

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

*Tom A. Royer, Extension Entomologist*

Greenbug and 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 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 similar to 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.

For greenbugs, we have the **Glance 'n Go** System for sampling and estimating treatment thresholds. The information can be accessed through the web site <http://www.pswcrl.ars.usda.gov/gbweb/index.htm> and is attached at the end of this document as well.

Simply estimate the treatment thresholds by using the aphid threshold calculator, and print off the form. If you want to bypass that calculator, as a general rule of thumb you can print off a **Glance 'n Go** form for spring infestations of 4 or 6 greenbugs/tiller and use it to sample your fields.



**Bird Cherry-Oat Aphid**

### ***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 almost 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 from BCOA**: \_\_\_\_\_
  - Total # aphids \_\_\_\_\_ / 25 stems = average # aphids/tiller \_\_\_\_\_
  
- **Step 2:** Estimate **Crop Value** /acre
  - Yield potential = # \_\_\_\_\_ bushels/acre
  - Grain Value = \$ \_\_\_\_\_ per bushel
  
  - Crop Value** = Yield potential x Grain Value = \$ \_\_\_\_\_ per acre
  
- **Step 3:** Estimate Control Cost:
  - Insecticide cost = \$ \_\_\_\_\_ /acre
  - Application Cost = \$ \_\_\_\_\_ /acre
  
  - Control Cost** = Insecticide Cost + Application Cost = \$ \_\_\_\_\_ /acre
  
- **Step 4:** Estimate **Preventable Loss**
  - **Crop value** = \$ \_\_\_\_\_ /acre
  - **Yield Loss from BCO** = \_\_\_\_\_
    - 0.00** if counts are less than 20/tiller
    - 0.05** if counts are 20-39 aphids/tiller
    - 0.09** if are 40 or more/tiller
  
  - Preventable Loss** = Crop value x Yield loss estimate = \$ \_\_\_\_\_

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.

## Upcoming issues

Dr. Bob Hunger is currently evaluating the wheat leaf rust and stripe rust situation in Oklahoma. An update and control recommendations are coming soon.

## Upcoming events

**April 18, 2005:** Grower meeting at Caddo-Kiowa Tech. Center in Ft. Cobb. Contact the Caddo County extension office for details.

## Wheat Field Days

**April 27 – Menko – 10:00 AM**

**May 4 – Elk City – 9:00 AM**

**May 5 – El Reno – 10:30 AM**

**May 9 – Alva – 6:00 PM**

**May 17 – Woodward – 8:00 AM**

**May 20, 2005 – Lahoma field day, Lahoma Research Station – Time T.B.A.**

*Contact county extension offices for directions and agenda's.*

*We are in the process of posting variety signs at our trial locations. Variety trial plot plans can be downloaded at <http://www.pss.okstate.edu/wheat/index.htm>*

## Subscription information

The *Wheat Production Newsletter* is published in electronic format on an as needed basis throughout the year. To receive an electronic copy in pdf format, send an email with **subscribe** as the subject line to [jeff.edwards@okstate.edu](mailto:jeff.edwards@okstate.edu)

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Dr. Jeff Edwards  
Small Grains Extension Specialist, Oklahoma State University

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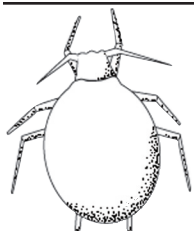
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# Glance 'n Go Sampling for Greenbugs in Winter Wheat

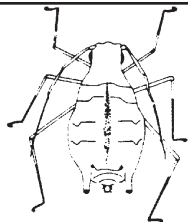
Prepared by  
Tom A. Royer  
and K.L. Giles,  
Oklahoma State  
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and N.C. Elliott,  
USDA-ARS,  
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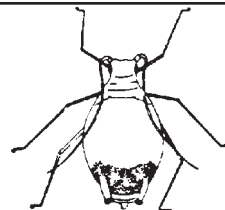
Treatment Threshold = 4 Greenbugs/Tiller  
Economic Thresholds for January - May



**Mummy (Parasite)**  
Tan, bloated body



**Greenbug**  
Green with dark stripe down back



**Bird Cherry-Oat Aphid**  
Olive-green with red patch on back of body

- ▶ To sample the wheat field, use a “zig zag” or “W” pattern and walk at least 15 steps (about 30 foot) between stops.
- ▶ Carefully pull and examine 3 tillers (stems) per stop, taking one tiller from the left, right, and front.
- ▶ At each stop, mark the circle ● if you find a mummy on that infested tiller. Mark the box with an X☒ if the tiller has one or more live greenbugs on it.
- ▶ Keep a running total of tillers with mummies and infested tillers. After each set of 5 stops, look at the number of mummies and infested tillers and follow the decision rules in the columns.

▶ **Mummies Column:**

- ▶ If the number of tillers with mummies exceeds the number in the mummy column, **Stop Sampling, and DO NOT TREAT.**
- ▶ If the number of tillers with mummies is less than the number in the mummy column, use the **Infested Tillers** columns to make a decision.

▶ **Infested Tillers Column:**

- ▶ If the number of infested tillers is less than or equal to the number in the Don't Treat Column, **Stop Sampling, and DO NOT TREAT.**
- ▶ If the number of infested tillers is falls within the number range in the Keep Sampling Column, **KEEP SAMPLING.**
- ▶ If the number of infested tillers is equal to or greater than the number in the Treat Column, **Stop Sampling, and TREAT.**
- ▶ If the “Stop Sampling” box is reached and a decision is not made: **Recheck the field in 2-6 days.**

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Field 1		Date					Spring, Threshold = 4			
Sample ▼	Stop every 30 ft. and look at 3 tillers					Total tillers with 1 or more greenbugs ☒	● Mummies      ☒ Infested Tillers			
	Stop 1	Stop 2	Stop 3	Stop 4	Stop 5		Don't Treat ▼	Don't Treat ▼	Keep Sampling ▼	Treat ▼
Tillers 1-15 ▶	○ □ □	○ □ □	○ □ □	○ □ □	○ □ □	▶ /15 ▶	4 or more	6 or less	7-13	14 or more
Tillers 16-30 ▶	○ □ □	○ □ □	○ □ □	○ □ □	○ □ □	▶ /30 ▶	4 or more	16 or less	17-24	25 or more
Tillers 31-45 ▶	○ □ □	○ □ □	○ □ □	○ □ □	○ □ □	▶ /45 ▶	5 or more	27 or less	28-34	35 or more
Tillers 46-60 ▶	○ □ □	○ □ □	○ □ □	○ □ □	○ □ □	▶ /60 ▶	6 or more	37 or less	38-44	45 or more
Tillers 61-75 ▶	○ □ □	○ □ □	○ □ □	○ □ □	○ □ □	▶ /75 ▶	7 or more	48 or less	49-55	56 or more
Tillers 76-90 ▶	○ □ □	○ □ □	○ □ □	○ □ □	○ □ □	▶ /90 ▶	8 or more	58 or less	59-65	66 or more

Stop Sampling Resample in 2-6 days

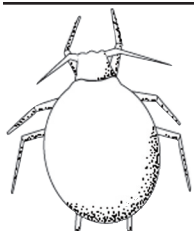


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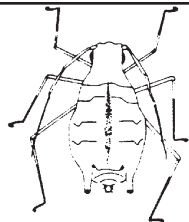
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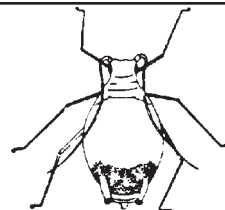
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- ▶ If the number of infested tillers is equal to or greater than the number in the Treat Column, **Stop Sampling, and TREAT.**
- ▶ If the “Stop Sampling” box is reached and a decision is not made: **Recheck the field in 2-6 days.**

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Field 1	Date	Spring, Threshold = 6					Total tillers with 1 or more greenbugs ☒	● Mummies      ☒ Infested Tillers			
		Stop 1	Stop 2	Stop 3	Stop 4	Stop 5		Don't Treat ▼	Don't Treat ▼	Keep Sampling ▼	Treat ▼
Tillers 1-15 ▶		○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	▶ /15 ▶	4 or more	7 or less	8-15	N/A
Tillers 16-30 ▶		○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	▶ /30 ▶	4 or more	19 or less	20-28	29 or more
Tillers 31-45 ▶		○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	▶ /45 ▶	5 or more	31 or less	32-40	41 or more
Tillers 46-60 ▶		○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	▶ /60 ▶	6 or more	43 or less	44-52	53 or more
Tillers 61-75 ▶		○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	▶ /75 ▶	7 or more	55 or less	56-65	66 or more
Tillers 76-90 ▶		○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	○ ○ ○ ☐ ☐ ☐	▶ /90 ▶	8 or more	68 or less	69-77	78 or more
		Stop Sampling			Resample in 2-6 days						

