

IPM Scout School
Guide to Laboratory Specimens
ALFALFA DISEASES

Seedling Health Problems

Name the pathogen(s) that cause(s) this disease:

Describe the symptoms of the disease:

Is it possible to determine specific causes of alfalfa seedling disorders in the field?
If so how?

Aphanomyces Root Rot

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

How can you control this disease?

Phytophthora Root Rot

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

Compare and contrast Aphanomyces and Phytophthora root rot.

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Violet Root Rot

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

Violet root rot is associated with which soil type? Does soil pH influence the severity of violet root rot?

Verticillium Wilt

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

What are factors that influence the expression of symptoms? When are symptoms commonly observed in alfalfa fields?

Fusarium Wilt

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

How might you distinguish between Verticillium and Fusarium wilt?

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Crown Rots/Decay

Name the pathogen(s) that causes this disease:

Describe the symptoms of the disease:

Crown rot can be a bioindicator of other problems. Can you name examples?

Spring Black Stem

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

The spring black stem fungus infects several plant parts. What are they? What type of weather conditions favor the development of spring black stem?

Root Knot Nematode

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

How would you distinguish between nodules (for N-fixation) and galls caused by the root knot nematode?

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Common Leaf Spot

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

How do leaf diseases affect alfalfa production?

Stemphylium Leaf Spot

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

Compare and contrast symptoms of Common and Stemphylium leaf spots.

Downy Mildew

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

Can you see signs of the pathogens? If so, what signs do you see and where do they occur?

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Alfalfa Mosaic Virus

Name the pathogen that causes this disease:

Describe the symptoms of the disease:

How is AMV moved about from plant to plant?

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SOYBEAN DISEASES

Brown Stem Rot

What pathogen causes the disease?

Describe the symptoms of the disease:

When are symptoms usually first noticed?

What symptoms will distinguish this disease from sudden death syndrome?

How can you control these diseases?

Sudden Death Syndrome

What pathogen causes the disease?

Describe the symptoms/signs of the disease.

What time during the growing season is sudden death syndrome most common?

What environmental conditions favor disease?

How do you control this disease?

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SOYBEAN DISEASES

Phytophthora Root Rot

What pathogen causes the disease?

Describe the symptoms of the disease:

When during the growing season can the effects of Phytophthora root rot be seen?

Where does the causal fungus survive?

What environmental conditions favor disease development?

How do you control this disease?

Why might the use of resistant soybean varieties not be effective in the control of this disease? How might you make the use of resistant soybean varieties a more effective control strategy?

Soybean Cyst Nematode (SCN)

What pathogen causes the disease? *Heterodera glycines*

Describe the symptoms/signs of the disease:

SCN survives in the soil as cysts. What are cysts?

How can you control this disease?

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Sclerotinia Stem Rot (White Mold)

What pathogen causes this disease?

Describe the symptoms/signs of the disease:

How does the pathogen survive?

What is the primary source of inoculum? What is the inoculum? Where does this inoculum infect?

How do you control white mold?

Septoria Leaf Spot

What pathogen causes Septoria leaf spot?

Describe the symptoms/signs of the disease:

In Wisconsin, why is Septoria leaf spot important? Because it causes severe yield losses? For other reasons? If the latter, what reasons?

In Wisconsin, how can you usually prevent the occurrence of Septoria leaf spot?

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SOYBEAN DISEASES

Green Stem Syndrome/Soybean Virus Diseases

What pathogen(s) cause(s) this disease?

Describe the symptoms/signs of the disease:

THOUGHT QUESTIONS: (Check your notes from lecture)

How might soybean plants acquire a viral pathogen?

How might you distinguish symptoms of a viral infection from injury from a herbicide such as dicamba?

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CORN DISEASES

Seedling Rot/Blight

What pathogen(s) cause(s) the disease?

Describe the symptoms of the disease:

Is there a particular pattern to the disease? If so, what?

What other disease/injury problems might be confused with this disease? How could you distinguish between seedling rot/blight and these other problems?

When are plants most susceptible to this disease?

What environmental factors favor disease development?

How can you control this disease?

Eyespot

What pathogen causes the disease?

Describe the symptoms of the disease:

What environmental factors favor disease development?

Where does the pathogen survive?

How can you control this disease?

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CORN DISEASES

Northern Corn Leaf Blight

What pathogen causes the disease?

Describe the symptoms of the disease:

Where does the pathogen survive?

Where are spores for secondary spread of the pathogen produced?

When is the disease the most serious (from the standpoint of yield loss)?

How do you control this disease?

Will crop rotation and debris management help control this disease? Why or why not?

Northern Corn Leaf Spot

What pathogen causes the disease?

Describe the symptoms of the disease. Compare and contrast these with the symptoms of northern corn leaf blight:

Where does this pathogen survive?

Where are spores for secondary spread of the pathogen produced?

How do you control this disease?

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CORN DISEASES

Gray Leaf Spot

What pathogen causes the disease?

Describe the symptoms of the disease:

To what other disease(s) can gray leaf spot (and other leaf spots in general) contribute?

What environmental factors favor disease development?

What cultural practices favor disease development?

How do you control this disease?

Genetic Ringspot

What causes the disease?

Describe the symptoms of the disease:

What type of pathogen might produce symptoms similar to those produced by genetic ringspot? How might you distinguish between whether you have genetic ringspot or disease caused by a pathogen?

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CORN DISEASES

Gibberella Stalk Rot

What pathogen causes the disease?

Describe the symptoms of the disease:

What other disease is caused by the same pathogen?

Where does the pathogen survive?

What cultural practice will favor this disease?

How can you control this disease?

Anthracnose Stalk Rot

Note: The pathogen that causes this disease also causes leaf blight as well.

What pathogens cause the disease?

Describe the symptoms of the disease:

What cultural practice will favor the disease?

How can you control this disease?

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CORN DISEASES

Root Lesion Nematode

What pathogen causes the disease?

Describe the symptoms of the disease:

What other disease of corn might be more severe in corn infected with root lesion nematode?

What pattern of disease might indicate that you have a root lesion nematode problem?

How do you control root lesion nematodes?

How can you prevent the spread of this pathogen?

Corn Smut

What pathogen causes the disease?

Describe the symptoms of the disease:

How do you control smut?

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Crazy Top

What pathogen causes the disease?

Describe the symptoms of the disease:

How do you prevent/control this disease?

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SMALL GRAIN DISEASES

Barley Yellow Dwarf/Red Leaf

What pathogen causes these diseases?

Describe the symptoms of the diseases:

How is the virus transmitted?

When is the plant most susceptible to infection?

What other problem might you confuse with this disease? How can you distinguish between the two?

How can you control these diseases?

Scab

What pathogen causes the disease?

Describe the symptoms/signs of the disease.

Where does this pathogen survive?

What other disease is caused by this pathogen?

How do you control this disease?

In what other way can this disease be a problem?

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SMALL GRAIN DISEASES

Take-All

What pathogen causes the disease?

Describe the symptoms of the disease:

What is weathering? What disease is often confused with weathering? How can you distinguish the two?

Where does the causal fungus survive?

What environmental conditions favor disease development?

How do you control this disease?

What is the impact of no-till practices on this disease?

Eyespot

What pathogen causes the disease?

Describe the symptoms of the disease. Compare and contrast these symptoms with those of take-all.

What environmental factors favor disease development?

How can you control this disease?

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SMALL GRAIN DISEASES

Smuts

What pathogens cause smut disease?

Loose Smut:

Stinking Smut (Common Bunt):

Describe the symptoms of both types of smuts. Compare and contrast the two diseases:

Describe the infection and development processes of the two smuts. Compare and contrast.

When is the best time to check for loose smut? Covered smut?

How do you control smuts? Compare and contrast strategies for loose and stinking smut.

Powdery Mildew

What pathogen(s) cause(s) powdery mildew?

Describe the symptoms/signs of the disease:

How do you control this disease? What control strategies won't work?

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SMALL GRAIN DISEASES

Septoria Leaf Blotch

What pathogen(s) cause(s) the disease?

Describe the symptoms of the disease:

What cultural practices favor disease?

What environment favors disease development?

How can you control this disease? Why doesn't use of resistant varieties always work?

Ergot

What pathogen causes the disease?

Describe the symptoms/signs of the disease:

How and where does the pathogen survive?

What is the primary inoculum of the disease and where is it produced? How is it disseminated?

What is the secondary source of inoculum? Where is it produced? How is it disseminated?

What may happen if you eat grain that contains ergot?

How are toxins produced by the ergot fungus used today?

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SMALL GRAIN DISEASES

Rusts

What pathogen(s) cause(s) the disease?

Describe the symptoms of the disease:

What is the alternate host for the wheat stem rust pathogen?

What is the alternate host for the oat rust pathogen?

Describe the pros and cons of eradicating barberry for control of stem rust of wheat (i.e., why won't barberry eradication totally control stem rust? How might barberry eradication aid in disease control?).

What is the most common method of control for cereal rusts?