

Managing Insects to Protect Forage Production

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RESOURCES

<https://www.aces.edu/blog/topics/forages-livestock/pastures-and-forage-crop-ipm-guide/>

ALABAMA A&M AND AUBURN UNIVERSITIES



IPM-0028

Pastures and Forage Crops



Insect and Weed Control Recommendations for 2020

INSECT PEST MANAGEMENT

Check forages regularly to detect insect infestations. They should be checked frequently during the active growing season, particularly during periods of drought. Three to four locations in each field should be monitored. Symptoms of insect infestation may be early visible chewing, or it may be less obvious. Insects may be on the foliage, may hide in the crowns of the plants, or may feed on the plant roots. Look for yellowing plants and spots where the grass may be dead or thinning.

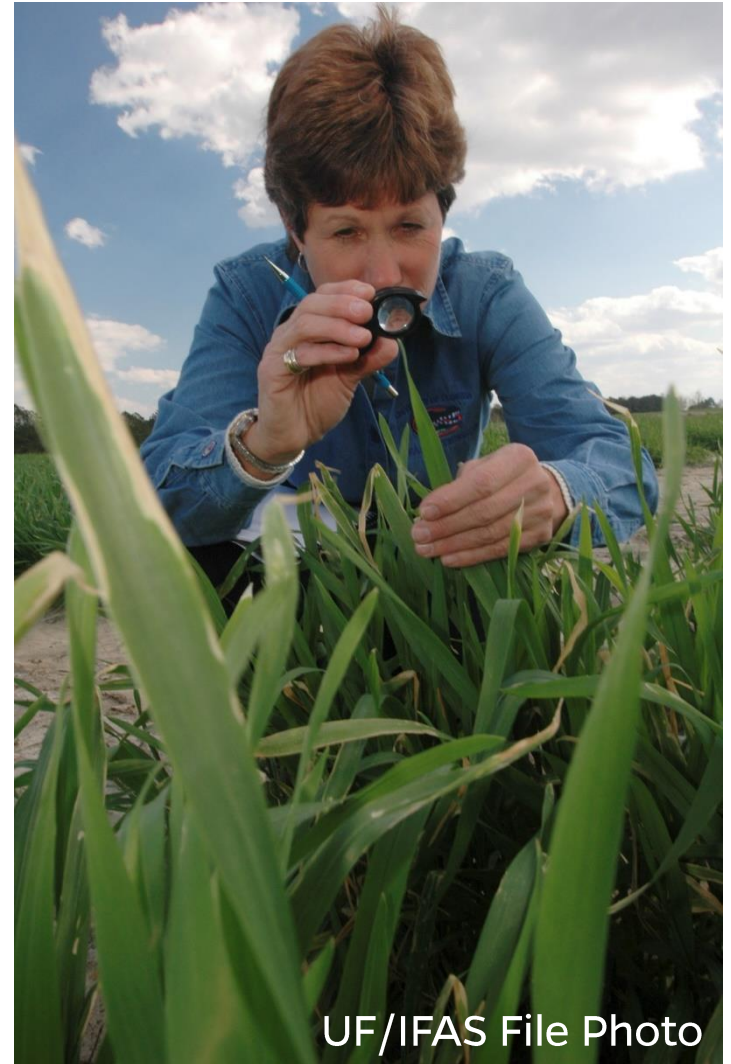
A sweep-net helps in detecting insect infestations, particularly those of grasshoppers, the various armyworms, spittlebugs, blister beetles, and leafhoppers. These nets, often made of tapered muslin bags mounted on a 12- to 15-inch rim, can be bought for \$20 to \$30. However, an old pillowcase mounted on a dip net makes a good substitute. If excessively large numbers of insects are detected in the sweep net, the area can then be examined more closely.

This insect has several generations per year. There can be considerable overlap between generations later in the season.

Fall armyworms can be found feeding on foliage at any time of day but may be less likely to be found during the hottest hours. When fully grown, they are 1.5 inches long. Fall armyworms are always striped, but their coloring is not always the same. Their background color ranges from light green to almost black. Fall armyworm caterpillars can be identified by four black dots arranged in a square on the back of the tip of the abdomen, and three white lines on the back of the segment behind the head. Larger caterpillars typically have a light-colored, upside-down Y-shape on the head. More information on biology and habits of fall armyworms can be found in Alabama Extension publication "Management of Fall Armyworm in Pastures and Hayfields" (ANR-1019). Contact your county Extension office for information on distinguishing fall armyworms from other common caterpillars.

INTEGRATED PEST MANAGEMENT (IPM)

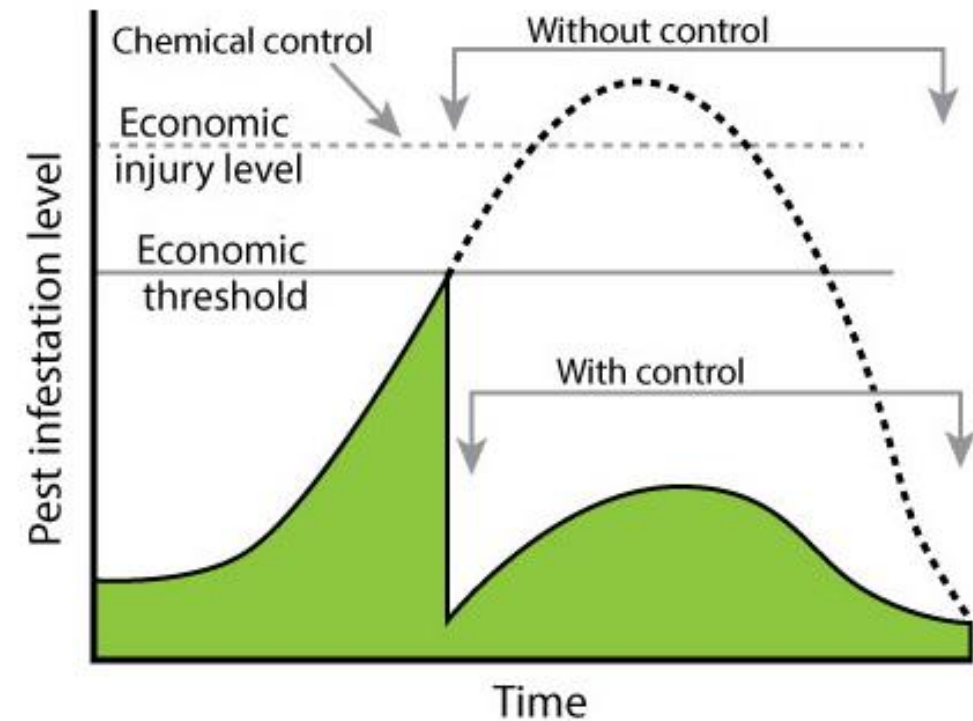
- Monitor regularly
- Look for signs of insect activity
 - Feeding damage
 - Yellowing
 - Areas of poor growth
- **MUST DETECT INFESTATIONS EARLY FOR GOOD CONTROL**



UF/IFAS File Photo

AT WHAT POINT DO I NEED TO TAKE ACTION?

- **Economic injury level** - pest density at which damage can no longer be tolerated without experiencing economic loss
- **Economic threshold** - pest density at which control measures should be applied to prevent an increasing pest population from reaching the economic injury level



INSECT PESTS OF FORAGES

- **Caterpillars**
- **Bermudagrass stem maggot**
- **Fire ants**



FALL ARMYWORM

- **Moths migrate from South Florida, South Texas, South & Central America**
- **Do not overwinter in our area**
- **Hot, dry weather favors outbreaks**



FALL ARMYWORM

- **Broad host range – forage grasses, corn, alfalfa, cotton, soybeans, and most vegetable crops**

Forage grasses infests:

Bermudagrass

Bahiagrass

Millet

Sorghum-sudan

Ryegrass, rye, wheat, oats



ARMYWORM LIFE CYCLE

Eggs
2-4 days



**5 or more
generations per
year**



Larvae
14 days



**Females can lay
over 1,000 eggs
in lifetime**



Pupate in Soil
6-10 days

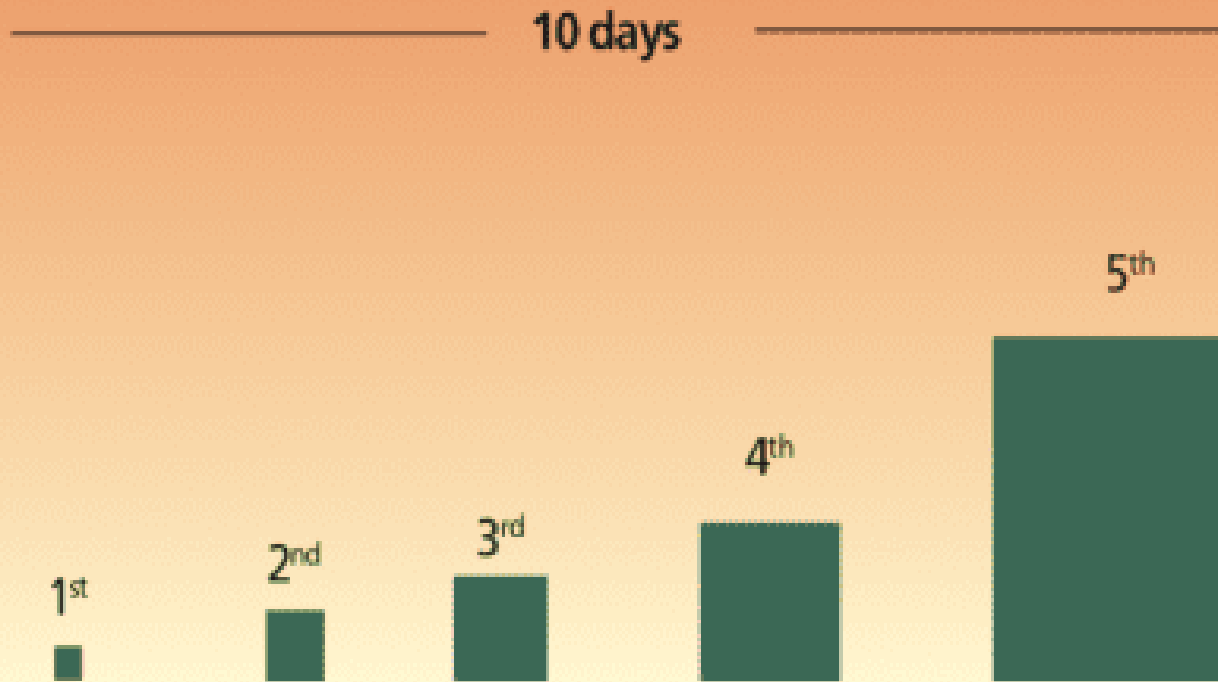


Adult
14 days

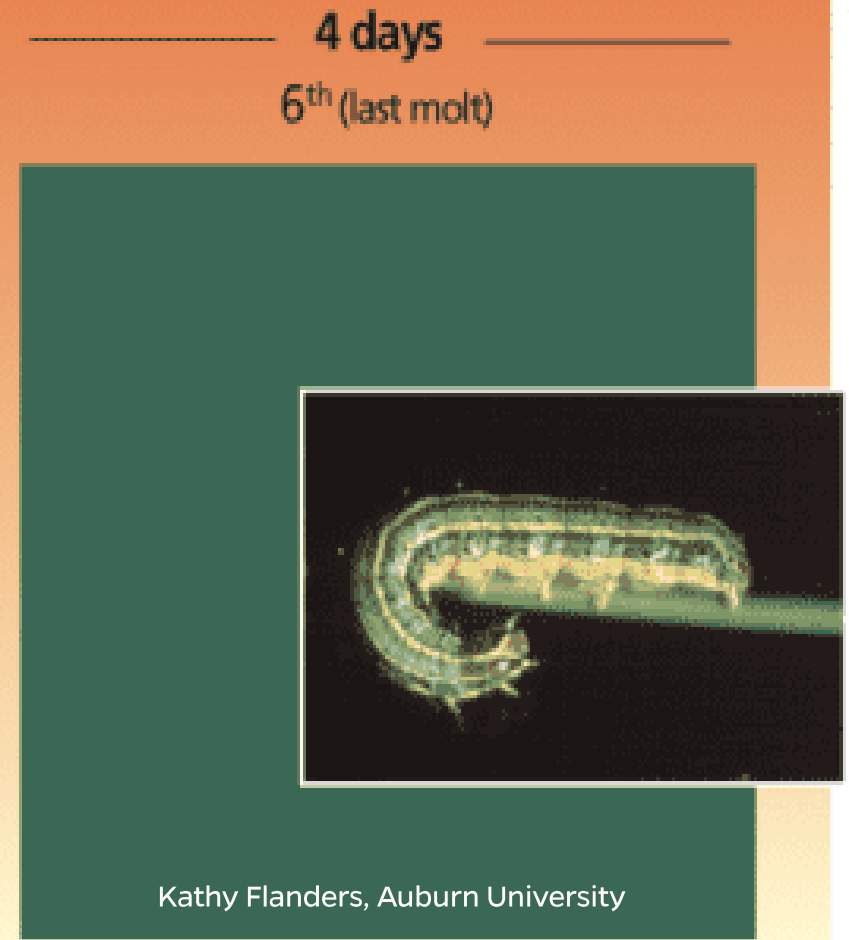


They came out of nowhere...

- Very small, don't eat much
- Difficult to see if not actively looking



Majority of damage caused



TRUE ARMYWORM

- **Look similar to fall armyworm**
- **Unlike fall armyworms, true armyworms overwinter**
- **Control methods are the same**
- **May see in late spring some years**



Photo: Lyle Buss

STRIPED GRASS LOOPER

- Larvae are about 1 ½ in. long
- ‘Looping’ method of crawling
- Stripes down the body, including the head
- Pupate on plant, in folded leaf



Photo: Lyle Buss

MONITORING IS IMPORTANT

- **Begin scouting weekly June - September**
- **Timing of day important - first thing in the morning or early evening**
- **Want to find caterpillars that are about $\frac{1}{2}$ - $\frac{3}{4}$ inch long**
- **Threshold - 2-3 caterpillars per sq. foot**



You've reached the threshold - now what?

- **If close to harvest, cut and harvest**
- **If grazing, have cows intensely graze field - eat grass before caterpillars do**
- **If not ready for harvest, insecticide application may be best option**



Photo: Tyler Jones

What to spray?

- **If armyworms are same size, can use cheap, short residual product**
- **If armyworms of different sizes or if you have a long way to go before harvest, can use long residual product**
 - Dimilin
 - Prevathon
 - Intrepid

FARMING



Management of Fall Armyworm in Pastures and Hayfields

► The fall armyworm is a chronic pest in the Southeast and can cause severe damage to grass and forage crops. Damage varies in appearance and severity according to the type of grass and management practices. They are most numerous in late summer or early fall.

The fall armyworm, *Spodoptera frugiperda*, is a chronic pest in the Southeast. More than 60 plants have been reported as hosts of the fall armyworm, including forage grasses, corn, alfalfa, cotton, soybeans, and most vegetable crops. There are two strains of the fall armyworm, the rice strain and the corn strain. The rice strain caterpillars feed on a variety of forage crops, but seem to prefer lush, green, well-fertilized bermudagrass. Other forage grasses that are hosts for fall armyworm are bahiagrass, pearl millet, sorghum-sudan hybrids, tall fescue, and various winter annuals including ryegrass, rye, wheat, and oats.

Seasonal Occurrence

As the name indicates, fall armyworms are most numerous in late summer or early fall. Usually, reports of fall armyworm damage begin to come in during late July or early August. First reports are usually from southern Alabama. There are three or more generations of fall armyworm each year. Each generation takes about 30 days under Alabama's summer conditions. Occasionally, severe outbreaks occur as early as mid-April.

Fall armyworms are susceptible to cold and are unable to survive even the mildest winters in Alabama. Each year, fall armyworm moths, carried by air currents, make their way from southern Florida, southern Texas, and Central and South America. The size and timing of the initial moth flights are two factors that influence the outbreak potential of this pest.

Droughty conditions are favorable for the fall armyworm. Fall armyworms can be found up until the first killing frost in an area. However, the risk of damage declines as it gets cooler because the pest

Behavior Patterns

The fall armyworm is in the same insect family (Noctuidae) as cutworms and other armyworms. Fall armyworm caterpillars damage grass by chewing plant tissue.

Fall armyworms are typically most active early in the morning, late in the afternoon, or in early evening, but on taller, unmowed grass, they can be observed feeding on foliage throughout the day. On closely grazed or recently mowed hayfields, fall armyworm larvae spend the warmer hours of the day deep in the sod.



GENERAL USE PESTICIDES FOR CONTROL OF CATERPILLARS IN PERENNIAL GRASS PASTURES

Mode of Action (MOA)	INSECTICIDE TRADE NAME Active Ingredient	Rate	Applications per Cutting of Hay	Min. Days from Last Application to Harvest (H) or Grazing (G)	Comments	Est. Cost Per Acre
1A	SEVIN XLR Plus Carbaryl	1-1.5 qt./A	2-3	14		\$23.70
28	PREVATHON Chlorantraniliprole	14-20 fl. oz./A	1 every 7 days, max. of 4 per cutting	0	Larvae become paralyzed after eating then die in 1-3 days	\$27.80
18	INTREPID 2F Methoxyfenozide	4-8 fl. oz./A	1	7 (H), 0 (G)	Use higher rate for heavier infestations or where thorough coverage is difficult. Larvae stop feeding almost immediately but may take several days to die.	\$18.80
5	BLACKHAWK Spinosad	1.1-2.2 oz./A	Do not apply more than 3 times in a 21 day period	3 (H), 0 (G)	Do not allow cattle to graze until foliage has dried. Use higher rate for heavy populations and larger caterpillars.	

RESTRICTED USE PESTICIDES FOR CONTROL OF CATERpillARS IN PERENNIAL GRASS PASTURES

Mode of Action (MOA)	INSECTICIDE TRADE NAME Active Ingredient	Rate	Applications per Cutting of Hay	Min. Days from Last Application to Harvest (H) or Grazing (G)	Comments	Est. Cost Per Acre*
3A	BAYTHROID XL Beta-cyfluthrin	2.6-2.8 fl. Oz./A	1 every 5 days, max. of 4 per cutting	0	For first and second instar armyworms.	\$7.25
3A	TOMBSTONE Cyfluthrin	1.6-2.8 fl. Oz./A	1 every 5 days, max. of 4 per cutting	0	For first and second instar armyworms.	
15	DIMILIN 2L Diflubenzuron	2 fl. Oz./A	1	1 (H), not specified (G)	Apply before armyworms are ½ inch long because caterpillars keep eating before their next molt. For max. control, apply at first sign of egg hatch.	\$3.19
3A	DECLARE Gamma-cyhalothrin	1.02-1.92 fl. Oz./A	1	7 (H), 0 (G)	Use higher rate for heavy populations, larger caterpillars or dense foliage.	
3A	WARRIOR II WITH ZEON Lambda-cyhalothrin	1.28-1.92 fl. Oz./A	1	7 (H), 0 (G)	Use higher rate for heavy populations, larger caterpillars or dense foliage.	\$6.15
3A + 28	BESIEGE Lambda-cy + chlortraniliprole	6-10 fl. Oz./A	1	7 (H), 0 (G)	Use higher rate for heavy populations, larger caterpillars or dense foliage.	\$29.71
1A	LANNATE LV Methomyl	0.75-3pt./A	1-4	3 (H), 7 (G)	Use higher rate for heavy populations, larger caterpillars or dense foliage. BERMUDAGRASS ONLY.	\$33.34
3A	MUSTANG MAXX Zeta-cypermethrin	2.8-4 fl. Oz/A	1	0	Use higher rate for heavy populations and larger caterpillars. Graze when spray is dry.	\$5.90

BERMUDAGRASS STEM MAGGOT



Photo: Tim Wilson

BERMUDAGRASS STEM MAGGOT

- **Adult fly – small and yellow with dark eyes**
 - 1/8 inch long
- **Larvae (maggot) – 1/8 inch long**
 - Feed at last plant node, where leaf blade emerges from stem
 - Hidden in plant stem



Photo: ANR-1462

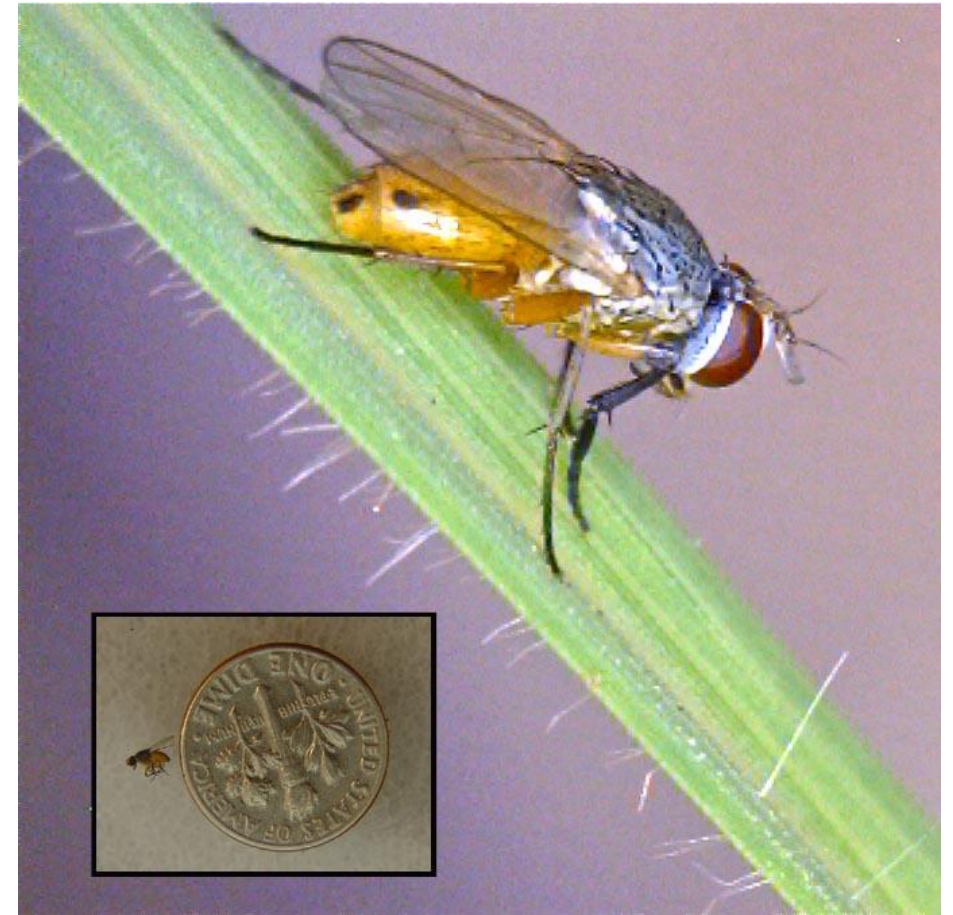


Photo: Will Hudson

BERMUDAGRASS STEM MAGGOT LIFE CYCLE

Target for
insecticide

Adult
18-20 days



Photo: Will Hudson

Egg
2.5 days

Larvae
7-10 days



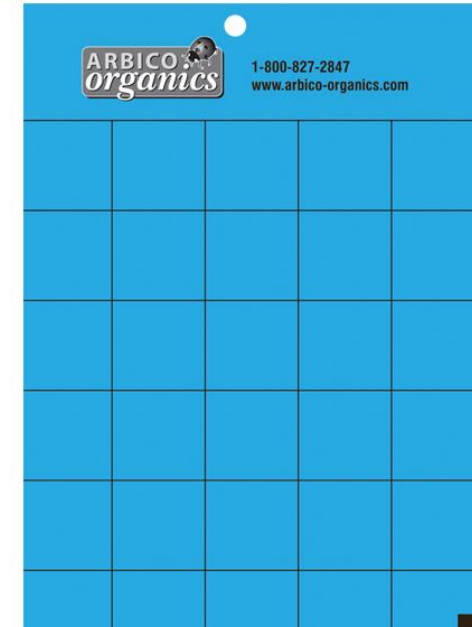
Photo: Tim Wilson

Inside the
plant -
protected
from
insecticides

Pupate in Soil
7-10 days

MONITORING

- **Blue sticky traps in field**
- **Bring to your local County Extension Office for identification**
- **Threshold - ???**



MANAGEMENT

- **If within one week of normal harvest time, cut and remove hay**
- **Maggots leave plants and enter soil**
- **Young maggots die**
- **Those close to pupating, pupate**
- **Adult flies flee field**
- **7-10 days later, adults emerge from soil**

MANAGEMENT

- **7-10 days after cutting, treat with insecticide (pyrethroid) to kill adult flies**
- **May need to spray again, 7-10 days later**

Mode of Action (MOA)	Insecticide Trade Name	Rate	Min. Days from Last Application to Harvest (H) or Grazing (G)	Est. Cost Per Acre
3A	BAYTHROID XL	2.6-2.8 fl. Oz./A	0	\$7.25
3A	TOMBSTONE	1.6-2.8 fl. Oz./A	0	
3A	DECLARE	1.02-1.92 fl. Oz./A	7 (H), 0 (G)	
3A	WARRIOR II WITH ZEON	1.28-1.92 fl. Oz./A	7 (H), 0 (G)	\$6.15
3A	MUSTANG MAXX	2.8-4 fl. Oz./A	0	\$5.90

FIRE ANTS

- **100% irradiation is not likely**
- **Ants are territorial**
- **Chemical control may not be economical in pastures**

- **More economical to treat priority areas:**
 - Handling facilities
 - Hayfields
 - Calving pastures
 - Equipment barns



FIRE ANTS

- **Chemical treatment – continuous process**
- **Fast-acting baits (2-4 weeks):**
 - AMDRO PRO (hydramethylnon)
- **Slower-acting baits (8-12 months):**
 - EXTINGUISH (methoprene)
 - ESTEEM (pyriproxyfen)
- **Combination:**
 - EXTINGUISH PLUS (hydramethylnon + methoprene)
- **Most effective when applied May – September**

TAKE HOME

- **Monitoring is important**
- **Must detect early infestation for good control**
- **If using an insecticide, follow the label**
- **THE LABEL IS THE LAW**

QUESTIONS?

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