



# Current Report

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## The Cereal Aphid Expert System and Glance 'n Go Sampling for Greenbugs: Questions and Answers

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### What is the Cereal Aphid Pest Management Expert System?

The Cereal Aphid Pest Management Expert System is a set of computer programs designed to help the user manage cereal aphids in winter wheat. It was developed through the cooperative efforts of the USDA Agricultural Research Service, Site Specific Technology Development Group of Stillwater (SST), and Oklahoma State University through a grant provided by the Oklahoma Center for the Advancement of Science and Technology (OCAST). To access the Cereal Aphid Pest Management Expert System, go to the Department of Entomology and Plant Pathology website at: <http://entopl.okstate.edu/>, select "Agriculture Models" then "Cereal Aphids Pest Management".

This expert system has a Greenbug Economic Threshold Calculator, which will calculate a treatment threshold for greenbugs based upon data that the user provides. It also allows the user to print a **Glance 'n Go** sampling form that can be used for multiple fields. Treatment thresholds that are calculated by this expert system are precise because it uses historical weather data to predict growth rates of greenbug populations as it calculates treatment thresholds. In addition, it has an "Insecticide Selection" helper, an "Aphid Identification" helper, and a "Natural Enemy" information module.

### What is Glance 'n Go Sampling?

The **Glance 'n Go** sampling system for greenbugs is designed to help the user accurately and rapidly sample wheat for greenbug infestations. It is based upon data taken in more than 100 wheat fields in Oklahoma over a two year period. **Glance 'n Go** requires the field scout to keep track of the number of tillers that are infested with greenbugs instead of counting their actual numbers. This strategy works well to find if the number of greenbugs is below or above a set treatment

threshold. It is a fast, easy, and proven technique for sampling insects. The **Glance 'n Go** sampling system can reduce sampling time by 25% or more, yet is just as reliable as directly counting the insects in the field.

### How will Glance 'n Go benefit my wheat production operation?

The research shows that greenbug infestations can cause economic loss long before they cause visible injury to the wheat plant. **Glance 'n Go** is designed to SAVE a wheat producer TIME and MONEY. By checking a winter wheat field with this system, a grower can quickly detect greenbug infestations and make control decisions based upon the value of the crop and the costs needed to produce it. This system is a significant step forward for controlling greenbugs in winter wheat.

### Why do I have to use a different sheet for fall and spring?

The **time of year** is important because research shows that in the fall greenbugs are distributed within the field in a different pattern compared to the spring. In the fall, greenbug outbreaks usually develop from winged individuals that fly into fields from other crops or grasses. Spring infestations typically develop from existing greenbugs that successfully overwintered in the wheat field.

### Why do I have to calculate a treatment threshold?

The **treatment threshold** is based upon the yield loss caused by greenbug feeding, the cost of control, and the value of the wheat crop. The estimated yield loss caused by green-

bugs was determined from research conducted in Oklahoma over a four year period. The other two factors, control costs and wheat value can change from year to year, field to field, and producer to producer. For example, in one year, wheat may be worth \$2.20 a bushel and in another year it may be worth \$4.00 per bushel. The control cost can vary because it is based upon the price of the pesticide that you choose, and the cost of the application. A producer who owns spray application equipment could spray a field at a lower cost per acre than a producer who pays for a custom application. The treatment threshold in **Glance 'n Go** accounts for all of those factors and reflects their value.

### **Does the treatment threshold work for wheat at different stages of growth?**

The treatment threshold used in **Glance 'n Go** can be used on wheat only after it reaches the 4-leaf stage. IT IS NOT APPROPRIATE TO USE IT ON SEEDLING WHEAT, BECAUSE GREENBUGS CAN KILL SEEDLINGS. Results showed that once the wheat plant reaches the 4-leaf stage, the amount of injury caused by greenbugs is independent of plant height or other factors. The research used to develop this system provided no reason to adjust greenbug treatment thresholds based upon the size of the plant.

### **Does Glance 'n Go work for other cereal aphids?**

**Glance 'n Go** is designed only for the greenbug, which is the most important aphid pest of wheat in Oklahoma. Research is being conducted to determine the amount of yield loss caused by the bird cherry-oat aphid. When the research is completed, **Glance 'n Go** may be modified to include both aphids.

### **Does Glance 'n Go account for natural enemy activity?**

The latest version of **Glance 'n Go** accounts for activity by the parasitic wasp *Lysiphlebus testaceipes* on greenbugs. It does so by accounting for presence of mummies in the field. Although ladybird beetles can dramatically reduce greenbug numbers, predicting their impact on greenbug numbers has proven to be more difficult, and at present, does not hold much promise for use in Oklahoma.

### **Why do I have to walk at least 15 paces between samples?**

The **Glance n' Go** system will accurately evaluate a field if directions for collecting samples are followed. That includes taking a representative sample of the field. To assure that representative samples are taken, the sampler should; (1) not look at tillers before they are collected and (2) sample a large portion of the field. Taking 15 paces between samples increases the odds that the field is being adequately sampled. Large fields (larger than 100 acres) should be regarded as two fields and sampled separately to make a decision. Remember, this tool is only as good as the information used to make a decision. Shortcuts will make this sampling tool much less useful!

### **Where can I get more information?**

Contact your local County Extension Office. Extension Educators can access the **Glance 'n Go** system and are trained in its use. You can also obtain a **Glance 'n Go** scouting form from the Entomology and Plant Pathology website at <http://entoplp.okstate.edu/> by selecting "Agriculture Models" then "Cereal Aphids Pest Management" and following instructions for printing a copy.

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