PP-894 (Revised)

Common Barley Diseases in North Dakota

Hosts – Symptoms – Controls

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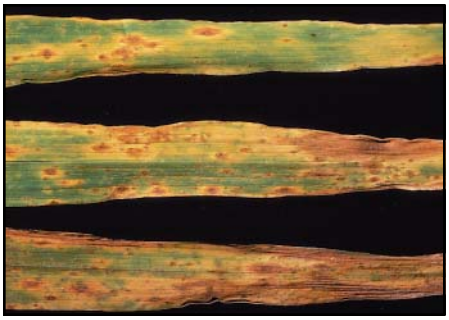
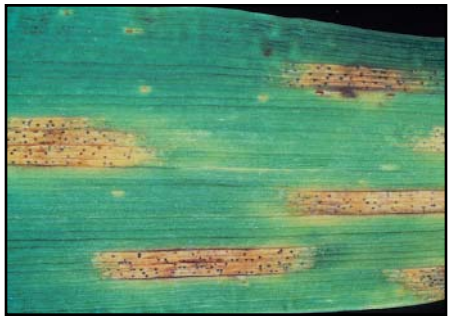
1. Common Root Rot

2. Spot Blotch

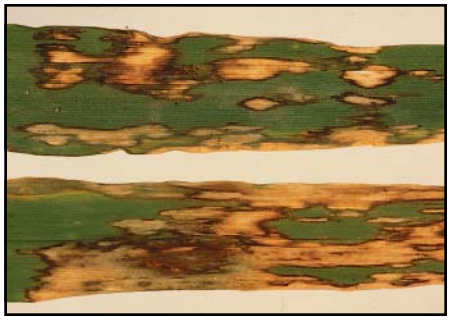
3. Net Blotch



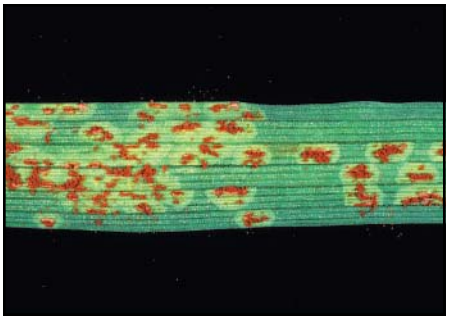
4. Stagonospora Leaf Blotch



5. Septoria Leaf Blotch

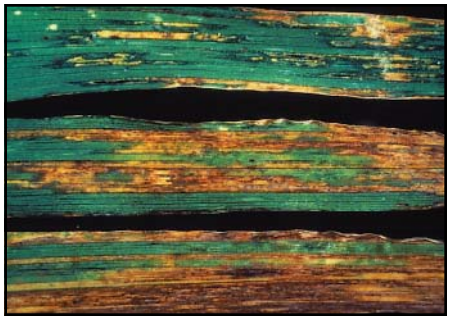


6. Scald



7. Leaf Rust

8. Powdery Mildew



9. Bacterial Blight

10. Barley Stem Rust

11. Scab or Head Blight

12. Barley Yellow Dwarf Virus

13. Loose Smut

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1. Common Root Rot *(Cochilobolus sativus)*

Hosts: Barley, spring wheat and durum. No variety is completely resistant, but some of the newer lines are more tolerant.

Symptoms: Diseased seedlings have dark brown spots near the seed or on stems below the soil line. Crown rot develops later in the season. Affected plants may turn prematurely white. Kernels in the head are shriveled and roots are dark brown and rotted. Yields often are reduced by root rot even though symptoms are not well developed.

Controls: Promote rapid emergence by planting in well prepared, warm seed bed. Avoid herbicide stress. Rotate with crops such as oat, flax or legumes. Fungicide seed treatments also are available for suppression of common root rot.

2. Spot Blotch *(Cochliobolus sativus)*

Hosts: Recently released barley varieties have good resistance. Spring wheat and durum are affected to a lesser extent.

Symptoms: Fungus spores produced on crop residue are carried by air currents to the leaves. Infections appear as dark, chocolate-colored blotches. The spots merge, eventually forming irregular dead patches on the leaves. Heavily infected leaves dry up completely, and infections on the flag leaf during kernel filling are the most serious.

Controls: Grow resistant varieties. Fungicides can be used on varieties that are more susceptible. Rotate with crops such as oat, rye, legumes or flax to reduce source of fungus spores from residue.

3. Net Blotch *(Pyrenophora teres)*

Hosts: Most current barley varieties are susceptible. Other crops are not affected.

Symptoms: A characteristic "netting" of the dark, chocolate-colored blotches on leaves, sheaths and glumes distinguishes this disease from spot blotch (No. 2).

Controls: Grow least susceptible varieties. Fungicide sprays will protect against infections.* Rotation with crops other than barley will reduce the amount of fungal spores residing in residue.

4. Stagonospora Leaf Blotch *(Stagonospora avenae* f. sp. *triticea)*

Hosts: All barley varieties are susceptible. Attacks spring wheat, durum and some grasses.

Symptoms: Leaf spotting develops from infections by fungus spores produced on barley or wheat stubble and residue. Spots first appear as small yellow flecks, later becoming tan with a yellow border. Spots are boat shaped at first then merge to form blotches. The margins of the spots are indefinite. Leaves dry and shrivel.

Controls: Minimize residue on soil surface of re-crop land. Fungicides may be used to prevent infections.*

5. Septoria Leaf Blotch *(Septoria passerinii)*

Hosts: Current barley varieties are susceptible. Other crops are not affected.

Symptoms: The fungus causes yellowish to light brown elongated spots of varying sizes. Initially spots are long with definite margins parallel to leaf veins. Spots may merge and involve large areas of leaf tissue. Margins of leaf often pinch and dry. Small black fruiting bodies form in rows in diseased areas.

Controls: Grow the most resistant varieties. Use fungicides to protect leaves.* Bury infected crop debris. Use rotation with other crops.

6. Scald *(Rhynchosporium secalis)*

Hosts: All barley varieties are susceptible. Scald occurs primarily in the northern tier of counties.

Symptoms: Leaf spots develop during cool, wet weather. The spots are oval shaped and the margins of the spots change from bluish-green to zonated brown or tan rings, with bleached straw-colored centers.

Controls: Minimize residue on soil surface of re-crop land. Rotate with other crops. Systemic fungicides are registered for control.*

*Information on Specific chemicals registered for barley disease control can be obtained from North Dakota Extension Circular PP-622 (revised) "Field Crop Fungicide Recommendations," or by consulting the county extension office.

7. Leaf Rust (*Puccinia hordei)*

Hosts: Most barley varieties are susceptible. Leaf rust has been a problem primarily on late-planted barley in northern counties.

Symptoms: Orange-red pustules erupting from the leaf surface contain spores which are spread by wind to other leaves. Heavily infected leaves die prematurely.

Controls: If conditions for epidemic development prevail, leaf rust can be controlled with systemic fungicides.*

8. Powdery Mildew *(Blumeria graminis f. sp. hordei)*

Hosts: Barley. Develops when cool, humid and cloudy weather persists.

Symptoms: White to gray powdery-surfaced pustules that are scattered on or completely cover the leaf blade, with associated yellowing, browning and drying of leaf tissue.

Controls: May be controlled with sulfur or systemic fungicides*, but the disease generally is not an economic problem in North Dakota.

9. Bacterial Blight *(Xanthomonas campestris pv. transluscens)*

Hosts: Barley, spring wheat, durum and grasses.

Symptoms: Linear water-soaked areas and exudate droplets develop on leaves after several days of rainy, damp weather. The lesions elongate and merge into irregular glossy-surfaced stripes.

Controls: Rotate to non-grain crop. Bury crop refuse. Use disease free seed.

10. Barley Stem Rust *(Puccinia graminis f. sp. tritici* and *f. sp. secalis)*

Hosts: Barley and wheat *(Puccinia graminis f. sp. tritici),* barley and rye *(Puccinia graminis f. sp. secalis).*

Symptoms: Masses of brick-red spores (pustules) erupt primarily on stems and leaf sheaths, but leaf blades, glumes and awns may also be infected. Spores are easily spread by wind to other plants, and the disease is favored by warm, moist weather.

Controls: Most current varieties are susceptible to race QCC of *Puccinia graminis f. sp. tritici,* but resistance is being incorporated into new lines. All commercial varieties are susceptible to *Puccinia graminis f. sp. secalis,* but this form is rarely found. Stem rust also can be controlled with systemic fungicides.*

11. Scab or Head Blight *(Fusarium graminearum)*

Hosts: Barley, spring wheat, durum and many grasses. Scab is found throughout the state.

Symptoms: Appears first as brownish water-soaked lesions at the base of the glumes or on the rachis. Discoloration may then spread in all directions from initial infection. In severe infections, salmon-orange spore masses may appear at the base of the glumes.

Controls: Cultural practices such as rotation to broadleaf crops, tillage to bury residues, and alternating planting dates can lower the risk of scab. Fungicides used in combination with these practices may reduce the severity of the disease.* Use disease-free seed to avoid subsequent seedling blight.

12. Barley Yellow Dwarf Virus

Hosts: Barley, spring wheat, oat, and other monocots.

Symptoms: The virus is transmitted by several species of aphids. Bright yellow chlorosis shows first on the tips and margins of older leaves. Other symptoms may include stunting, reduced kernel size and weight, sterility, and failure of heads to emerge.

Control: Use resistant or tolerant varieties if available. Early planting may allow crop to develop prior to an influx of large populations of aphids which may be carrying the virus.

13. Loose Smut *(Ustilago nuda)*

Hosts: All barley varieties are susceptible to one or more races.

Symptoms: Masses of smut spores replace the entire head of plants. Smutted heads often emerge before healthy heads. Spores are dislodged and scattered by wind soon after emergence. The fungus infects open flowers and becomes established in the embryo of the developing seed. The State Seed Department tests for the presence of loose smut in barley seed.

Controls: Grow smut-free seed. Treat seed with effective, registered seed treatments.* All suspect seed lots should be treated.

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