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Viral diseases in small grains

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Viral diseases in small grains

Abstract

Last week the [Plant Disease Clinic](#) received the first sample of the year with symptoms typical of barley yellow dwarf virus. This disease can be seen on oats and wheat every year, and it is one of the major disease problems on oats in the state. This year yellow dwarf symptoms will probably be less severe than normal on oats because of the early planting that occurred.

Keywords

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Disciplines

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INTEGRATED CROP MANAGEMENT

Viral diseases in small grains

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[2] **Yellow dwarf virus of oats.**

Yellow dwarf is caused by a group of closely related viruses that are spread by several species of aphids. The disease can cause extreme stunting of plants and discoloration of the leaves. Leaf blotches that are yellow, orange, or red develop until entire leaves are covered. Plants along the edges of fields are usually affected first. Severely affected plants produce little or no grain. The virus can infect all cereal grains, corn, and grass weeds. The aphids that spread yellow dwarf viruses are more active during warm conditions in the late spring and summer. Plants infected in the seedling stage are the most severely damaged. Early-planted oats typically suffer less yield loss because they are older during the period of the greatest aphid activity.

On winter wheat, planting date has the opposite effect on yellow dwarf severity. Earlier-planted crops have more problems because aphids are still active during the seedling stage of the crop. Winter wheat planted after the Hessian fly-free date usually escapes fall infection by the virus. These crops can still be infected in the spring, but the impact of spring infection on winter wheat is usually minimal.



[3]

Patches of stunted, yellowed plants due to barley yellow dwarf virus in wheat.



[4]

Barley yellow dwarf virus in wheat, with healthy plants on the left.

Management of barley yellow dwarf virus depends on planting date and genetic resistance. Resistance is available in oat and wheat varieties, and new sources, including transgenic, are being investigated.

There are numerous other viruses that can affect small grain crops, but they are rarely reported in Iowa. In Kansas, wheat streak mosaic and soilborne wheat mosaic viruses can cause serious problems with the wheat crop. They cause stunting, yellowing, and either a streaking or mosaic pattern on the leaves. These viruses are likely to occur in Iowa but I have not encountered them to my knowledge.

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<http://www.ipm.iastate.edu/ipm/icm//ipm/icm/1999/5-31-1999/viralsmg.html>

Links:

[1] <http://www.exnet.iastate.edu/Pages/plantpath/pdcintro.html>

[2] <http://www.ipm.iastate.edu/ipm/icm//iydwarf.html>

[3] <http://www.ipm.iastate.edu/ipm/icm//iydfield.html>

[4] <http://www.ipm.iastate.edu/ipm/icm//iydcompare.html>

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