

Plant Disease and Insect Advisory



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Bird Cherry Oat Aphids in Wheat: To Control or Not to Control

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Bird cherry oat aphid numbers have been increasing in wheat during the past several weeks in some parts of Oklahoma. As populations become more visible, questions will be asked about the need for control.

Research conducted by Dr. Kristopher Giles (OSU) and Dr. Norman Elliott (USDA-ARS) has revealed that bird cherry oat aphids DEFINITELY cause much more yield loss to forage and grain than we previously believed. Bird cherry-oat aphid also is a vector of Barley Yellow Dwarf Virus, which can also reduce yield. Despite that information, you will be hard pressed to find any treatment recommendations for this insect in the southern

hard red winter wheat belt.

This spring we are seeing aphid buildups in some wheat fields that are reminiscent of those seen in 1997, when populations were so dense, the wheat plants were sticky with honeydew and aphid densities exceeded 500+ aphids per linear foot of row. A producer is very likely to be concerned about such a build-up.

What are my thoughts and suggestions regarding control of Bird cherry oat aphid in winter wheat?

- Bird cherry-oat aphid causes very little, if any visible damage and populations are usually controlled by weather, parasites, predators, and disease; therefore infestations may go unnoticed.
- Research information provided by Drs. Giles and Elliott suggest that BCO is equally as damaging to wheat yield as is the greenbug. Data from studies conducted in the northern grain producing states of South Dakota, Minnesota, and North Dakota on spring wheat have also shown that it causes yield loss, particularly if the wheat has not yet reached the boot stage.
- The data shows that if populations were to exceed 20 aphids per tiller BEFORE boot, (400 aphids per foot of row) for 10 days, a 5% yield loss could be expected. If populations exceeded 40 aphids per tiller for 10 days, (800 per foot of row) BEFORE boot, a 9% yield loss could be expected.

So where does that leave us?

My suggestion is as follows:

Aphids are preyed upon by tiny wasp parasitoids, which sting them and lay an egg inside of the aphid. As the wasp larva develops inside the aphid, it causes the aphid to become a “mummy”. Look for the presence of mummies (they will be light tan colored) on wheat stems. If more you see mummies on at least 7 of 25 stems, don’t treat because parasites are likely working on the other aphids as well.



If mummies are not evident, and a producer is trying to decide whether to treat, use the following steps to determine if a field should be treated:

Count the number of aphids on 25 individual tillers. Determine a potential **Yield Loss** from the aphids. Then determine your **Crop Value**, and your **Control Costs**. Use those numbers to estimate **Preventable Loss**. If **Preventable Loss** exceeds **Control Costs**, then Treat, otherwise, Do Not Treat.

- Step 1: Estimate **Yield Loss**: _____
 - Total # aphids _____ /25
 - = average # aphids/tiller _____
 - **Yield loss estimate**: = **0.00** if aphid counts are less than 20 per tiller
0.05 if aphid counts are 20-39 aphids per tiller
0.09 if aphid counts are 40 or more

- Step 2: Estimate **Crop Value** \$ _____ /acre
 - Yield potential/acre # _____ bushels/acre
 - value of grain per bushel $\underline{\times}$ \$ _____ per bushel
 - = **Crop Value** \$ _____ per acre

- Step 3: Estimate Control Cost \$ _____ /acre
 - Insecticide cost \$ _____ /acre
 - Application Cost $\underline{+}$ \$ _____ /acre
 - = **Control Cost** \$ _____ /acre

- Step 4: Estimate **Preventable Loss**
 - **Crop Value**/acre \$ _____
 - **Yield Loss** from aphid $\underline{\times}$ \$ _____
 - = **Preventable Loss** \$ _____

IF **Preventable Loss** \$ _____ is greater than **Control Cost** \$ _____ **TREAT**
 IF **Preventable Loss** \$ _____ is less than **Control Cost** \$ _____ **DON'T TREAT**

The bottom line is that you shouldn't push the panic button. Natural enemies can reduce aphid numbers rapidly, so give them some time to work. If they are not present, use the guidelines I outlined before deciding to spray.

Wheat Disease Update - Oklahoma

Bob Hunger, Extension Wheat Pathologist



Wheat soilborne mosaic virus (WSBMV). In many years, WSBMV often is being “left behind” by this time of year because wheat plants tend to “out-grow” the virus as temperatures warm above 75 degrees. However, the cool temperatures we’ve had these last couple of weeks have extended or in some cases have increased the severity of symptoms. This is evident in Gene Krenzer’s variety demonstration plot and our breeder screening nursery here at Stillwater. Symptoms also were observed in the Carver/Krenzer plots just north of the intersection of highways 51 and 74 near Marshall. Again, WSBMV is not a disease that should be of concern because of the multitude of good varieties

that are resistant to this disease. However, on a susceptible variety, WSBMV can decrease yields by as much as 70%.

Leaf and stripe rust/foliar diseases. Still no reports or observations of significant leaf rust or stripe rust in Oklahoma. Craig Siegerist (my technician) traveled on April 4 from Stillwater to Chickasha to Minco to Kingfisher to Crescent to Marshall and then back to Stillwater, and saw no leaf or stripe rust. He did see some scattered symptoms of tan spot/septoria on lower leaves, and heavy moderate to heavy powdery mildew at Marshall and Crescent. We also have not found pustules on wheat here at Stillwater. For the most part, the wheat in this central-area of Oklahoma is at the growth stage where the flag leaf is just emerging or has emerged (about growth stage 8).



Wheat Tan spot



Aphids/barley yellow dwarf virus (BYDV). Aphids are heavy in many locations. On the trip described under foliar diseases, Craig found heavy aphid infestations at Chickasha, Crescent, and east of the intersection of highways 74 and 51 (east of Marshall). At these locations, symptoms of BYDV were evident, and Craig observed circular spots killed by the aphid/BYDV complex. More moderate aphid infestations were seen at Minco, Kingfisher, and at Marshall, with symptoms of BYDV also evident but not as striking.

Reports from other states - Arkansas. Dr. Gene Milus (wheat researcher in Arkansas) indicated to me on March 31 that WSBMV symptoms were light in his trials, that his tan spot plots had heavy symptoms, and that the wheat was later than normal but overall, pretty healthy. He had seen some aphids, but no BYDV, leaf rust or stripe rust.

Reports from other states – Texas. Dr. Art Klatt just returned from the south Texas plots and indicated the same information reported in the last advisory, that is, there are heavy infestations of both stripe rust and leaf rust. I'll send more information as it is received.

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