



Pest e-alerts



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Canola Disease Update

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With a dry fall and winter and serious outbreaks of insects in canola this year, diseases took a back seat in pest importance this year. Nevertheless, diseases did develop and the following observations were made in research plots and spring canola tours this year.

Aster Yellows

Aster yellows has been increasing in occurrence in my plots at Perkins and Stillwater, and was fairly widespread in southwestern Oklahoma. Aster yellows is a phytoplasma disease of canola that causes flower sterility. Flower buds remain green and fail to produce any seed, leaving a club-shaped stalk completely devoid of seed (Figure 1). Foliage of affected plants often takes on a red to purple color and severely affected plants are stunted. Sometimes only a part of the seed stalk is affected and these plants may be taller than normal plants. Phytoplasmas are wall-less bacteria spread by leafhoppers and the aster yellows phytoplasma is spread by the aster leafhopper. Leafhoppers are migratory insects that pick up aster yellows while feeding on infected plants. Once inside the leafhopper, the phytoplasma increases in the leafhopper and after an incubation period, it moves to the salivary glands where it is transmitted to healthy plants during feeding. Leafhoppers are phloem feeders and the phytoplasma colonizes the phloem causing general plant dysfunction. Phytoplasmas essentially behave like virus diseases. Interestingly, leafhoppers infected with aster yellows phytoplasma have been shown to be fitter (more vigorous) than non-infected it increases.



Figure 1: Aster Yellow

Aster yellows has a wide host range and is an economic problem in carrots and in ornamentals such as coneflower. Leafhoppers pick up the phytoplasma while feeding on infected cultivated plants or weed hosts such as dandelion and thistle. I have plots with up to 25% aster yellows, but levels in commercial fields have been less than 2%. Where levels of aster yellows are high, the disease is destructive because infected plants produce no yield.

Powdery Mildew

Powdery mildew is easy to identify by the white powdery growth on leaves stems and pods (Figure 2). It develops late in the season as the canola matures. Powdery mildews typically disrupt surface layers of plants cells causing affected leaves and other plant parts to desiccate and prematurely ripen. Powdery mildew has increased in canola over the last several years. The 2016 crop was severely affected and growers have complained about the white dust covering swathers working in severely diseased fields. A few growers this year sprayed fungicide for control of powdery mildew. There is little information on the yield effects of powdery mildew on canola. The prevailing thought is that it is a cosmetic problem that does not affect yield, but I have not seen or generated any data to support or refute this assumption. I rated a variety trial this year and found no differences in levels of powdery mildew. I plan on trying some late-season treatments next year.



Figure 2: Powdery Mildew

Black Leg

Black leg is a widespread fungal disease of canola in Oklahoma. The disease causes leaf spots (Figure 3) from spores released on infested stubble. The fungus then moves into the crown where it causes stem cankers that can girdle the plant and reduce yield. The dry fall and winter did not support early infection of the crop. Outbreaks of leaf spot were observed in north central Oklahoma in April after periods of rainy weather. However, the late disease development is unlikely to affect yield because the fungus does not have time to develop the yield damaging cankers before plants ripen. Levels of black leg on stems were very low in my plots where I am screening varieties and breeding lines for resistance to black leg.



Figure 3: Black Leg

Black Rot

Black rot is common in old canola fields and was widespread in 2017. Black rot is a bacterial disease of Brassica crops caused by the bacterial plant pathogen *Xanthomonas*. Other strains of *Xanthomonas* also cause disease on tomatoes, peppers, cotton, and recently corn in Oklahoma. Black rot causes yellow, v-shaped lesions on the edges of lower leaves of canola (Figure 4). The bacterium gains entry into the plant through the hydathodes, the pores on the edges of leaves that sometimes produce water guttation droplets. Because of the bright yellow lesions on leaves the disease is quite conspicuous. It can occur in the fall and be mistaken for black leg. Leaf spots from black leg are circular and not v-shaped, and generally lack the bright yellow color. Black leg lesions contain numerous black fruiting bodies of the fungus while black rot does not. On more susceptible Brassica crops such as cabbage, black rot invades the vascular system where it causes decay and reduced marketability. Canola apparently has resistance to black rot, which limits spread within the plant and the disease appears to be only a cosmetic problem on lower leaves. The big concern with black rot is the misidentification with black leg, particularly in the fall leading to unnecessary fungicide application.



Figure 4: Black Rot

Plant Disease and Insect Diagnostic Laboratory

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