



Pest e-alerts



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Plan to Manage Hessian Fly

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Hessian fly is here to stay for the foreseeable future, so producers need to devise a strategy to manage it. Even though there is not a 100% solution to manage this pest, producers have several options to minimize the problems caused by Hessian fly.

Hessian fly infestations are often overlooked in wheat until damage becomes visible. The fly is tiny (1/8 inches) and resembles a gnat. The damaging stage is the larva, which starts out as an orange, headless and legless maggot that quickly crawls to a hidden feeding site in the plant. Once it attaches to the plant, it turns into a shiny, green-white maggot that doesn't move until it emerges as a fly. The mature larva forms a dark brown, 1/8 inch long puparium, commonly referred to as a "flaxseed". The flaxseed serves as the over-wintering and over-summering stage.

We typically see two main generations in Oklahoma, (fall and spring) plus several other "pulses" or minor infestations that can occur anytime during the winter when temperatures exceed 55° F and we get a rainfall event of ½ inches or more. Larvae injure the wheat as they feed, in the fall by feeding on stem tissue at the crown of young plants or, in spring, feeding just above the nodes of jointed wheat.

In the fall, young infested plants become dark-green to bluish-green in color and are stunted with thickened leaves. The infested tiller eventually dies. Some varieties may compensate by producing more secondary tillers. Others have some level of genetic resistance. The Wheat Improvement



Team is working to utilize these different characteristics to take better advantage of them in the wheat breeding program. Most of the popular varieties planted in Oklahoma are susceptible and suffer plant damage and subsequent yield loss due to larval feeding.

A spring infestation typically commences when temperatures rise above 45 to 50 degrees coupled with a rainfall event. Infested wheat stems often lodge at the point of feeding as the field begins to mature, so a heavily infested field looks like it has suffered hail damage. Yield loss occurs from poor grain fill and direct loss from lodged stems at harvest.

To confirm a fall infestation, remove the plant and roots from the soil and inspect the crowns for maggots or flaxseeds by gently pulling the leaf sheath away from the stem. In spring, inspect the first or second joint of the stem inside the leaf sheath. You can estimate damage by counting fallen tillers per foot of row in several locations, and dividing that by the number of heads in a foot of row. If you suspect that you have an infestation, bring the suspect samples in to your County Extension Office for confirmation.

The next question is obvious: what can a producer do to prevent Hessian fly outbreaks? Hessian fly can be managed using several methods which work best when combined as a long-term management strategy.

- **Plant late.** Fields planted later, in mid to late October, are at less risk of a fall infestation. A specific “fly-free planting date” does not exist for Oklahoma growers, with the exception of the northern tier of counties in Oklahoma, including the panhandle. Yet, a late planting will escape early emerging fly infestations, and will enhance the effectiveness of an insecticide seed treatment.
- **Grow resistant varieties.** Resistant varieties can be a very effective tool for managing Hessian fly. Unfortunately, few resistant winter wheat varieties are available and many of the most popular varieties are susceptible to Hessian fly. Entomologists in the Wheat Improvement Team have been evaluating some varieties for resistance and tolerance to Hessian fly for the past 3 years. You can compare varieties for resistance to Hessian fly by consulting PSS-2142 2009 Wheat Variety Comparison for a listing. Some resistant or partially resistant varieties include Duster (resistant); Chisholm, Centerfield, Ike, 2174, OK 102 and Okfield (partially resistant).
- **Control volunteer wheat.** Volunteer wheat serves as an early source for Hessian fly. It is important to destroy any volunteer wheat by August 15 to reduce that reservoir.
- **Rotate wheat with a non-host crop.** Crop rotation can be effective at reducing Hessian fly infestations, but remember that Hessian fly adults can fly up to 1 mile from their over-summering/over-wintering site. Fields located next to continuous, no-till wheat fields are at greater risk from spillover infestations.

- **Bury wheat residue and control volunteer wheat.** Hessian fly infestations are reduced when residue is buried 2-4 inches beneath the soil surface because the flaxseed is buried deep enough to prevent the fly from reaching the surface. This option is not available if the producer is committed to no-till. No-till producers should use resistant varieties, multi-crop rotations, delayed planting and volunteer wheat control; AND seriously consider using an insecticide seed treatment.
- **Use an insecticide seed treatment.** Seed can be treated with imidacloprid or thiamethoxam insecticide to reduce fall infestations, if the rate is adequate and the wheat is not planted too early. Wheat that is planted early September may suffer higher infestations even with treated seed because the insecticide becomes diluted within the plant as the wheat matures. A late flush of Hessian flies in the fall will survive on treated wheat if planted much earlier. No-till/low-till growers that grow continuous wheat and plan to plant in late September/early October or growers planting clean-till in fields located near no-till fields should strongly consider a seed treatment. REMEMBER, these seed treatments do not reduce spring infestations.

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