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Alfalfa Diseases

Michigan State University Extension Service

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AG FACTS

Alfalfa Diseases

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This bulletin provides useful information for diagnosing crop disease problems in the field or plant clinic laboratory. It will assist crop disease consultants, 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, method 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 the alfalfa disease compendium and

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.

ALFALFA DISEASES

DISEASE	MONTH SYMPTOMS APPEAR						PLANT PART SHOWING SYMPTOMS				
	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	ROOTS	CROWN	LEAVES	STEM	ENTIRE PLANT
Bacterial Wilt		•	•						•	•	•
Seedling Blights and Stem Rots		•	•				•			•	•
Phytophthora Root Rot			•	•			•				•
Fusarium Root Rot				•	•		•	•			•
Anthracnose			•	•				•		•	•
Crown Rot		•	•	•				•			
Fusarium Wilt				•	•		•	•	•	•	•
Verticillium Wilt		•	•				•		•	•	•
Common Leaf Spot		•	•						•		
Spring Black Stem		•	•						•	•	•
Summer Black Stem			•	•					•	•	•
Lepto Leaf Spot		•	•	•					•		
Yellow Leaf Blotch	•	•	•						•		
Rust					•	•			•	•	
Downy Mildew	•	•							•		
Potassium Deficiency				•					•		
Manganese Deficiency				•	•				•		

ALFALFA DISEASES

DISEASE	SYMPTOMS	ENVIRONMENTAL CONDITIONS FAVORING DISEASE	METHOD OF TRANSMISSION	RECOMMENDED CONTROL	SPECIAL NOTES
Bacterial Wilt (<i>Clavibacter insidiosum</i>)	Thinning of stand usually occurs during third year and thereafter; plants stunt, yellow and wilt during warm weather. Occurs in stands over 3 years old.	Cooler spring and summer weather; ample field moisture.	Bacteria are soil-borne and enter the plant through wounds from winter injury and mechanical damage.	Plant resistant varieties; maintain balanced soil fertility; prevent root and crown injury.	Most varieties are resistant.
Seedling Blights and Stem Rots (<i>Pythium</i> spp. <i>Fusarium</i> spp. <i>Rhizoctonia solani</i>)	Seed decay occurs before and after emergence; soft rot of roots and stems develops; seedlings yellow and die rapidly.	<i>Pythium</i> —cool wet soils; <i>Fusarium</i> and <i>Rhizoctonia</i> —warm, wet weather.	Pathogens are soil-borne and enter roots through direct penetration or by wounds.	Seed into firm, mellow seedbeds; maintain balanced soil fertility; select fields with good surface and internal drainage; avoid planting if extended cool, wet weather is forecast.	
Phytophthora Root Rot (<i>Phytophthora megasperma</i>)	Taproots rot; yellow rotted areas later turn dark brown and may rot off; infected plants stunt, yellow; and may wilt and die.	Poorly drained soils during periods of extensive rainfall.	Fungus is soil-borne and becomes active during periods of excessive moisture.	Plant resistant varieties; properly prepare seed beds; maintain balanced soil fertility; provide adequate drainage.	
Fusarium Root Rot (<i>Fusarium</i> spp.)	Damage to roots varies from irregular brown rotted areas to complete destruction of root and crown; as symptoms progress plants yellow, wilt and die. Usually a problem in older stands.	Severe moisture or heat stress.	Fungus is soil-borne.	Maintain plants in vigorous growing conditions.	

ALFALFA DISEASES *Continued*

DISEASE	SYMPTOMS	ENVIRONMENTAL CONDITIONS FAVORING DISEASE	METHOD OF TRANSMISSION	RECOMMENDED CONTROL	SPECIAL NOTES
Downy Mildew (<i>Peronospora trifoliorum</i>)	Light green to yellow blotches appear on leaves; leaves twist and margins curl down; a pale violet downy growth occurs on underside of infected leaves.	Cool, moist weather in spring and fall. Germination occurs only in free water and optimum 64°F.	Pathogen overwinters systemically in shoots and crown buds; conidia are produced only in darkness and periods of high humidity; spread primarily by wind and splashing rain; new infections occur every 5 days.	Seed in spring; harvesting removes inoculum.	
Anthracnose (<i>Collectotrichum trifolii</i>)	Light to dark brown sunken leaves occur on stems and contain small, black, pepper grain bodies; bluish-black discoloration of crown appears; dead, straw-colored stems scattered throughout the field.	Warm, humid weather.	Fungus persists on crown and stems; spores spread by wind.	Plant resistant varieties.	
Potassium Deficiency (K)	Small, whitish-gray spots appear at margins of leaflets; areas between the spots turn brown and die; older leaves may turn pale yellow.	K deficiency appears after first cutting is taken.	Nonparasitic	Add K according to soil test recommendations.	See Extension Bulletin E-550, <i>Fertilizer Recommendations: Vegetable, Field Crops in Michigan</i> .
Manganese Deficiency (Mn)	Plants stunt; chlorosis occurs on younger leaves; interveinal tissues yellow, the veins remain green. Later, small, light-brown necrotic areas appear on the upper leaf surfaces.	Mn deficiency occurs in acid soils (pH 5.2 and below); heavy rains and hot, dry periods on acid soils will result in a pH around 5.0.	Nonparasitic	Add Mn according to soil test recommendations.	See Extension Bulletin E-550.

See also Extension bulletins E-1422, *Alfalfa Diseases I*, and E-1423, *Alfalfa Diseases II* for more information.

ALFALFA DISEASES *Continued*

DISEASE	SYMPTOMS	ENVIRONMENTAL CONDITIONS FAVORING DISEASE	METHOD OF TRANSMISSION	RECOMMENDED CONTROL	SPECIAL NOTES
Summer Black Stem (<i>Cercospora medicaginis</i>)	Large, circular ash gray spots appear on leaves; spots are surrounded by yellow halo; brown to black lesions appear on stem.	Warm, moist weather.	Pathogen lives in old stems; spores are wind-borne.	Plant resistant varieties; harvest at 1/10 bloom or earlier if leaf drop is severe.	Appears more after the first cutting. Not common in Michigan.
Leptosphaerulina (Lepto) Leaf Spot (<i>Leptosphaerulina briosiana</i>)	Small, rough, circular spots with tan centers, brown borders surrounded by yellow halos appear on the leaves.	Warm, moist weather.	Pathogen overwinters in leaf debris; spores are wind-borne to new leaves.	Plant resistant varieties; cut early if leaves are dropping.	Not common in Michigan.
Yellow Leaf Blotch (<i>Leptotrochila medicaginis</i> , <i>Pseudopeziza jonesii</i>)	Small, chlorotic spots appear on upper leaf surfaces; spots enlarge to chlorotic streaks and become yellow to orange fan-shaped blotches between veins at leaf edge; pycnidia or fruiting bodies appear on blotches.	Cool, moist weather. (45° to 70°F.)	Pathogen overwinters on old leaf surfaces; ascospores germinate and penetrate the host directly within 4 hours at 68°F.	Harvest early to reduce buildup of leaf infection.	
Rust (<i>Uromyces striatus</i>)	Dark, reddish-brown rust pustules form on leaves, petioles and stems; leaves on heavily rusted plants shrivel and fall prematurely; stems are infected when cutting is delayed.	Warm days, cool nights, free water on leaves and stems.	Spores are wind-borne.	Cut regularly to avoid problems.	

ALFALFA DISEASES *Continued*

DISEASE	SYMPTOMS	ENVIRONMENTAL CONDITIONS FAVORING DISEASE	METHOD OF TRANSMISSION	RECOMMENDED CONTROL	SPECIAL NOTES
Crown Rot (several fungi)	Tan to black crown discoloration occurs; rotted tissue intersperses with healthy tissue; crowns slowly deteriorate; stands gradually thin.	Factors that promote injury to crowns.	Fungi are saprophytic in soil and enter roots through wounds caused by environmental, mechanical or other means.	Cut when soil is dry; allow 8 to 10 in. of regrowth after last cutting; use good fertilizer management; do not graze stands.	
Fusarium Wilt (<i>Fusarium oxysporum medicaginis</i>)	Occur as irregularly shaped patterns in field; stems wither on one side of plant; leaves appear light green to bleached; colored streaks occur in tap root.	High soil temperatures.	Fungus survives in the soil and enters roots through wounds.	Plant resistant varieties.	
Verticillium Wilt (<i>Verticillium albo-atrum</i>)	Upper leaves wilt on warm days; leaves and stems become pale yellow, bleached and desiccated; light to dark brown streaks appear on tap root of stunted plants in field.	Cool, moist weather.	Fungus survives on crop debris and is seed-borne; spores are wind-borne and spread on blowing trash.	Plant resistant varieties if available.	
Common Leaf Spot (<i>Pseudopeziza medicaginis</i>)	Small, circular, black or brown spots occur on leaves; leaves turn yellow and drop as disease progresses.	Moist periods with cool to moderate temperatures (68°F).	Fungus survives on crop residue; spores are wind-borne.	Harvest at one-tenth bloom; destroy volunteer plants in fence rows; plant resistant varieties.	
Spring Black Stem (<i>Phoma medicaginis</i>)	Black, irregular spots occur on leaves and stems; stem lesions enlarge until lower stems appear black; young shoots die.	Cool, moist weather in May.	Fungus survives on crop residue.	Harvest at one-tenth bloom.	



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