopy, light tillage to reduce residue, and fungicide application.



Stripe rust (*Puccinia striiformis*) of wheat and barley

Symptoms: Yellow pustules occurring in stripes; different subspecies infect wheat and barley; spores are wind-dispersed; overwinters on wheat and other grasses
Risk factors: Overwintering stripe rust, incidence of stripe rust in other wheat-growing regions in North America
Management: Variety selection, fungicides



Leaf rust of wheat (*Puccinia triticina*) and barley (*Puccinia hordei*)

Symptoms: Small, red-orange spore masses (pustules) on leaves; spores rub off on your finger; older pustules or those on resistant varieties will appear black; spores are wind-dispersed
Risk factors: Incidence of leaf rust in other cereal-growing regions in North America (particularly south and east of Montana), wind conditions and time of infection; infection is favored by 6-8 hours of dew and temperatures from 60 to 80°F
Management: Variety selection, fungicides



Stem rust of wheat and barley (*Puccinia graminis* f. sp. *tritici*)

Symptoms: Small, red-brown spore masses (pustules) with frayed edges on stems and leaves; spores rub off on your finger; older pustules or those on resistant varieties will appear black; spores are wind-dispersed
Risk factors: Incidence of stem rust in other cereal-growing regions in North America (particularly south and east of Montana), wind conditions and time of infection; infection is favored warm day temperatures from 77 to 86°F and cool night temperatures 59 to 68°F and dew; barberry is the alternate host
Management: Variety selection, fungicides

