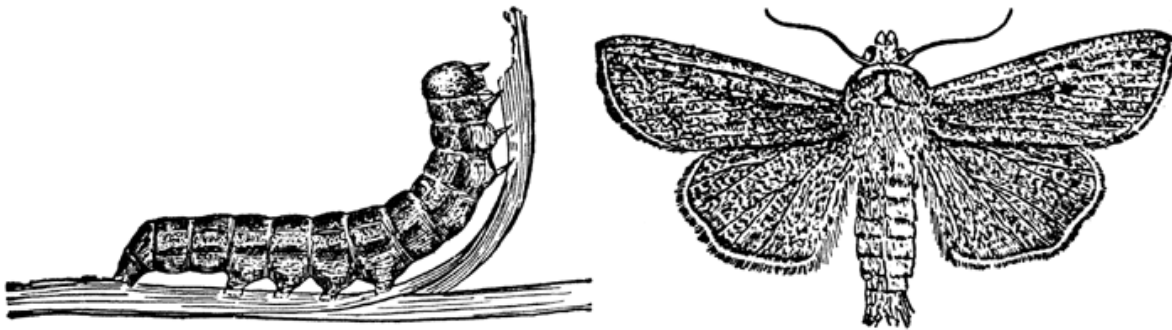


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Armyworms In Texas Pastures

**Texas AgriLife Extension Service
Harrison County Office
102 West Houston
Marshall, Texas 75670
903-935-8413
<http://harrison.agrilife.org/>**

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Armyworms In Texas Pastures...

Armyworm outbreaks are difficult to predict but infestations seem to occur in portions of the state every year especially after rains in the early fall. Common species of armyworms present in Texas include: the fall armyworm, *Spodoptera frugiperda*; the yellowstriped armyworm, *Spodoptera ornithogalli*; the beet armyworm, *Spodoptera exigua*; and the armyworm, *Pseudaletia unipuncta*. The fall armyworm is usually the species that causes the most problems in pastures, small grains and turfgrass.

BIOLOGY AND HABITS

All armyworms have four life stages: egg, larva, pupa and adult. Eggs are very small, white, laid in clusters of 50 or more and are covered with grayish, fuzzy scales from the body of the female moth. The eggs are seldom seen in grasses and are usually laid at the base of host plants. Lush plant growth is preferred by the adults for egg laying. Larvae (caterpillars) are very small when they emerge from the egg. Larvae will feed for 2-3 weeks and can be 26-37 mm (1-1.5 inches) long with various color patterns depending on the species. The larvae have five instars (stages when molting occurs) and sometimes hide in debris on the soil surface in the middle of the day. When full grown, larvae enter the soil and form the pupal stage. Adult moths emerge from pupae. Moths mate and lay eggs, thus starting the life cycle over again.

Several generations (a generation is the development from egg to adult stage) occur each year and typically take about 28 days to complete. Generation time can be extended if cooler temperatures occur and can last up to several months. Armyworms in the spring and summer occur in more distinct groups than later in the season. Fall populations of larvae often blend together several generations and may appear to be continually occurring. Some detail on the species mentioned follow.

Fall Armyworm - The fall armyworm overwinters in the pupal stage in the southern regions of Texas. The adult is a moth that migrates northward as temperatures increase in the spring. The adult moth has a wingspan of 32-40 mm (about 1.5 in.). The hind wings are silver-white; the front wings are dark gray, mottled with lighter and darker splotches. Each front wing has a noticeable whitish spot near the extreme tip on the males. Larval color can vary from light tan to shades of green. The head is brown or black with a prominent white line between the eyes which forms an inverted "Y." The fall armyworm has four large spots on the upper surface of the last segment of its body. Along the middle of the larva's back is a wide, yellowish-gray band with a dark, black stripe just below the yellowish-gray band.

Yellowstriped Armyworm - The yellowstriped armyworm moth has dark forewings with white and brown markings, and white hind wings. The wingspan ranges from 32 to 38 mm. The larva has a brownish head and bright yellow stripes near the top of the sides of the body and a pair of black, triangular spots running the length of the body.

Beet Armyworm - Adult beet armyworm moths have wingspans of 25 to 32 mm, with forewings that are mottled gray or brown with a pale spot near the center of each wing. The hind wings are a uniform gray or white. The larva is usually green but color can vary, with dark lateral bands running the length of the body. The larva has a single, dark spot behind the head and directly above the second pair of true legs (located directly behind the head). Beet armyworms tend to be more of a problem in hot, dry conditions and are usually a significant pest in vegetables and other broadleaf plants (such as cotton).

Armyworm - The adult moths are grayish tan, with small salmon or orange-pink dots on the forewings. The armyworm larva has a dark band running lengthwise along the middle of the back with a pale stripe just below the dark band. Fall armyworm has the reverse coloration. Armyworm caterpillars have a net-like or "honeycomb" pattern in their eyes and a dark band at the top of each proleg (unjointed legs near the back of the body). Armyworm larvae lack the inverted "Y" and four black spots on the last segment which are characteristic of the fall armyworm.

PEST STATUS AND CONTROL

When feeding, larvae strip foliage and then move to the next available food. High populations appear to march side by side to the new food. Thus, the name armyworms is derived.

Armyworms attack many different kinds of plants. When food is scarce, they will move to plants that are not normally attacked. Thus, armyworms can be found on nearly any plant as they migrate in search of edible foliage. Plants attacked by armyworms include: bermudagrass, fescue, grain and forage sorghum, corn, small grains, sweet potato, beans, turnip, clover, spinach, cucumber, potatoes, tomatoes, cotton and cabbage.

Damage consists of defoliation. The small larvae will chew the green layer from the leaves, creating a "window pane" effect. The first three instars cause very little feeding damage while the last two instars consume 85% of the total foliage consumed.

Control-Although armyworm outbreaks are memorable when they occur, in reality, the outbreaks are usually small in scope. Weather and natural enemies usually act together to keep populations under control.

Parasites such as wasps and flies are very effective against armyworms. Predators, such as ground beetles, are also effective in limiting outbreaks. Birds, skunks and rodents also consume large numbers of larvae and pupae. Diseases such as insect viruses and fungi can also be important.

However, conditions can occur that favor armyworms. High egg survival of fall armyworms is favored by above average rains in August and September. Beet armyworm outbreaks are likely in hot, dry conditions or when multiple applications of insecticides reduce natural enemies. Because armyworm moths are strong fliers, outbreaks can also occur when storms move the moths and allow them to escape natural enemies.

Armyworms should be controlled when they occur in large numbers or plant damage is becoming excessive. The fall armyworm outbreaks usually occur late in the summer and early fall. Preventive treatments normally are not justified because attacks are sporadic and egg mortality is usually high. A variety of natural enemies keep fall armyworm larvae down to moderate numbers. Early detection of larvae is the best management tool and is achieved by frequent, thorough inspection of plants. Outbreaks seem to occur shortly after a rain or supplemental irrigation.

Fall armyworms feed any time of the day or night, but are most active early in the morning or late in the evening. Susceptible fields or lawns should be scouted by counting the number of armyworms in a square foot area in 8 different sites. Divide the total worm count by 8 to find the average number of armyworms per square foot. Be sure to take samples in the interior of the field because this pest is often heaviest near the field margins. Sometimes, only the field margins require treatment.

The threshold level ranges from two to three larvae per square foot for seedling wheat. For older plants, three to four larvae and obvious foliage loss justify control measures. Thresholds in improved pastures and lawns vary with conditions but treatment should be considered when counts average three or more worms per square foot.

Insecticide choices vary with the crop but the following (with product names and grazing restrictions in parentheses) are labeled for use in pastures include carbaryl (Sevin®) (14 days), malathion (0 days), methomyl (Lannate®) (7 days), methyl parathion (PennCap®-M) (15 days) and various biologicals such as Dipel®(0 days). Insecticide labeled in lawns and turf include halofenozide (Mach® 2), bifenthrin (Talstar®), cyfluthrin (Tempo®, Bayer Advanced®), carbaryl (Sevin®) permethrin (multiple brands) and spinosad (Conserve® and others).

ARMYWORM CONTROL – PASTURES / HAY, May 2011						
	Active Ingredient	Price*	Application Rate	Cost per acre	Grazing and Harvesting Restrictions	Remarks
Malathion 57%, Malathion ULV	Malathion	\$49.54 / gal	2 pt / acre	\$12.39	Harvest or Graze - 0 d	May be applied on the day of harvest or grazing.
			1.5 pt in 1 gal diesel or fuel oil / acre	\$9.29		
Mustang Max	Zeta-cypermethrin	\$213.27 / gal	2.8 fl oz / acre	\$4.67	Cutting & Hay - 0 d; Forage, Straw & Seed Screening - 7 d; Alfalfa & non-grass feed - 3 d harvest or graze	The restricted entry interval (REI) is 12 hours for all labeled crops. Do not make applications less than 7 days apart. Apply as insects appear in sufficient volume of water to ensure thorough coverage of foliage.
			3.0 fl oz / acre	\$5.00		
			3.5 fl oz / acre	\$5.83		
			4.0 fl oz / acre	\$6.66		
Tracer	Spinosad	\$850.00 / gal	1 fl oz / acre	\$6.64	Hay or fodder - 3 d; Forage - 0 d; No grazing until spray has dried	Treat when economic thresholds are exceeded, targeting eggs at hatch or small larvae. Do not apply more than 3 times in any 21-day period. Do not make more than 6 applications per season. Treat when eggs hatch and larvae are small
			1.5 fl oz / acre	\$9.96		
			2 fl oz / acre	\$13.28		
Sevin 4F, Sevin XLR	Carbaryl	\$126.19 / 2.5 gal	1 qt / acre	\$12.61	Harvest or grazing - 14 d	Up to 2 applications per year may be made but not more often than once every 14 days. Carefully mark swaths to avoid over-application.
			1.5 qt / acre	\$18.92		
Dimilin 2L	Diflubenzuron	\$247.57 / 1 gal	2 fl oz / acre	\$3.87	Cutting - 1 d	The restricted entry interval (REI) is 12 hours for all labeled crops. Do not exceed a total of 2 fl oz per acre per cutting. Do not exceed a total of 6 fl oz per acre per year. For maximum control use at first sign of hatch outs and prior to larvae reaching fourth instars (<1/2 inch). Must be ingested and larvae must molt before populations are reduced.
Warrior	Lambda-cyhalothrin		2.56 fl oz / acres		Harvest or straw – 7 d; Graze or forage – 0 d	Apply as required by scouting, usually at intervals of 5 or more days. Timing and frequency of applications should be based upon insect populations reaching locally determined economic thresholds. No more than 11.52 fl oz/acre/season.
			3.84 fl oz / acre			
Intrepid 2F	Methoxyfenozide	\$261.52 / gal	4 fl oz / acre	\$8.17	Hay - 7 d harvest; Forage - 0 d harvest	Only effective on Lepidoptera. Begin applications when first signs of feeding damage appear or when threshold levels of feeding damage occur. Use higher rate for heavier infestations and under conditions in which thorough coverage is more difficult.
			5 fl oz / acre	\$10.22		
			6 fl oz / acre	\$12.26		
			7 fl oz / acre	\$14.30		
			8 fl oz / acre	\$16.35		
Lannate (Bermudagrass pasture ONLY)	Methomyl	\$202.88 / 2.5 gal	3/4 pt / acre	\$7.61	Feeding forage or graze - 7 d; Hay cutting - 3 d	Do not make more than 4 applications / crop. Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours.
			1 pt / acre	\$10.14		
			2 pt / acre	\$20.28		
			3 pt / acre	\$30.42		
Karate Z	Lambda-cyhalothrin	\$180.00 / gal	1.28 fl oz / acre	\$1.80	Forage, graze or cut - 0 d; Hay - 7 d	Use higher application volumes and rates when foliage is dense, pest populations are high, larvae are large and/or weather conditions are adverse. A minimum re-treat interval (REI) of 30 days is required for pastures and rangeland receiving 1.92 fl oz per acre which have not been cut between applications.
			1.92 fl oz / acre	\$2.70		
Baythroid XL	Beta-cyfluthrin	\$345.00 gal	2.6 fl oz / acre	\$7.01	Grass for Hay, Pasture, Rangeland & Seed - 0 d; Grass in mixed-stands with Alfalfa - 7 d	For control of 1 st and 2 nd instar (larvae 1/4 inch long and less).
			2.8 fl oz / acre	\$7.55		

*Price shown is approximate. Actual price will vary. For educational use only. Pesticide user must read and follow label directions. Updated May, 2011