Forage Pest Update

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Over the last 10 days, we have found fall armyworms (FAW) in a couple of areas of the state. In NE Arkansas, Lance Blythe, Greene Co. Staff Chair, has found a few in fields that he routinely scouts. Fortunately, he has not identified fields at treatment level. In addition, Rex Herring, Sevier Co. Staff Chair, indicated that mixed sized FAW were noted during harvest of a field. So far, reports indicate that the FAW populations were below treatment levels. We are also finding bermudagrass stem maggots (BSM) in sweep nets and on yellow sticky cards (Fig.1). Generally, BSM can become a problem requiring treatment as early as the second cutting.

Figure 1. Bermudagrass stem maggot on the tip of a finger, Photo courtesy of Lance Blythe.

As mentioned above, bermudagrass stem maggots (BSM) are showing up in sweep nets or on yellow sticky cards. Typically, we do not see extensive BSM damage before the second and more often third cutting. Damage from this pest often goes unnoticed (or mistaken from drought damage) until the producer experiences a significant yield loss.

Now is the time to encourage your hay producers to scout their fields for both FAW and BSM. The sections below provide more scouting and control details for these forage pests.

Fall Armyworms

FAW infestations are easily overlooked when the caterpillars are small and eating little. Once they grow larger and consume more grass, damage becomes apparent (Fig. 2).

Now through fall, we should continue scouting pastures and hayfields. New growth following rainfall will be particularly vulnerable to fall armyworm attack. Producers that plant winter annuals and hunters planting food plots should remain attentive to pests and damage. 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 2. Fall Armyworms (*Spodoptera frugiperda*).

Sweep netting is useful in identifying the presence of FAW in a field and is very effective in detecting early instar FAW caterpillars. Other 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. 3) 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 most effective at collecting the small worms.

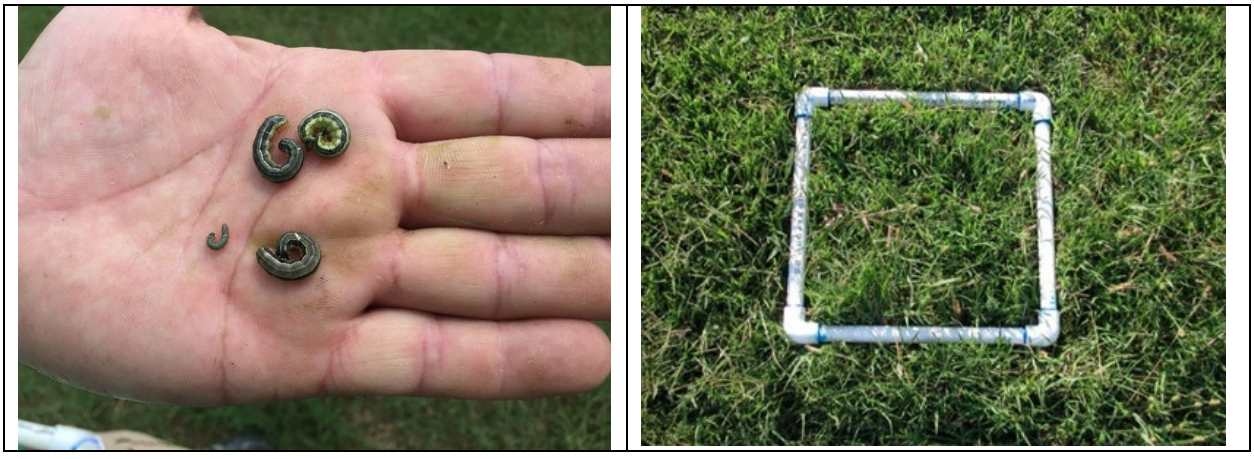

Figure 3. Mixed sizes of fall armyworms (left) and fall armyworm sampling square (right).

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 $3.50 up to about $18.00. 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. Previous 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 or the chorantraniliprole/lambda-cyhalothrin products. 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 is sparse or not present (such as right after cutting**).**

Hayfields can be dually infested with fall armyworms and bermudagrass stem maggots. And in a few 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 for BSM control 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

As we move into the second and more likely, third cuttings, we may see fields showing readily apparent BSM damage. Generally, hayfields are more apt to show BMS damage that grazed bermudagrass. Moderately grazed pastures are usually not seriously affected because grazing continually removes susceptible shoots. A major problem with a bermudagrass stem maggot infestation is that damage may go unnoticed until the grass is cut and a reduction in yield occurs.

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. 4). 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. 5). 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.

Figure 4. Typical damage caused by the bermudagrass stem maggot. Note the dead upper leaves.

Figure 5. 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. 6). The maggot (larva) is also yellowish colored and about 1/8 inch in length when fully mature (Fig. 7).

Figure 6. Bermudagrass stem maggot adult. Note the four black spots on its abdomen.

Figure 7. 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, 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 8 shows a bermudagrass field with significant damage in untreated verses the pyrethroid treated area.

Figure 8. 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 is cut.