



Pest e-alerts



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New Research on Bermudagrass Stem Maggot

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New research published by Allen Knutson and Forest Mitchel of Texas A&M Agrilife examined the economic damage that results from bermudagrass stem maggot infestations in hay pastures. The authors reported that for each one percentage of stems infested by the stem maggot, a yield loss of 8.9 pounds of grass per acre resulted.

The bermudagrass stem maggot is an introduced pest of bermudagrass. First reported in Oklahoma about 4-6 years ago, this fly pest only infests bermudagrass and stargrass, both in the Genus *Cyndon*. It is not a pest of bermudagrass turf because bermudagrass turf is mowed frequently, which kills the young larvae. It is not usually a pest of grazed pastures because the cattle consume the eggs and maggots as they feed, but it is a pest of concern for bermudagrass hay producers.



The adult is a small (3.0-3.5 mm), yellow fly that lays eggs on the stem of the bermudagrass plant. Mature maggots measure 3 mm long and are whitish-yellow. The eggs hatch and the maggots move to the top node on a grass stem and burrow into the shoot to feed on the sap. They continue to feed up to 10 days, and then drop to the soil and pupate for about 7-10 days. Adult flies emerge, mate and females lay eggs for up to 20 days. Once established, they will have multiple generations during the growing season. Current evidence suggests that they do not overwinter outside of the Gulf Coast states, but build and migrate as the summer progresses.

The damaging stage is the immature maggot. Larval feeding results in leaf yellowing within three days. Damaged fields appear to be “frosted” because the upper 2-3 leaves die from the feeding activity, while the rest of the plant is still green. To confirm an infestation, split the stem just below the dead leaves to see if there is a tunnel and the maggot. You might not be able to find the maggot if it has already pupated, but the tunnel will remain. The damaged shoot simply stops growing, but the plant may compensate by producing side shoots.



Management: Stem maggot does not typically cause extensive damage to grazed pastures because the livestock eat the eggs and larvae. There are two options for hay producers. One is an insecticide treatment only. The other is an early harvest followed by an insecticide treatment.

In order to use the insecticide only option, it is necessary to estimate percentage of grass stems with stem maggot damage. First, cut a “handful” of grass at the base of the stems. Carefully select 50 random stems and inspect them for stem maggot damage. Total all damage stems and estimate percent of damage per 50 stem sample. Take 5-10 more samples in different areas of the field and calculate an average percentage of stem damage in the field. Knutson, Mitchel and Vanessa Corriher-Olson from Texas Agrilife developed a Threshold Table for estimating a treatment threshold for producers that chose to manage stem maggot with insecticides.

Treatment thresholds for Bermudagrass stem maggot as percent of injured stems for different hay values and costs of insecticide application. Match the value of your hay with the appropriate cost of control to determine the treatment threshold of percent-infested stems. (from Knutson, Mitchel and Corriher-Olson, 2019)

Value of Hay \$ per pound (\$ per ton)	Cost of control, \$ per acre				
	\$10.00	\$12.00	\$14.00	\$16.00	\$18.00
	Treatment Threshold: Percent-infested stems				
\$0.09 (\$180.00)	10	12	14	16	18
\$0.07 (\$140.00)	14	16	18	22	24
\$0.05 (\$100.00)	18	22	26	29	33
\$0.03 (\$60.00)	29	34	40	46	51

Option 2 is to early-harvest the hay followed by an insecticide treatment in 7 days.

1. Harvest the crop, bale it, and remove it from the field as soon as possible. Any maggots still feeding will die as the crop dries out.
2. Follow up with an application of a foliar-applied insecticide about 7 days after harvest.

For insecticide suggestions, consult [CR-7193 Management of Insect Pests in Rangeland and Pasture](#) or E-832, *2019 OSU Extension Agent's Handbook for Insect, Plant Disease and Weed Control*. Research from Georgia suggests that the lowest registered rate is effective. Typically, one application should suffice. Photos courtesy of Will Hudson, University of Georgia, Bugwood.org

Check Pastures and Seedling Wheat for Fall Armyworm

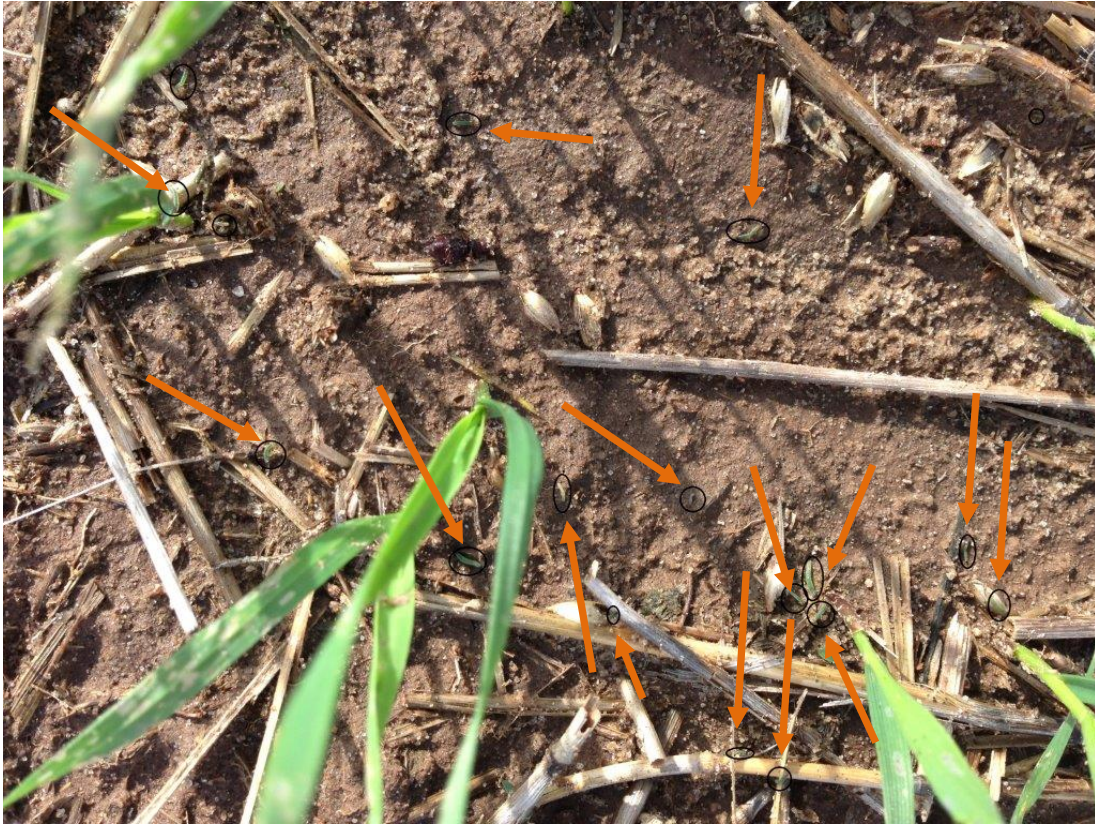
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We have a battery of fall armyworm pheromone traps set out among some Oklahoma counties, but the trap captures have not been that numerous this year. However, I have received reports of scattered fall armyworm infestation in grass pastures especially in southern Oklahoma. There have also been reports of fall armyworm infestations in grass pastures in north Texas. Producers and wheat growers should regularly scout their crops so they can protect them from fall armyworms.

Scouting for caterpillars in pasture is easy. For those wanting to put up grass hay, look for caterpillars and “window paned” or chewed leaves. Get a wire coat hanger, bend it into a hoop, place it on the ground, and count all sizes of caterpillars in the hoop. Take samples in several locations, along the field margin as well as in the interior. The coat hanger hoop covers about 2/3 of a square foot, so the threshold in pasture would be reached when you find an average of two or three ½ inch-long larvae per hoop sample (3-4 per square foot).



Scouting for fall armyworm is very similar. This photo from Lanie Hale in 2017 is a picture of “window paned” wheat from a field that he had scouted. He counted 3 fall armyworms per row foot from his visual count (which is treatment threshold) but when he looked closely at his photo on his computer, he saw 15 worms in an area the size of his hand (they were very tiny, and probably newly hatched). It is easy to miss some of these little worms in the field because they hide in residue and are very tiny.



Look very closely for “window paned” leaves and count all sizes of larvae. Examine plants along the field margin as well as in the interior, because they sometimes move in from road ditches and weedy areas. The suggested treatment threshold is 2-3 larvae per linear foot of row in wheat with active feeding.

It is much easier to control fall armyworm with an insecticide when they are small (less than ½ inches). For control guidelines and information on registered insecticides for fall armyworm, Consult the newly updated OSU Fact Sheets [CR-7193 Management of Insect Pests in Rangeland and](#)

[Pasture](#) and [CR-7194 Management of Insect and Mite Pests of Small Grains](#) and for control suggestions. We will not get relief from fall armyworms until we get a killing frost, so keep vigilant!

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