

# Insect Pest Management Decisions In Preparation For Planting Wheat

DR. DOUG JOHNSON AND DR. DON HERSHMAN

PRINCETON, KY.

There are three insects (one is a group of insects) and a mite that pose a threat to wheat in the fall. The “cereal” aphids are known for their ability to move the yellows viruses that cause Barley yellow dwarf. This is actually a large group of aphid species. Generally there are five species common in Kentucky, of which the bird cherry-oat aphid is the most important. The wheat curl mite may also cause considerable damage to wheat due largely to its ability to move wheat streak mosaic virus. The other two insects, the Hessian fly and the fall armyworm, are problematic due to direct feeding on the plant. Although this is a quite diverse group of pests, all of them are affected by several common cultural concerns.

## Cultural Concerns:

All of these fall pests have two important aspects in common: short term weather, especially temperature and the “green bridge”. All insect development, that is, the rate at which they grow, feed, move and reproduce, etc. is largely governed by temperature. Additionally, in general, once a hard frost has occurred, and daily average temperatures fall below about 50°F, these insect pests will be less important. In a warmer fall that lasts later into the year, these pests are likely to have a greater impact on the crop. Though there is nothing we can do about the short term weather, it is important that we understand when our crops are at greater risk to pests because of weather.

Another important cultural concern is the presence of a “green bridge”. This “green bridge” is generally considered to be the presence of a host plant (usually volunteers of a crop plant) present throughout a break period from the previous crop to the emergence of the new crop. In wheat, this is most likely to occur in areas where wheat is grown as a single crop for most of the year, with only a short time between crops (e.g. Great Britain, American dry land west). In Kentucky, we usually have a full summer between our wheat crops and our fields are often rotated. These items usually prevent the “green bridge”, but not always.

In the past several years, we have witnessed the presence of considerable over-summering volunteer wheat, and volunteer corn that has germinated after harvest. Both of these crops can provide the makings of a green bridge or an early start-up, for one or more of our fall pests. In particular during the drought of 2007, we saw considerable volunteer wheat from seed that had laid dormant during the hot dry summer, but germinated in early September, providing a host long before production wheat was planted. Additionally, in 2007 there was a marked increase of volunteer corn that emerged along with the production wheat. Both of these volunteer hosts, occurred in a fall that lasted quite late into the year, and the volunteers were often within fields of production wheat or very near.

Volunteer wheat and corn can serve as host plants for all of these fall pests. All of these pests can feed and reproduce on these crops

and both corn and wheat can serve as a reservoir for the aphid and mite born viruses that result in barley yellow dwarf and wheat streak mosaic.

Volunteer hosts particularly wheat that are present through the summer or well before the planting and emergence of our crop allows these pests to continue their life cycles through the summer, or to get a head start on their fall population development. Preventing/removing these hosts should play an important role in preventing problems from these pests. For example, in every case that we have seen the wheat curl mite and the resulting damage from wheat streak mosaic, has been in association with volunteer wheat. In speaking with colleagues in Nebraska, the presence of volunteer wheat is nearly always the cause of this problem. Additionally, in 2007 when a large population of fall armyworm was noted, many production wheat fields which contained volunteer corn were infested. Fortunately, fall armyworms prefer corn and generally stayed on the corn plants within the wheat field! This situation may not have ended so well had the pest in question been the wheat curl mite (and we would not have known this until wheat streak mosaic symptoms showed in the spring).

Certainly it is not possible to remove all alternative hosts, particularly during the summer. Corn, for example, is a crop during the summer and in Kentucky we generally plant wheat following a corn crop. But even with corn, we should strive for a break period between corn harvest and wheat emergence where there are no live plants (especially grass weeds, e.g. Johnson grass). Additionally, there are many other wild grasses and grass weed hosts on which these pests can live. However, managing to eliminate these crop plants as volunteers in production fields, as early a possible, especially in the fields that are planned for wheat production, can greatly aid in reducing the impact of these pests.

## So what can/should you do?

1. Rotate fields in which wheat is planted to another crop.
2. Maintain good grass weed control in fields to be planted to wheat.
3. Set your combines to reduce seed loss as much a possible.
4. Consider controlling grass weeds and volunteer grass crops in production wheat fields.
5. Plant your production wheat after the Hessian fly free date.

A concluding note about controlling volunteer crops; In this issue, Dr. Jim Martin has provided information on control of these crop as weeds. Please read this article. Just remember, from the insect management standpoint, these crops must be dead, not dying, to prevent pest build up. Techniques that do not kill the plants (mowing, for example) will not work. Techniques that kill the plants slowly will allow the pests to remain until the host plants are dead. Δ

*Dr. Doug Johnson is Extension Entomologist and Dr. Don Hershman is Extension Plant Pathologist both with the University of Kentucky at Princeton.*