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Canola Disease Update

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The canola crop is off to a good start this fall with adequate soil moisture in most production areas, which should greatly improve winter survival. In the past couple of years, early hard freezes and dry winters have made winter survival a challenge. However, when weather conditions are favorable for the crop, generally they also favor plant disease development. In visits to my plots this fall, I have observed only a low level of the leaf spot phase of black leg disease (Figure 1). Plant size in my plots is running small because they were replanted. Dr. Josh Lofton, OSU Cropping System Specialist, recently observed more severe levels of leaf spot (Figure 2) in his plots which had larger plants with more vigorous canopy development. Leaf spots are the first symptoms of black leg disease. The spores that cause leaf spot are produced



on infested stubble left on the soil surface from the previous crop. These spores are airborne and infect leaves from fall to spring during rainy weather. Generally, fall infections are more damaging because the development of stem cankers progresses slowly as the fungus grows from the leaves, through the petioles, and into the lower stem. If mild weather progresses in to the winter, we could see further disease development and more severe black leg.

Fig 1. Leaf spot on winter canola caused by the black leg fungus. The dark pepper-like specks in the spot are fruiting bodies of the fungus.



Fig 2. Increasing black leg severity on canola leaves from left to right. The fungus advances from the leaves, into the petiole, and finally the lower stem where it causes stem cankers that can reduce yield.

Management of black leg relies primarily on planting resistant varieties and less commonly on fungicide application. Fungicide application in the fall is targeted to protect against leaf spot development. Growers in the UK use a 10% infection threshold to recommend a fungicide application. Our results with fungicide sprays have resulted in improved yields in some, but not all trials depending on the fungicide used and the number of applications. Given the low current canola prices, our inability to identify a single application timing that is effective, and the inconsistent yield responses observed, I have been hesitant to make fungicide recommendations on winter canola.

Selecting resistant varieties is the most commonly used approach to managing black leg around the world. There are two types of resistances to black leg in canola. Major gene resistance, also called seedling resistance because it protects against leaf spot on young plants, is most effective. However, major gene resistance can be rendered ineffective by new races of the black leg fungus. The Round Up-Ready varieties we have tested to date do not have resistance to leaf spot and probably lack effective major resistance genes. We have identified seedling resistance in a few, conventional (non-Round-Up Ready) varieties and hybrids. The second type of resistance is adult plant resistance to canker development in the spring. This type of resistance is more stable but generally only partially effective. We have worked hard since 2010 to screen germplasm in the field to identify adult plant resistance. Results have been limited by dry conditions, poor winter survival, and a lack of a known susceptible check variety. Results suggest that most varieties and hybrids we grow have some level of partial resistance. I believe this because we have identified aggressive races of the fungus all around the state, but the impact of the disease has generally been minimal. We are currently increasing seed of a variety named 'Euro1' that we received from colleagues in France. 'Euro1' is reported to lack

both major gene resistance and adult plant resistance. We hope that including this variety in future field trials will help us better identify adult plant resistance.

Dr. Richard Grantham - Director, Plant Disease and Insect Diagnostic Laboratory

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