Rye Diseases
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Joseph L. Clayton, L. Patrick Hart, Botany and Plant Pathology
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AG FACTS

Rye Diseases

Joseph L. Clayton and L. Patrick Hart
Dept. of Botany and Plant Pathology

This bulletin provides useful information for diagnosing crop diseases in the field and the plant clinic laboratory. It will assist crop disease consultants and their scouts, state agricultural advisers, agribusiness representatives, pest control dealers and applicators, county agricultural agents, students in plant sciences and growers throughout Michigan.

The descriptions of symptoms, environmental conditions favoring disease, methods of transmission and recommended control are brief, but complete. The calendar indicates the month in which symptoms appear and the plant part showing the symptom. More detailed information, including photos of disease symptoms, is available in Extension bulletins. Contact your county Cooperative Extension Service office or the MSU Bulletin Office to obtain these publications.

For information on resistant hybrids and varieties, chemical control and other measures, consult recent literature, competent area specialists, Extension plant pathologists or informed seed suppliers.

RYE DISEASES

DISEASE	MONTH SYMPTOMS APPEAR							PLANT PART SHOWING SYMPTOMS				
	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	ROOTS	LEAVES	STEMS	HEAD	ENTIRE PLANT
Crown Rot	•	•				•	•	•	•			•
Scald		•							•		•	
Leaf Rust			•						•	•		
Stem Rust				•					•	•		
Spot Blotch		•	•						•	•		
Scab			•	•							•	
Ergot		•	•	•							•	
Take-All		•	•	•					•	•	•	•

RYE DISEASES

DISEASE	SYMPTOMS	ENVIRONMENTAL CONDITIONS FAVORING DISEASE	METHOD OF TRANSMISSION	RECOMMENDED CONTROL	SPECIAL NOTES
Crown Rot *(Helminthosporium sativum)*	Circular patches of dwarfed, reddish-brown plants appear scattered throughout the field; patches vary in size from a few feet to several rods. Large chocolate-colored spots form on sheath and first leaf; disease develops at or below soil surface. Roots and crowns are dark brown.	Drought and warm temperatures are the most important factors; dry autumns and open winters.	Fungus survives in the soil; seed-borne also.	Treat seed; plant into a firm, mellow seedbed.	
Scald *(Rhyncosporium secalis)*	Dark, bluish-gray, water-soaked, oval or lens shaped blotches appear on leaves; sometimes there is a yellowish-green band or halo around the blotch; spots at base of blade are more elongated and extend into sheath.	Cool, wet weather.	The fungus overwinters on seed, living or dead tissue of rye and wild hosts. Spores are wind-blown to new leaves and are distributed from plant to plant by rain.	Clean plow, rotate crops; use treated seed and destroy perennial grasses.	
Leaf Rust *(Puccinia dispersa)*	Small, oval, orange-brown pustules form on both surfaces of leaf. Infects the stem also.	Cool nights (59°F), free moisture on the leaves for 6 to 8 hours; warm (77°F), bright days.	Overwinters as mycelium in leaf tissue; a new generation of spores is produced every 10 days during the growing season.	Plant resistant varieties.	
Stem Rust *(Puccinia gramini secalis)*	Elongated, brick-red, ragged pustules form on the leaves and stem.	Cool (64°F) nights combined with warm (77°F) days and 6 to 8 hours of free moisture on the stems and leaves.	Spores are wind-borne and a new generation is produced every 14 days.	Rye matures early, so it escapes the second generation.	

RYE DISEASES *Continued*

DISEASE	SYMPTOMS	ENVIRONMENTAL CONDITIONS FAVORING DISEASE	METHOD OF TRANSMISSION	RECOMMENDED CONTROL	SPECIAL NOTES
Spot Blotch *(Helminthosporium sativum)*	Light brown, lens-shaped spots with light edges appear on the leaves; dark, brown-black spots girdle the joints.	Cool, wet weather in spring.	Fungus overwinters in crop residue, soil, seed and seedlings of rye.	Treat seed to prevent seedling rot.	
Scab *(Gibberella zeae)*	One or more bleached spikelets appear, premature ripening, salmon colored mold appears at bases of spikelets and edges of glumes.	Warm, humid weather during flowering and grain ripening.	Pathogen survives on infected corn debris on the soil surface; spores are wind-blown to new plants.	Rotate to crops other than cereals; clean plow.	Scabby rye is toxic to most nonruminant animals.
Ergot *(Claviceps purpurea)*	An amber-colored honeydew ooze develops on infected flowers, followed by hard purple-black sclerotia in place of kernels.	Cool, wet weather.	Spores live in the soil for 1 year, germinate in the spring and are wind-blown to heads during flowering.	Rotate crops; destroy all wild grass hosts, e.g., quack grass, orchard grass, timothy, redtop squirrel tail, wild rye, brome grass, meadow fescue and meadow foxtail.	Ergot has a wide host range of wild and domesticated grasses.
Take-All *(Gaeumannomyces graminis)*	Stunted plants, sparse tillering, yellowing, becoming ashen white; base of stem has a brown to black layer of mycelium between stem and sheath; roots rot; diseased plants usually occur in circular area.	Wet spring weather, poor soil conditions, rye on rye and use of nitrate fertilizers.	Soil-borne; can overwinter on crop residue; will live in soil up to 3 years.	Use a 3-year rotation program with corn and legumes; maintain a balanced soil fertility program; control quack grass and other wild grass hosts.	

See also Extension bulletins E-1425, *Barley and Rye Diseases,* and E-1430, *How to Recognize and Control Ergot on Small Grains and Grasses.*

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