Forage Pest Update

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Currently, many are just hoping to receive enough rainfall to have some sort of recovery from the drought and hopefully grow forage during what remains of the summer and fall. However, with such limited forage and hay, now is the time to keep forage insect pests in the forefront. We don't want to lose what me might gain (once rain returns) to insect pests. In July, we began to see a few fall armyworms sporadically, especially in irrigated fields. Fall armyworms populations at treatment level have been identified sporadically at locations in most areas of the state. Most of the infested fields were in irrigated fields and occurred in infested bermudagrass, alfalfa, pearl millet and sorghum-sudangrass. In addition to fall armyworms, we are seeing an uptick in bermudagrass stem maggots – both adults and infested stems. Grasshoppers (particularly in western and northwestern Arkansas) are sporadically abundant in some areas. I've also observed and had many calls on striped blister beetles in yards and forage. With this in mind, below is some updated information that you might recognize from previous Pest Management Newsletters.

Fall Armyworms

Diligence is critical in identifying and managing fall armyworm outbreaks before significant losses occur. Infestations are easily overlooked when the caterpillars are small and eating very little. Once they grow large and consume more grass, damage becomes apparent (Fig. 1). Now through fall, we should continue scouting pastures and hayfields. Now that the rain has returned for some, new growth will be particularly vulnerable to fall armyworm attack. And with the shortage of forage and hay, many producers will likely plant winter annuals to provide much needed forage. As this newly planted grass emerges, it must be frequently scouted for fall armyworms, and treated if necessary, to prevent stand reduction or compete loss.



Figure 1. Fall Armyworms (*Spodoptera frugiperda*).

Clues to fall armyworm infestations include: 1) field appears “frosted” 2) presence of birds in the field and/or 3) the odor of freshly grass. Armyworm outbreaks often occur in waves about 30 days apart. However, when mixed worm sizes occur (Fig.2), overlapping generation are present and new infestations will occur more frequently than every 30 days. When scouting, carefully examine grass blades, stems and organic debris at plant base for armyworms. It is best to take at least ten one-foot-square random samples (Fig. 2) across the pasture or hay meadow. Make note of the armyworm sizes as this will help make good management decisions. In addition to counting worms per square foot, counting the number of worms collected in a sweep net is a very good method to identify a FAW infested field and are wonderful at collecting the small worms.

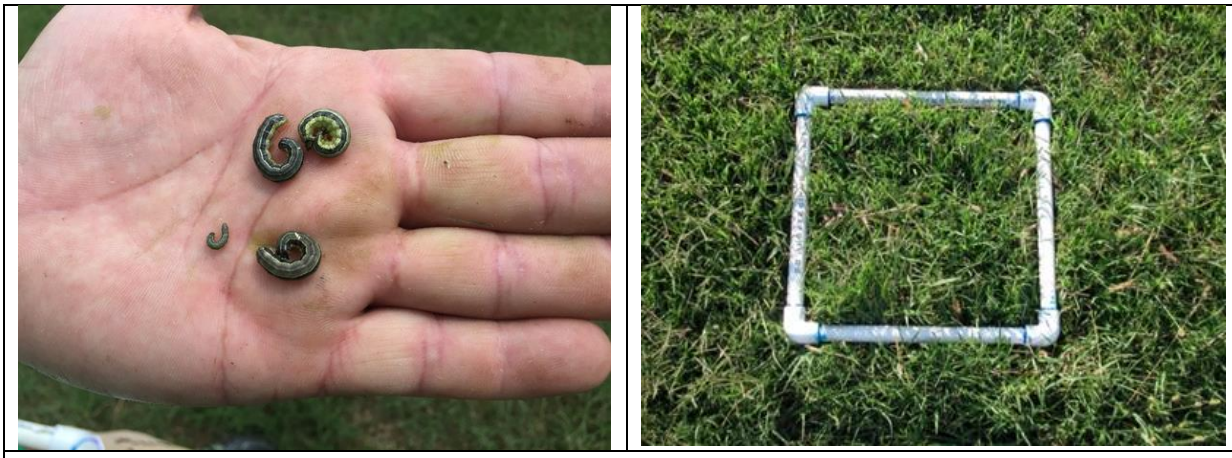

Figure 2. Mixed sizes of fall armyworms (left) and fall armyworm sampling square (right).

Insecticide application is recommended when an average of two or three fall armyworms per square foot occur within the field. Although we are working to develop a threshold using sweep nets, the data has been inconsistent. Correlations between worms per square foot and worms per 25 sweeps vary between data sets. For example, 3 worms/square foot correlated with 28, 77, 149 and 177 worms/25 sweeps depending upon which data set was used in the analysis.

Per-acre insecticide cost will vary from as low as about $2.50 up to about $16.00. When calculating cost, always consider the cost per acre and not the cost per gallon of product. Consider residual activity of the product, especially if you are seeing multigenerational populations (all sizes of fall armyworm caterpillars) and heavy armyworm pressure. Pyrethroid insecticides such as Karate® (lambda-cyhalothrin), Mustang Max® (zeta-cypermethrin) and Baythroid XL (beta-cyfluthrin) have short-duration residual activity. In contrast, products such as Vantacor® (chlorantraniliprole), Besiege® (chlorantraniliprole and lambda-cyhalothrin) and Intrepid® (methoxyfenozide)) have longer-duration residual activity and can reduce the number of applications necessary to produce a hay crop. Last year efficacy evaluations demonstrated that a mixture of lambda-cyhalothrin and Dimilin® (diflubenzuron) would provide longer-

duration residual activity than lambda-cyhalothrin alone but not as long as chlorantraniliprole, chorantraniliprole/lambda-cyhalothrin or methoxyfenozide. Insecticides that provide residual activity and have no grazing restriction and a limited pre-harvest interval for hay include: lambda-cy and Dimilin® tank mix, Intrepid® or generic methoxyfenozide, Besiege® and Vantacor®. Also remember, for a translaminar or systemic product to work, green growing grass needs to be present. In other words, treatment with a product with long residual product will not work if the grass if grass id sparse or not present (such as after cutting**). (Note: Prevathon® (chlorantraniliprole) is no longer available but has been replaced by a more concentrated formulation – Vantacor® (also chlorantraniliprole). Vantacor® also carries the 2 (ee) label recommendation for a lower application rate against fall armyworms).**

Hayfields can be dually infested with fall armyworms and bermudagrass stem maggots. And in some cases, the timing of an application for fall armyworms and bermudagrass stem maggots coincide. When this does occur, remember that bermudagrass stem maggot control is aimed at the egg laying adult flies which are treated with pyrethroids. Fall armyworm treatment options with more residual activity that include a pyrethroid are the lambda-cyhalothrin/Dimilin® tank mix, lambda-cyhalothrin/Vantacor® tank mix and Besiege® (lambda-cyhalothrin/clorantraniliprole).

For additional information on armyworms see “Managing Armyworms in Pastures and Hayfields” and is available at: https://www.uaex.uada.edu/publications/PDF/FSA-7083.pdf and the Insecticide Recommendations for Arkansas” at: https://www.uaex.uada.edu/publications/mp-144.aspx.

Bermudagrass Stem Maggots

We are getting reports of bermudagrass stem maggot presence in multiple areas of the state. In some fields damage is occurring but in others we are only picking up a few adults with a relatively low percentage of infested stems. In some cases, damage has been noted and insecticides applied. We need to encourage our hay producers to be diligent in scouting their Bermuda grass fields now so that control can be initiated at the optimal time. One major problem with bermudagrass stem maggot infestation is that they may go unnoticed until they cut and see a dramatic reduction in yield.

Damage caused by the bermudagrass stem maggot results from larval stages (maggots) feeding in the shoot causing the top two or three leaves to die (Fig. 1). Lower leaves remain alive and unaffected by the maggot’s feeding. Because of the death of the top couple of leaves, the plant (and field, if heavily infested) may exhibit a frosted appearance (Fig. 2.). The life cycle from egg to adult requires about three weeks The adult female fly will lay eggs on the bermudagrass stem near a node. The maggot will hatch from the egg, crawl up to toward the last plant node (where the leaf blade emerges from the stem) and burrow into the shoot and begin feeding. Usually by the time the top leaves have died, the maggots have exited the stem and pupated on the

ground. With such as short generation period, multiple generations occur and populations tend to increase later in the season causing an accumulation of damage.



Fig. 1. Typical damage caused by the bermudagrass stem maggot. Note the dead upper leaves.



Fig. 2. Bermudagrass stem maggot damage.

The adult fly is small (~1/8 inch long) and yellow colored with four prominent black spots on the abdomen (Fig. 3). The maggot (larva) is also yellowish colored and about 1/8 inch in length when fully mature (Fig. 4).



Fig. 3. Bermudagrass stem maggot adult. Note the four black spots on its abdomen.



Fig. 4. Bermudagrass stem maggot larvae.

In general (but we have observed exceptions), this pest is less of a problem in coarse stemmed bermudagrass varieties and bermudagrass that is grazed. In grazed pastures, cattle eat the fly eggs and maggots along with the grass, lessening population build up. Bermudagrass stem maggots often become an economic pest in finer stemmed varieties (common, Coastal, Alicia and others) that are baled for hay, especially later in the season after the population builds. In heavy infestations, regrowth after cutting can be slowed substantially. Bermudagrass stem maggot management demonstrations have shown as much as 50% yield loss in fine-stemmed varieties. Figure 5 shows a bermudagrass field with significant damage in untreated verses the pyrethroid treated area.



Fig. 5. Pyrethroid treated verses non-treated areas of a bermudagrass field infested with bermudagrass stem maggots. Photo by Ben Thrash.

Systemic insecticides and insect growth regulators labeled for use in bermudagrass forage are **not** effective in combatting bermudagrass stem maggot damage. Effective insecticide applications are aimed at killing the egg-laying adults. When applied from seven to ten days following harvest, a pyrethroid insecticide application will usually protect the crop until the next cutting. Timing of the pyrethroid application is critical for two reasons. First, the grass has resprouted and adults are emerging from larvae that

pupated at the time of cutting and are ready to lay eggs. Second, pyrethroid applications made after the seven to ten day treatment window are less effective because some eggs have already been laid and the grass canopy may be too thick for the pyrethroid application to penetrate the area where adults rest. In many situations, early cutting is necessary to allow for a successful treatment to prevent significant yield loss in the next cutting. Pyrethroid insecticides such as lambda-cyhalothrin and others labeled for use in forage grass are the most cost-effective product choices against bermudagrass stem maggots. It is always a very good idea to survey the field for bermudagrass stem maggot damage just before cutting. If readily apparent damage is present, treated the field with a pyrethroid 7-10 days after the bermudagrass was cut.