

# 2020 Wheat Insect Control Recommendations

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## Introduction

Many farmers in Tennessee use wheat as a double-crop with soybeans. As with any crop, wheat has several insect pests that may reduce yields if not effectively controlled in the field. Yields can be improved if more producers take time to inspect their fields during the growing season for insect pests. This information is designed to acquaint the producer with the major insect pests of wheat, the damage they cause and measures used to control the pests.

## Aphids

Several aphid species feed on the leaves and grain heads of wheat. Adult aphids are only about 1/8 inch long, and may or may not have two pairs of nearly transparent wings. These pests are significant in that they are capable of transmitting diseases, such as barley yellow dwarf (BYD) virus, in addition to the damage inflicted by their feeding habits.

The bird cherry-oat aphid is dark green and the primary species that transmits BYD. It is usually the most common species observed in wheat.

The English grain aphid is pale green with black antennae and cornicles ('tailpipes'), which are longer than the antennae and also longer than the cornicles of other aphid species normally observed in wheat.

The greenbug is pale green with a dark green stripe down the back of the wingless form. The tips of the legs and cornicles are black, and the antennae are mostly black.

The corn leaf aphid is bluish-green with black legs, cornicles and antennae.

The rice root aphid occurs on the roots of wheat and is also known to transmit BYD.

**Sampling:** A good sampling plan is to scout 1 row foot of wheat at 10 locations throughout the field. Aphids are typically found on the stems and underside of leaf blades. Examine each plant within the row foot for number of aphids and determine the aphid species present. Samples should be taken during the fall (e.g., approximately 30 days after planting) or late winter (prior to March).

**Treatment Thresholds:** Bird cherry-oat, English grain, corn leaf and rice root aphids. With the exception of greenbug (below), treatment for high numbers of aphids is generally not recommended unless they are causing leaves to dry up and die in several portions of the field. However, more aggressive management is needed to prevent BYD. Insecticide seed treatment such as Gaucho, Cruiser and NipsIt Inside can be used to reduce transmission of BYD. Data suggests that early planted wheat is most likely to benefit from the use of a seed treatment. If a seed treatment is not used, a foliar insecticide application during the fall or late winter (prior to March) can also reduce transmission of BYD. These applications should be made when aphids are present but before populations exceed 6-8 aphids per row foot, otherwise transmission of BYD may have already occurred.

Greenbug. This aphid injects a toxin while feeding. Treatment should be made when aphids are killing three or more leaves per plant. For wheat less than 6 inches tall, treatment should also be considered if greenbugs number 50 or more per linear foot. Treatment should also be made if greenbugs number 200 or more per foot in wheat 6-10 inches tall.

| Insecticide (Trade Names) for APHIDS     | Lb Active Ingredient per Acre | Amount Formulation per Acre    | Performance Rating |
|--|-------------------------------|--------------------------------|--------------------|
| <b>Seed Treatments</b>                   |                               |                                |                    |
| clothianidin (NipsIt Inside 5)           | ----                          | 0.75 - 1.79 oz per 100 lb seed | 8                  |
| imidacloprid (Gaucho 600)                | ----                          | 0.8 - 2.4 oz per 100 lb seed   | 8                  |
| thiamethoxam (Cruiser 5)                 | ----                          | 0.75 - 1.33 oz per 100 lb seed | 8                  |
| <b>Foliar Treatments*</b>                |                               |                                |                    |
| dimethoate 4                             | 0.25 - 0.375                  | 8 - 12 oz                      | 7                  |
| methomyl (Lannate LV 2.4)                | 0.225 - 0.45                  | 12 - 24 oz                     | 7                  |
| $\beta$ -cyfluthrin (Baythroid XL 1)     | 0.014 - 0.019                 | 1.8 - 2.4 oz                   | 8                  |
| $\gamma$ -cyhalothrin (Declare 1.25)     | 0.015                         | 1.54 oz                        | 8                  |
| $\lambda$ -cyhalothrin (Warrior II 2.08) | 0.02 - 0.03                   | 1.28 - 1.92 oz                 | 8                  |
| Z-cypermethrin (Mustang Max 0.8)         | 0.02 - 0.025                  | 3.2 - 4 oz                     | 8                  |

## Armyworms

Armyworms can be serious pests of wheat when populations reach large numbers. Armyworms get their name from their migrating habit, as they sometimes start at one portion of the field migrate to other areas of other fields, eating foliage as they go.

True armyworm larvae are smooth, almost without any hairs, and greenish-brown to reddish-brown with a dark stripe along each side. A broad dorsal stripe runs down the length of the back. This species differs from the fall armyworm by having a dark lateral band on the outer portion of each proleg. Damaging infestations of true armyworm normally occur in the spring. Besides feeding on foliage, larvae will sometimes cut the heads of maturing wheat plants.

Fall armyworms are normally a pest of early planted seedling wheat during the fall. These insects can completely defoliate a wheat field when populations are very large. Fall armyworm larvae differ from true armyworms by having a prominent inverted Y on the front of the head and no dark bands on the outer portion of the prolegs.

**Sampling:** Scout 1 square foot of wheat in 10 locations throughout the field during the fall and spring. Armyworms fall to the ground when disturbed, and larvae may also be hidden under debris on the soil surface during hot times of the day.

### Treatment Thresholds:

True Armyworm. For infestations that occur during the spring, use a threshold of 6-8 larvae per square foot if wheat is still in the milk stage. Once past the milk stage, wheat can tolerate higher populations and treatment is not usually recommended unless larvae are cutting wheat heads.

Fall Armyworm. Treatment for fall armyworm during the fall should be considered when four or more larvae are present per square foot.

- **Avoid planting before the Hessian fly free date (Oct. 15) as infestations of fall armyworm almost always occur in early planted wheat, especially for wheat planted in September.**

| Insecticide (Trade Names) for ARMYWORMS (True and Fall) | Lb Active Ingredient per Acre | Amount Formulation per Acre | Performance Rating |
|---|-------------------------------|-----------------------------|--------------------|
| chlorantraniliprole (Prevathon 0.43 SC)                 | 0.05 - 0.07                   | 14 - 20 oz                  | 9                  |
| chlorantraniliprole, $\lambda$ -cyhalothrin (Besiege)   | See label                     | 6 - 10 oz                   | 9                  |
| methomyl (Lannate LV 2.4)                               | 0.225 - 0.45                  | 12 - 24 oz                  | 7                  |
| spinetoram (Radiant SC 1)                               | 0.023 - 0.047                 | 3 - 6 oz                    | 9?                 |
| spinosad (Blackhawk 36% WDG)                            | 0.038 - 0.074                 | 1.7 - 3.3 oz                | 8                  |
| $\beta$ -cyfluthrin (Baythroid XL 1)                    | 0.014 - 0.019                 | 1.8 - 2.4 oz                | 8                  |
| $\gamma$ -cyhalothrin (Declare 1.25)                    | 0.01 - 0.015                  | 1.02 - 1.54 oz              | 8                  |
| $\lambda$ -cyhalothrin (Warrior II 2.08)                | 0.02 - 0.03                   | 1.28 - 1.92 oz              | 8                  |
| Z-cypermethrin (Mustang Max 0.8)                        | 0.02 - 0.025                  | 3.2 - 4 oz                  | 8                  |

## Cereal Leaf Beetle

The cereal leaf beetle is a pest of wheat, oats, barley and other cereal crops. They have one generation per year. Adults, eggs, and larvae may be found in wheat during April to June. Adults are shiny, black beetles with red legs and thorax and are approximately 3/16 inch long. The larvae are pale yellow and soft-bodied, but they are normally covered with their fecal material giving them a dark goeey, shiny appearance. Adults and larvae skeletonize the leaf tissue between the veins, but the larvae cause most of the injury.

**Sampling:** Visually examine 10 tillers (stems) at 10 randomly selected locations in a field. Count the total number of eggs and larvae found on 100 tillers.

**Treatment Thresholds:** Treatment is necessary if 25 or more eggs and/or larvae are present per 100 tillers until wheat reaches the dough stage.

- Follow good agronomic practices for wheat production, including adequate plant populations and fertility.

| Insecticide (Trade Names) for CEREAL LEAF BEETLE | Lb Active Ingredient per Acre | Amount Formulation per Acre | Performance Rating |
|--|-------------------------------|-----------------------------|--------------------|
| methomyl (Lannate LV, 2.4)                       | 0.225 - 0.45                  | 12 - 24 oz                  | 8                  |
| spinosad (Blackhawk 36% WDG)                     | 0.025 - 0.074                 | 1.1 - 3.3 oz                | 7?                 |
| $\beta$ -cyfluthrin (Baythroid XL 1)             | 0.008 - 0.014                 | 1 - 1.8 oz                  | 7                  |
| $\gamma$ -cyhalothrin (Declare 1.25)             | 0.01 - 0.015                  | 1.02 - 1.54 oz              | 7                  |
| $\lambda$ -cyhalothrin (Warrior II 2.08)         | 0.02 - 0.03                   | 1.28 - 1.92 oz              | 7                  |
| Z-cypermethrin (Mustang Max 0.8)                 | 0.01 - 0.025                  | 1.76 - 4 oz                 | 7                  |

## Hessian Fly

The Hessian fly has been responsible for tremendous wheat losses in the past. Hessian fly larvae feed on stems at the base of plants, hidden behind the leaf sheaths. Larvae are reddish at first emergence and turn white or greenish white as they mature. Larvae are legless, resemble small grains of rice, and are approximately 1/4 inch long when fully grown. The pupae, or flax seed stage, are brown in color but otherwise similar to the larvae. Tennessee typically does not have significant problems with this pest. However, early planted wheat is susceptible to infestation. Planting after Oct. 15 (i.e., the “fly free date”) will greatly reduce the likelihood of serious Hessian fly infestations. Also, avoid planting wheat as a cover crop prior to the fly free date. Volunteer wheat is a good fall host for this pest and any volunteer wheat should be destroyed before September. Plowing under wheat stubble after harvest may

help reduce subsequent infestations in the fall. Although some varieties are available with resistance to Hessian flies, there are no varieties with adequate resistance to the fly biotype most common in Tennessee (Biotype L).

**Sampling:** Sampling for Hessian fly is generally not considered useful due to the inherent difficulty in making effective insecticide applications.

**Treatment Thresholds:** Foliar insecticide applications for this pest are difficult to time, and thus are only marginally effective and rarely recommended.

- **Plant after the fly free date (October 15) and use resistant varieties if they are available.**
- **Insecticide seed treatments will provide some protection against fall infestations of Hessian fly, especially when used at the highest labeled rates.**

## **Stink Bugs**

Stink bugs, primarily the rice stink bug and brown stink bug, are frequently observed on wheat that is heading where they feed on developing seed. Rice stink bug is generally most common, but this may vary from field to field.

**Sampling:** Stink bugs can be sampled visually by examining the heads of plants. However, a sweep net can be used to confirm the presence or absence of stink bugs. Samples should be distributed throughout the field.

**Treatment Thresholds:** Treatment thresholds are not well defined, but large numbers of stink bugs are needed to justify treatment. Published thresholds vary from one stink bug per 5 to 10 heads to 1 stink bug per head.

- **Economically damaging infestations in Tennessee are rare, and thus, insecticide treatments are seldom needed.**
- **If treatment is needed, pyrethroid insecticides that are labeled for wheat would generally be recommended. The highest labeled rates are suggested if brown stink bugs are numerous.**