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QUESTIONS ABOUT SPRING POPULATIONS OF HESSIAN FLY ASSOCIATED WITH INFESTED VOLUNTEER WHEAT

Doug Johnson, Extension Entomologist

I have received questions about the possibility of problems with the spring population of Hessian fly resulting from large areas of volunteer wheat that appear to be heavily infested with the pest.

Here is the situation described to me. In some areas a flush of volunteer wheat emerged in early to mid-September. This was probably linked to seed laying dormant over the dry summer, then germinating when rains finally appeared in early September. This early emergence was ideal for infestation by the Hessian fly. This has raised several questions regarding potential movement of Hessian flies from volunteer wheat into production fields.

1) Did the fall infestation of volunteer wheat have any affect on infestation of our production wheat in the Fall?

The volunteer wheat was heavily infested because it emerged well before the “fly free” date so it was exposed for a long time to egg lay by the Hessian fly adults. The eggs laid in the volunteer wheat hatched into maggots which fed on that wheat and when grown, changed into pupae (called Flax seeds) to survive the winter. The resulting adults will not be active until spring, they had no impact on the Fall-seeded production wheat. In the south there appear to be three generations rather than the two that are normal for the Midwest. In this case volunteer or cover crop wheat infested in August or early September could complete an additional generation and be available to lay eggs on our production wheat in early October. Whether or not this occurs in Kentucky has not been researched.

2) Would treating the infested volunteer wheat with an insecticide in the fall have controlled the problem?

If the volunteer wheat had been treated with a foliar insecticide shortly after it emerged, then some suppression of Hessian fly may have occurred; however, once the fly eggs had hatched and the maggots had moved under leaf sheathes, insecticidal control would not be effective.

3) Would mowing or killing volunteer wheat in the fall have controlled the infestation?

Mowing would have little or no effect because the plants would still be alive and growing.

Killing the volunteer wheat soon after emergence would have controlled this population but this would have had to be done BEFORE the Hessian fly larvae had changed into the flaxseed stage. Once in the flaxseed stage, the insect does not feed and only uses the plant for cover. Since the flaxseeds are usually very near ground level, mowing is unlikely to remove their cover.

4) Will the infestations on volunteer wheat increase the Hessian fly problem in the spring?

This is the toughest question to answer. I have no way of knowing how widespread this problem may be. Certainly when the adults emerge from the flaxseed this spring they will seek a host upon which to lay their eggs. The volunteer wheat is likely to be unthrifty so these insects will seek more robust

hosts. Certainly our production wheat is likely to “fill the bill”.

The insect is not a great flyer but it can fly and certainly can drift on the breeze. No one can say exactly how far they might move, a “best guess” is that production wheat within 400 yards of heavily infested volunteer wheat is at increased risk from a spring infestation. Wheat is the principal host plant of the Hessian fly but it may also be found on rye, barley and other wheat-related species.

5) Can a spring infestation be controlled with a foliar insecticide?

Yes, but it isn't easy. Remember the foliar insecticide must kill the adults or the very young maggots before they move under leaf sheaths. Information from North Carolina and Georgia indicates that a well-timed application of a long residual synthetic pyrethroid insecticide will control the adults and young larvae. Information from North Carolina (see link below) indicates that Warrior® is a preferred product. The major question then becomes *When should I spray?*

There are two ways to help time treatments if infestations in volunteer wheat are heavy:

1) Check for the flaxseed (pupal) stage in infested shoots of volunteer wheat. Squeeze them, if they are creamy white it is too early to treat. If they appear orange they are about ready to emerge as adults. An application to a field at increased risk might be warranted. This is likely to occur some time in March but is completely dependent upon weather, specifically temperature.

2) One can look for Hessian fly eggs on the leaf but this will be very time-consuming. The tiny, almost transparent eggs are laid end to end in a row between leaf veins on the upper surface of wheat leaves. Treatment may be justified if there are 4 or more eggs per leaf.

Below is a link to a Hessian Fly in Wheat website maintained by my colleague Dr. John Van Duyn of North Carolina State University. This site addresses Hessian fly in general. However, if you look in the “Management” section, at the second to last paragraph, just after the five numbered reasons for early season control, you will see his discussion of controlling spring Hessian fly problems.

<http://www.ces.ncsu.edu/plymouth/pubs/ent/HFLYupdate03.html>

There is no really good answer to this question. It does however serve to make the point that the best control is prevention. Never allow a “green bridge”. Destroy volunteer wheat and avoid using wheat as a cover crop.

PS: On Friday, 08 Feb 2008, I collected twelve flaxseed stage Hessian fly from the borders of my test plots. Upon applying the squeezing technique, I found that all of them were still milky white. dwj



Mark your Calendar

**University of Kentucky
Wheat Field Day**

***May 20, 2008
UKREC Farm
Princeton, KY 42445***

***For More Information
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