



Forage Production Newsletter

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Armyworms In Forage Crops And Hay Fields

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Introduction: It seems that every year gets stranger and when you think it is going to take on some form of normality things simply go hay wire. About three weeks ago I received a telephone call from Mr. Mike McCormick (Agri AFC Sale's Representative at Magnolia, MS.) informing me that Heath Hughes (another Agri AFC Sale's Representative) had just found a population of Fall Armyworms in a hay field in Southwest Mississippi along the Mississippi River and for us to be aware of this finding. Initially, I thought this could not be fall armyworms occurring this early which is earlier than they occurred last year which was earlier than the year before. Well they were correct and the pests are on the move. I feel we have a better understanding of dealing with the pest and a better arsenal of chemistries.

Armyworms consist of a vast group of damaging worms and these include the true armyworm, beet armyworm, yellow striped armyworm and the fall armyworm. All armyworm species can be diagnosed by the inverted Y on the front of their head capsule. All armyworms have a complete metamorphous which means they go through egg, larvae, pupae and adult stages. The larvae stage is the feeding stage and the most detrimental stage. There are two major armyworms that feed on grass crops and they include the true and fall armyworms with the true armyworm generally occurring in the early spring and the fall armyworm occurring in the late summer or early fall.

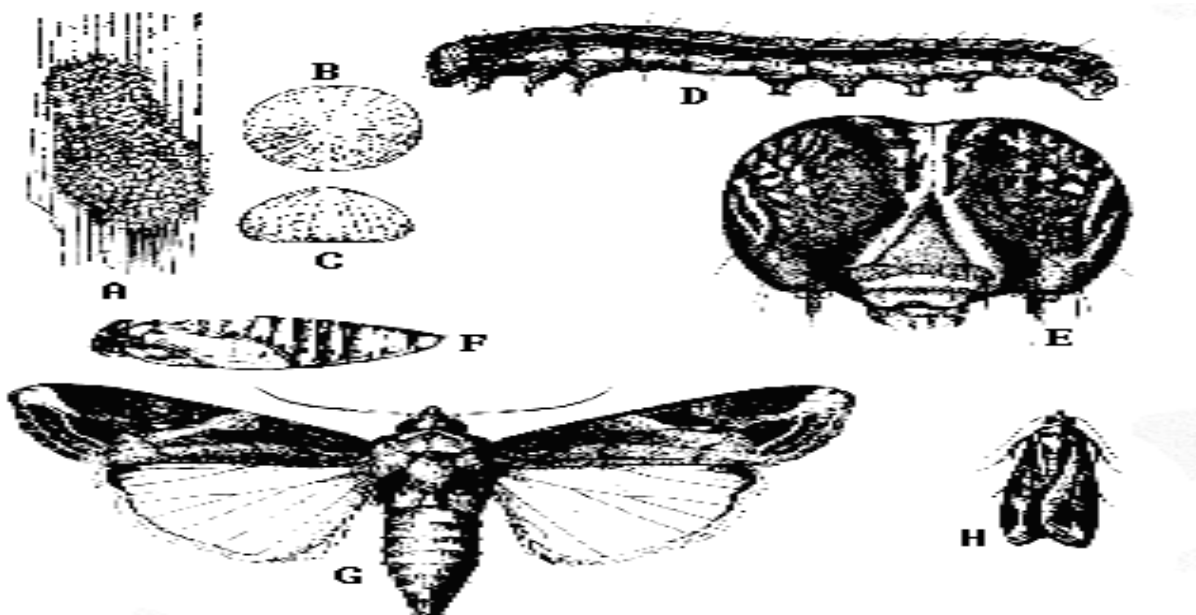
Characteristics: Fall Armyworm Adult: The adult is a moth having a wingspan of about 38.5 mm. The hind wings are white while the front wings are dark grey and mottled with lighter and darker splotches. Each forewing has a noticeable whitish spot near the extreme tip that appears heart shaped to me. As stated they all have an inverted Y on the head capsule.

Fall Armyworm Eggs: The eggs are minute and light in color. They are laid in clusters of about 200 eggs per cluster and are generally covered with grayish fuzzy scales deposited from the body of the female moth. The eggs become darker before they hatch as the head capsule and body develops.

Fall Armyworm Larvae: The fully grown larvae are green, brown, or black in color and are about 30-40 mm long. They have a dark brown head capsule that is generally marked with a pale, distinct inverted Y. Along each side of its body is a longitudinal black stripe and along the middle of the back is a wider yellowish-gray stripe

Fall Armyworm Pupae: The pupa is about 13 mm long and is reddish brown in the beginning but darkens to black as it matures.

Description of life stages of Fall Armyworm.



Fall armyworm. A, Egg mass. B, Egg (top). C, Egg (side). D, Larva. E, Larval head capsule. F, Pupa. G-H, Adults.

Fall Armyworm Biology: This worm species is a continuous resident of the Gulf Coastal states, tropics of North, Central and South America and some of the West Indies. The moths can migrate as far north as Montana, Michigan and New Hampshire but usually only obtain significant populations in the southern states. These insects love grass crops like corn, sorghum, bermudagrass, crabgrass and broadleaf signalgrass. However, they can be found feeding on broadleaf crops like cotton and soybeans. The immature larval stage migrate across fields in a large army motion severely injuring or damaging forage crops. If the forage is an annual crop they can totally destroy the plant and prevent it from returning. These pests prefer crabgrass, broadleaf signalgrass and the sorghums. Regardless, they greatly reduce the forage-producing capacity of a hay field or pasture.



Life History of Fall Armyworm: The Fall Armyworms overwinter in several forms in the tropics and some of the coastal states (There is no documentation of overwintering in MS. or LA.) as pupae. Moths typically begin their migration late June to early July with new moths continuing to appear until November. Each female lay about 1,000-2,000 eggs in masses of 50 to several hundred. The larvae will hatch from the eggs in two to ten days where they will feed in the clusters on the remains of the egg mass. Following this they will scatter in search of food. Unlike the nocturnal true armyworm, the fall armyworm will feed all day and night but are most active early in the morning or late in the afternoon. The worms will begin as small worms and go through several molts as they age and grow. It is easier to control a smaller worm than the larger worm. Remember, armyworms consume 80% of their total food intake during the last few days of development. In about two to three weeks the larvae burrow about 20 mm deep into the ground to pupate. Therefore, their feeding, if not controlled, can be quite extensive. Within about two weeks after they enter the ground, a new moth flight occurs and they can fly several miles before beginning their egg-laying cycle again. It has been reported that three to four generations can occur per growing season. In our area we can deal with the migrating population and with those that over-wintered here simultaneously. I would strongly guess that this population (because it occurred so early) is arising from the population that over-wintered here.

Natural Control: There are many parasitic enemies and diseases of the fall armyworm that tend to keep their population in check. However, cold, wet springs reduce the effectiveness of these parasites allowing the fall armyworms grow in population. High moisture during the summer favors the spread of pathogens that attack this pest.

Treatment Threshold: The treatment threshold is the presence of five to seven medium to large fall armyworms per square foot. Scouting is very important to address them early enough. Check around areas with dead grass or where birds are congregating. In this region check fields with high levels of crabgrass or broadleaf signalgrass. Another method to check for them is to look for the larvae's frass (excrement). If the grass is wet from dew or rain, the worms will attach to shoes or clothes.

Control: There are several chemicals used to control this pest that are very good. However, some are more expensive than others and some require several applications under high pressures. Before selecting a chemical for control consider cost, efficacy, mode of action, size of the larvae and grazing and haying restrictions before choosing a product.

CONTROL OF FALL ARMYWORMS IN HAY AND PASTURES

Insecticide	Amount of Formulation per Acre	Pounds Active Ingredient Per Acre	Acres 1 Gallon or 1 lb. Dry will treat	Pre-Grazing Interval	Pre-Harvest Interval	Application and Comments
*Baythroid XL	1.6-1.9 oz.	0.013-0.015	80-67	0	0	Do not apply within 7 days of harvest; 0 day restriction for grazing
Sevin XLR	1.0-1.5 qts.	1-1.5	4-2.6	14	14	Must remove cattle. Do not apply within 14 days of harvest or grazing. Other Sevin formulations also available.
Dimilin 2L	2 oz.	0.031	64	0	0	Allow 1 day after treatment before cutting for hay. Apply when larvae are less than ½ inch in size.
*Karate Z	1.28-1.92 oz.	0.02-0.03	100-66.7	0	7	Do not apply within 7 days of harvest; 0 day application restriction for grazing
Malathion 57 EC	2 pt.	1.25	4	0	0	Must remove cattle. Allow spray to dry before harvest or grazing
Intrepid 2F	4-8 oz.	0.06-0.12	32-16	0	7	Do not apply within 7 days of harvest; 0 day application restriction for grazing
Tracer 4SC	1-3 oz.	0.031-0.094	128-42.7	0	3	Do not apply within 3 days of harvest; 0 days restriction for grazing
*Mustang Max 0.08EC	2.8-4.0 oz.	0.0175-0.025	45.7-32	0	0	0 day application restriction for forage or hay.

* Denotes Restricted Use Pesticides. Extreme care should be used when mixing or applying these products. Read and follow all label restrictions.

The following is some information about the chemicals. These chemicals can be divided into several categories which include Pyrethroids (Baythroid, Karate and Mustang Max), Biological (Tracer), Carbamates (Sevin), Organo-Phosphates (Malathion) and Insect Growth Regulators (Dimilin and Intrepid). The pyrethroids, organo-phosphates, carbamates and Tracer are primarily contact insecticides that provide a quick kill but provide little residual while the insect growth regulators are somewhat slower but are very effective and provide more residual control over time. The insect growth regulators are slow because the insect must molt to kill them. However, with these insecticides, the insect will feed less aggressively when it has ingested the product and just because you see the insect in the field does not mean the product is not working. Remember, these products are often better on young worms. In the early stages where insects have grown to a large size, it will be best to use a compatible and labeled quick knock down product tank-mixed with one of the Insect Growth Regulators for residual control. The problem with the Insect Growth Regulators is that if the grass is actively growing when treated the new growth will grow beyond the treated older portion. This is not totally bad since the insects will move down during the heat of the day and feed in the treated area. Another negative about the Insect Growth Regulators is that when the hay is cut or grass grazed, the Insect Growth Regulator treated grass is removed.

The Insect Growth Regulators are less expensive on a per acre basis when compared to Sevin and Malathion (very commonly used and carried products). Another positive about one Insect Growth Regulator (Dimilin) is that as it passes through the cow it has been shown to offer some fly control. Remember, Sevin has a 14 day harvest and grazing restriction with the other products having much shorter restrictions and Malathion is not as effective in its control as some of the other products. With many of these products, there will be some sticker shock at per gallon price but they go out at very low rates and their cost per acre is very reasonable. Therefore, several people can go in together to purchase these products. Since these products are applied at low rates make sure to properly calibrate your spray equipment and use a minimum of 20 gallons of water per acre.

Cost in \$/Acre/Application.

Product Name	\$/Ac Low Rate	\$/Ac High Rate
Baythroid XL	3.73	4.42
Mustang Max 0.08 EC	4.77	6.81
Karate Z	3.13	6.00
Malathion	4.88	
Dimilin 2L	3.75	
Intrepid 2F	7.50	15.00
Tracer 4SC	8.75	26.25
Sevin XLR	11.82	17.73

Prices will vary among different dealerships and Co-Ops

For More Information Contact Your Local Extension Office.



Figure 2. Fall armyworm damage on closely mowed grass. Note brown patches resembling drought damage.



Figure 3. Fall armyworm damage in a hayfield. Caterpillars have eaten the tender, green portions of the grass, leaving jagged leaf edges and tough leaf bases.