

Canola Black Leg Update

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Black leg disease of canola has become widespread in Oklahoma, particularly where canola has been grown the longest. The disease causes leaf spots (Fig. 1a) which progress to cause cankers on lower stems (Fig. 1b) that may girdle plants causing lodging and reduced yield. The stem phase of the disease is relatively slow in development and it is thought that leaf spots must appear early in crop development (in the fall) for the cankers to fully develop and cause damage before harvest in June. Recent years of hot and dry weather in the summer and fall has apparently resulted in a delay in leaf spot appearance until the spring and a failure of stem cankers to reach damaging levels by harvest. This has been one of the few benefits of the recent drought!



Fig 1. (a) Leaf spot phase of black leg disease. Tiny specks in spots are fruiting bodies that produce tiny spores (conidia) that move short distances with water. (b) Stem canker phase of black leg disease. Cankers may girdle stems and reduce yield.

There are two types of spores produced in the black leg disease cycle. Ascospores (Fig. 2) are relatively large spores that are produced on infested stubble (Fig. 3) as a result of sexual recombination. Ascospore ripening occurs on stubble over a period of time and is favored by moderate temperature and rainfall. When mature, ascospores become airborne during rain events and move from stubble left in old fields into nearby new fields where they cause leaf spots. The second spore type (conidia) are tiny spores produced clonally on leaf spots, stem cankers, and on stubble. They are produced in sticky droplets and moved only short distances in water (Fig 4). They probably have little importance in causing disease in new fields where crop rotation has been planted. In the lab, we have to would canola plants to get infection by conidia.



Fig 2. Ascospores produced on canola stubble become airborne and cause leaf spots in new canola fields.

Fig 3. Fruiting bodies of the black leg fungus on canola stubble. Both spore types are produced on stubble.



This year and last year, I have been periodically monitoring ascospore development on canola stubble that we have collected and left in piles outdoors. Last year we could not find mature ascospores in the fall. This year we are seeing a few mature ascospores from stubble collected from central Oklahoma. Apparently the increased rainfall and more moderate temperatures this summer have supported earlier ascospore ripening this year compared to last. This could mean an increased risk for leaf spot infections in the fall and black leg pressure in the spring. Fungicides are registered for control of canola black leg and applications are generally

recommended in the fall. We have observed reductions in black leg following applications of Proline (Prothioconazole) and Quadris (azoxystrobin) in the fall, but yield responses have not been significant. We will have trials out again this year.

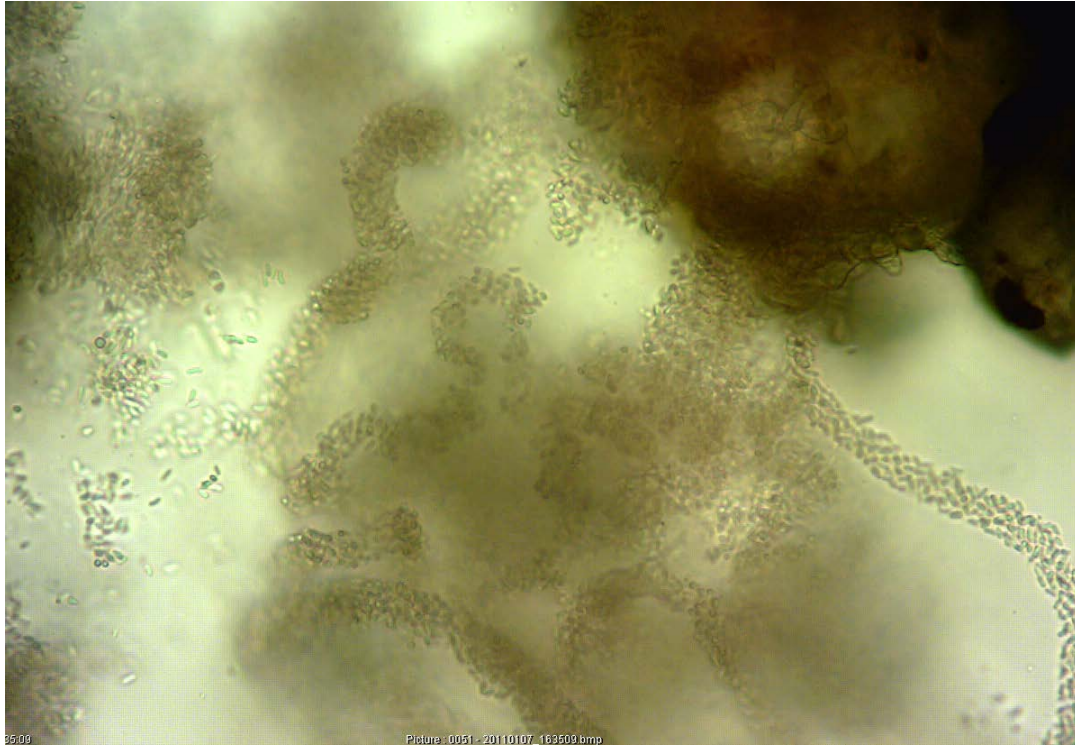


Fig 4. Masses of tiny, clonally produced, conidia released from fruiting bodies produced on leaf spots, cankers, and stubble.

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