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SEED**

**Organic News
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Why Were My Oats So Bad?

By Matt Leavitt, Albert Lea Seed Agronomist



The 2014 growing season has been a challenging one, especially for oat production in southern Minnesota and northern Iowa. A prolonged wet spring combined with heavy rains and cooler than normal temperatures in June led to planting delays and set the stage for fungal infections.

If you or anyone you know grew oats in northern Iowa or southern Minnesota this year, you have no doubt heard that they were low yielding and poor standing with very low test weight. In the words of Mac Ehrhardt, co-owner of Albert Lea Seed, "I have been here for oat harvest since 1991, and the oats have never been this bad before." We have taken in some seed oats with test weights as low as 20 lbs. The culprit is crown rust.

What is Crown Rust?

Crown rust is a disease caused by a fungus in the genus *Puccinia*. Crown rust interferes with photosynthesis and impedes proper grain fill, which leads to harvest losses, lowered yields, light test weight, and lodging. Extreme infection can lead to premature death of the plant.

Crown rust forms during mild to warm sunny days with adequate moisture for dew formation on the plants. It is then spread via spores from infected plants to healthy plants. The spores can be blown hundreds of miles and still remain viable.

The disease attacks oats primarily and will not impact barley, wheat, or rye. It can be identified in the field by bright orange-yellow, small, oval-shaped pustules over the whole oat plant including leaves, stems, and panicles.

In 2014, crown rust has infested a majority of the oat acres across Minnesota, Iowa, North Dakota, South Dakota and, indeed, nationwide.

While crown rust itself cannot survive the winter, in the northern Midwest it can overwinter on buckthorn, its alternate host. The abundant rain this spring and the cooler-than-average summer created very favorable conditions for buckthorn infection by crown rust.

What Can I Do?

Sometimes the weather conditions are so conducive for the formation and spread of the disease that there is not much that can be done to combat it. Selecting oat varieties resistant to crown rust is an important control strategy. However, given enough time and inoculum, the disease can overcome native resistance. Breeding resistant cultivars is a constant job for small grains breeders as new races of the disease continue to develop.

Timely fungicide applications (Headline®, Stratego®, etc.) can provide protection against crown rust. Oats should be sprayed at flag leaf emergence. However, if rust pustules have formed on the flag leaf, it is too late. If the fungus is inside the plant, a fungicide application won't help. Fungicides serve as a protective measure before the disease enters the plant.

Planting oats as early as possible is another good cultural practice to reduce the risk of infection—though that was a challenging prospect in 2014!

Finally, controlling and eradicating buckthorn in groves, woodlands, and around dwellings where feasible is another possible way to contain the spread and minimize the severity of the disease.

One point to note regarding the 2015 oat crop: Crown rust will not survive on oat straw, so there is no need to manage the crop residue differently to reduce the risk of disease next year. Also, crown rust is not a seed-borne disease.

Links for more information on crown rust:

<http://www.ars.usda.gov/Main/docs.htm?docid=9919>

<https://www.ars.usda.gov/Main/docs.htm?docid=9757>

<http://www.agriculture.gov.sk.ca/Default.aspx?DN=6d68d85d-ab16-4ea9-95e9-1d5f69b5a1c8>



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