

Grain Sorghum Insect Control

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Insect pests associated with grain sorghum cause a wide range of damage. Foliage feeding by whorl feeders, such as the corn earworm and fall armyworm, causes a lot of visible feeding. In reality, whorl feeders cause very little, if any, yield loss. On the other hand, an infestation of the small sorghum midge causes heavy damage, but little external evidence shows until harvest.

Be aware of the various insect pests associated with grain sorghum. Efficient management of insects on grain sorghum requires some knowledge of the biology and seasonal abundance of the insects. You can get higher yields and save money by managing insect pests based on biological principles and knowledge of the pests.

Insect Pests of Sorghum

Greenbug

The greenbug is an aphid that sucks sap from sorghum plants and, during feeding, injects a toxic substance into the plant. The greenbug is a pale green aphid about 1/16 inch long with a dark green stripe down the back. Greenbugs may be winged or wingless. All the wingless types are female and give birth to living young. The female reproduces for 20 to 30 days during which time she gives birth to 50 to 100 young. Greenbugs usually feed in colonies on the underside of leaves.



Greenbug

Due to their rapid rate of reproduction, heavy infestations of greenbugs may develop. However, their numbers are often kept in check by unfavorable weather, particularly heavy rainfall, and by natural enemies. One of the primary natural enemies of greenbug is a small parasitic wasp. These wasps are less active than greenbugs when the temperature is below 65°F.

Consequently, during periods of cool weather, the greenbug can increase to high numbers. Thus, temperature greatly influences greenbug populations. Mild winters and cooler-than-normal springs favor greenbug outbreaks. Insect predators, particularly lady beetle adults and larvae, syrphid fly larvae and lacewing immatures may also effectively reduce greenbug populations.

Greenbugs feed in colonies on the undersides of the leaves and cause characteristic reddened spots on the upper leaf surface. Honeydew is also typically present on the upper leaf surfaces. The extent of greenbug damage to sorghum is dependent on

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greenbug numbers, plant size, vigor, stage of growth and moisture conditions. Damage at the seedling stage may result in stand reduction.

Check plants periodically for greenbugs during the growing season. For greenbug and other aphids, examine at least 100 plants throughout the field and determine plant damage, aphid numbers, beneficial insect activity and plant moisture stress. Treatments are based on the assumption that greenbug populations will increase. If more than 20 percent of the greenbugs appear brown and swollen (i.e., parasite is inside) or predatory insects are present, these beneficials may significantly reduce the population. Re-examine such fields in two to three days to determine if treatment is needed. Treat fields when greenbugs are causing damage. Use Table 1 as a guide on when to treat.

Greenbug-resistant varieties of grain sorghum are available. These varieties tolerate larger numbers of greenbugs with less damage than susceptible varieties. Because thresholds are based on plot damage, treatment levels for resistant sorghums are the same as for susceptible sorghums.

Table 1. Treatment Guidelines for Greenbugs.

Plant Size	When to Treat
Emergence to 6 inches high	Visible damage to plants with colonies of greenbugs on plants.
6 inches to Preboot	Leaves showing damage and several greenbug colonies but before entire leaves die.
Boot to Half-Bloom	Leaves with visible damage and up to one whole leaf dying; greenbugs present.
Soft Dough to Hard Dough	Leaves with visible damage, up to two whole leaves dying; greenbugs present.

Corn Leaf Aphid

The corn leaf aphid is a bluish-green aphid, with black legs, cornicles and antennae. Grain sorghum tolerates high numbers of this aphid, but occasionally the population reaches levels requiring treatment, especially on very young seedlings. Corn leaf aphids do not inject a toxin as does the greenbug. Larger sorghum plants in the boot and later growth stages generally tolerate large numbers of aphids without significant damage. After head exertion, corn leaf aphid populations decline. Yield losses occur when corn leaf aphids cause stand loss of seedling plants or when very high numbers prevent head exertion from the boot.

Yellow Sugarcane Aphid

The yellow sugarcane aphid is lemon yellow and covered with small spines. It has two double rows of dark spots down the back. During feeding, the aphid injects a toxin



that causes seedling plants to turn purple, similar to phosphate deficiency. Mature leaves will be stunted and turn yellow as a result of feeding. Sorghum up to 18 inches tall can be killed by 5 to 10 aphids per leaf, but the aphid is rarely found on plants beyond the 5-leaf stage.

The yellow sugarcane aphid has a wide host range and is often found on johnsongrass and dallisgrass. Treat at the first sign of damage or one yellow sugarcane aphid per plant on seedling sorghum.

Table 2. Insecticides for Greenbug and Other Aphid Control.

Insecticide	Concentrate per Acre	Days from Last Application to Harvest
At Planting Application Gaucho/Axcess/Senator Cruiser Poncho	6.4 oz/cwt 5.1 oz/cwt 5.1-6.4 oz/cwt	
Foliar Sprays Dimethoate 4.0 Lorsban 4 EC	1/2 - 1 pt 1/2 - 1 pt	28 (see remark 1) 30 (see remark 1)
1. Dimethoate or Lorsban – Do not apply more than three times per season.		

Chinch Bugs

Chinch bugs are a pest of grain sorghum in Arkansas, particularly in the grand prairie region of the state. The black-bodied adult chinch bug has reddish-yellow legs and fully developed wings. The wings are mostly white with a triangular black spot at the middle of the outer wing margin. Immature chinch bugs resemble adults in shape but are reddish with a white band across the back and have no wings.



Adult and immature chinch bugs feed behind the lower leaf sheaths. They suck plant juices and cause a reddening of the leaf. Heavy infestations on young plants may result in wilting and severe stunting. Hot, dry weather favors buildup of chinch bug populations. Large numbers of chinch bugs may migrate from wild bunch grasses or small grains, such as wheat, to attack grain sorghum in the spring.

To monitor for chinch bugs, examine at least 100 plants per field at five or more locations throughout the field. When plants are less than 6 inches tall, treat when seedlings are dying to the point of reducing stand below an acceptable level and chinch bugs are present. On plants taller than 6 inches, begin control when immature and adult bugs infest 75 percent of the plants. Foliar sprays for chinch bugs are most effective when applied by ground equipment using 20 to 30 gallons of water per acre with the nozzles directed at the infested portions of the plant. Hollow cone nozzles are preferred. Satisfactory control of chinch bug is seldom obtained on booting or larger sorghum plants.

Table 3. Insecticides for Control of Chinch Bugs.

Insecticide	Concentrate per Acre	Days from Last Application to Harvest
At Planting Application		
Gaucho/Axcess/Senator	6.4 oz/cwt	
Cruiser	5.1 oz/cwt	
Poncho	5.1-6.4 oz/cwt	
Foliar Sprays		
Karate Z 2.08	1.92 oz	30
Baythroid XL 1E	2-2.8 oz	14
Sevin 80 S	1 1/2-2 1/2 lbs	21
Asana XL 0.66EC	5.8-9.6 oz	21
Prolex/Declare 1.25	1.54 oz	30
Mustang Max 0.8EC	3.2-4.0 oz	14

Caterpillars

Several caterpillar species feed on the plant or in the heads of grain sorghum. The primary caterpillars that feed on sorghum are sorghum webworm, corn earworm and fall armyworm. The corn earworm and fall armyworm feed in the early stages of sorghum on leaves and later on the heads. The sorghum webworm is a pest during the heading stage and feeds only in the head.

Scouting Grain Sorghum for Caterpillars

Scout sorghum at least once a week to detect caterpillar infestation. Scouting is very important when heads begin to emerge from the boot. Examine 100 heads per each 20- to 40-acre field and more in larger fields. Caterpillars feeding in the heads are

often difficult to detect. Shaking the heads onto a cloth or into a white plastic bucket may help detect larvae. Count the number and kind of worms present and determine the average number of each per head.

Whorl Feeders

Fall Armyworm, Corn Earworms

Fall armyworm and corn earworm moths often deposit eggs on the leaves of sorghum plants. Fall armyworm larvae are smooth in appearance, brown in color



Corn Earworm

with dark longitudinal stripes. The head capsule has an inverted "Y" on the face. Larvae of the corn earworm vary from pale green to brown with spots scattered across the body. The larvae, usually called budworms, feed in the whorls of young sorghum, often causing extensive "ragging" of the blades. This damage is not as harmful as it appears and seldom results in loss of yield. However, three to six larvae per plant in the whorl stage may cause damage to the developing head or growing point which justifies treatment at these levels. Generally when there are several worms in the whorl, they are fall armyworm, since corn earworm larvae are cannibalistic at this stage.

Head Feeders

Corn Earworm, Fall Armyworm and Sorghum Webworm

Corn earworm and fall armyworm infestations in grain sorghum heads are generally below treatment level except in late crops. Early-planting practices that encourage the development of beneficial insect populations aid in the control of armyworms and earworms. The corn earworm is more common than fall armyworm, but both species are readily abundant. Infestations are more damaging in tight headed sorghum varieties than in open heading varieties. When densities exceed an average of two larvae per head, 1/2-inch in size, in maturing sorghum, begin control measures. It is important to wait until larvae are around 1/2-inch in size because many natural enemies will feed on smaller larvae and often reduce populations below economic thresholds. Inspect sorghum heads soon after flowering and continue through the soft dough stage.

The sorghum webworm is one of the most common pests of sorghum in Arkansas. The larvae are reddish- to yellowish-brown, somewhat flattened, marked with four longitudinal reddish to black stripes. Larvae are approximately 1/2 inch long when mature and are densely covered with spines and hair. Large numbers of webworms, especially in late planted sorghum, can occur in heads where they gnaw circular holes in maturing seed and feed on the starchy contents. Apply an approved insecticide when you find five or more larvae per head.



Sorghum Webworm

Table 4. Insecticides for Control of Corn Earworm.

Insecticide	Concentrate per Acre	Days from Last Application to Harvest
Sevin 80 S	1.87-2.5 lbs	21
Sevin XLR 4L	3-4 pts	21
Lannate 2.4 LV	3/4-1 1/2 pts	14
Karate 2.08	1.28-1.92 oz	30
Baythroid 2 EC	1.6-2.8 oz	14
Silencer/LambdaCy	2.56-3.84 oz	30
Asana XL/Adjourn	5.8-9.6 oz	21
Prolex/Declare 1.25EC	1.02-1.54 oz	30
Mustang Max/Respect	1.28-4 oz	14 (grain)
Tracer 4E	1.5-3 oz	7 (grain) 14 (forage)

NOTE: Do not use methyl parathion on grain sorghum for it will damage plants.

Table 5. Insecticides for Control of Fall Armyworm and Sorghum Webworm.

Insecticide	Concentrate per Acre	Days from Last Application to Harvest
Sevin 80 S	1.87-2.5 lbs	21
Sevin XLR 4L	3-4 pts	21
Lannate 2.4 LV	3/4-1 1/2 pts	14
Tracer 4 SC	1.5-3 oz	7 (grain) 14 (forage)

NOTE: Do not use methyl parathion on grain sorghum for it will damage plants.

Sorghum Midge

The sorghum midge is potentially the most destructive pest of grain sorghum in Arkansas. The sorghum midge adult is a tiny, fragile-looking orange fly. The female deposits 50 to 250 tiny, yellowish-white eggs in spikelets of flowering heads during her short lifetime of 24 to 48 hours. A pinkish-orange maggot hatches from the egg and feeds on the developing seed. Larval feeding causes “blaster” heads

resulting in undeveloped seeds. The entire life cycle is completed in 15 to 20 days.

Midges reproduce on several grasses such as johnsongrass or similar plants, but sorghum is the preferred host. Early midge reproduction occurs in johnsongrass, but populations do not usually build up to high numbers on this host. Thus, midge-free sorghum may be produced in johnsongrass areas, regardless of planting date, if there is no earlier blooming sorghum nearby. The large population buildup usually occurs when sorghum begins flowering. Low numbers of midges may be in early sorghum, but they are seldom high enough to justify treatment. High populations of midge occur in areas where flowering is extended over a long time because of staggered planting dates. Two to three generations are produced in sorghum and may result in high midge populations in late flowering sorghum. High numbers of midge often occur about 30 to 35 days after the first sorghum blooms. In Arkansas, this generally occurs in early to mid-August depending on how early the first plantings are made. Successive crops of blooming sorghum are required for populations to build up.

In fields that germinate uniformly and grow without stress, only one generation of midge develops. In cases of uneven emergence or in fields where tillers and side branches, commonly called suckers, develop as a result of stress, late heads are produced. The production of late heads extends the blooming period enough for two generations to develop. Since the adult midge is a weak flyer with a short life span, it cannot disperse over large areas. Wind may scatter midge, and the populations are usually diluted by such scattering. Therefore, migration is not the primary source of infestation.

Planting to Avoid Midge Infestations

The short life span of the adult is a weak link in the life cycle of the sorghum midge. If no flowering sorghum is present, reproduction takes place only in johnsongrass. This stops or slows the buildup of midge populations. Damaging midge infestations may thus be avoided by early, uniform planting. If the entire crop cannot be planted early, damaging midge infestations may be avoided in later planted sorghum by delaying additional plantings by five to six weeks. By following these planting practices on an area basis, the seasonal buildup of midge populations is



Sorghum Midge

interrupted. In late planted sorghum, the potential for damaging midge infestations may be minimized by planting the entire crop within a few days.

Scouting for Midge

Sorghum midge only infests flowering grain sorghum, thus scouting procedures for midge should begin when flowering begins and continue at two- to three-day intervals until flowering is completed. Check a minimum of 100 heads throughout the field. Adult midges may be seen crawling on or flying about flowering grain heads. However, detection is facilitated by quickly slipping a clear plastic bag over the head. This allows the number of adults per head to be more easily counted. We recommend that sorghum be scouted for midge in the early morning before the wind rises because the small flies are difficult to locate and check accurately under windy conditions.

Large numbers of midge swarming around sorghum heads in the dough stage are no cause for alarm; these are the darker colored males. Midge cannot infest sorghum in the dough stage. The males stay around the heads from which they have emerged and mate with emerging females. Mating usually occurs within 15 minutes after female emergence. Fertile females then seek blooming sorghum for egg laying. Most of the midge seen in blooming sorghum are the orange-colored females.

Begin control procedures when 25 to 30 percent of the heads are flowering and you find an average of one midge per head. If you still find an average of one midge per head three to five days after treatment, immediately apply a second treatment. Midge frequently reinfest treated fields, and several applications at three- to five-day intervals may be needed if the yield potential is high and midge are abundant.

Table 6. Insecticides for Control of Sorghum Midge.

Insecticide	Concentrate per Acre	Days from Last Application to Harvest
Lorsban/Nufos 4 E	1/2 pt	30 (see remarks)
Dimethoate 4 E	1/4-1/2 pt	28
Lannate 2.4 LV	3/4-1 1/2 pt	14
Prolex/Declare 1.25E	0.77-1.28 oz	30
Karate 2.08	0.96-1.28 oz	30
Silencer/LambdaCy	1.92-2.56 oz	30
Baythroid XL1 E	1-1.3 oz	14
Mustang Max	1.28-4 oz	14 (grain)
Asana XL 0.66 EC	2.9-5.8 oz	21

NOTE: Do not use methyl parathion on grain sorghum for it will damage plants.



Rice Stink Bug Adult

Stink Bugs

Stink bugs infest grain sorghum after flowering and feed upon the young, developing grain. Grain sorghum is most susceptible to stink bugs in the milk and soft dough stages. Once the grain is hard, susceptibility to stink bug damage is greatly reduced.

The rice stink bug and southern green stink bug are the primary stink bugs found on grain sorghum, although other species may also be found damaging grain sorghum. All adult stink bugs are shield shaped. Rice stink bug adults are straw-colored and slightly less than 1/2 inch long. When immature stink bugs first hatch, they have a black head and thorax, but the abdomen is red with two black spots. The southern green stink bug adults are bright green and slightly larger than 1/2 inch in length. The immature form is light green with a series of white spots along the back.

Check fields weekly for stink bugs after heads begin forming. Examine 50 to 100 heads throughout the field to determine the average number of stink bugs per head. Treatment for stink bugs should begin when stink bugs per head average five during flowering, milk and soft dough stages. During the hard dough stage, treat when 16 or more stink bugs are present per head.

Table 7. Insecticides for Control of Stink Bugs on Grain Sorghum.

Insecticide	Concentrate per Acre	Days from Last Application to Harvest
Karate 2.08	1.28-1.92 oz	30
Baythroid XL1 E	1.3-2.8 oz	14
Asana XL/Adjourn	5.8-9.6 oz	21
Prolex/Declare 1.25	1.02-1.54 oz	30
Silencer/LambdaCy	2.56-3.84 oz	30
Mustang Max	1.28-4 oz	14 (grain)

NOTE: Use higher rates if brown stink bugs are predominant species.

SORGHUM PEST OCCURRENCE PROFILE

Wireworm _____

Cutworm _____

Greenbug..... _____

Corn Leaf Aphid..... _____

Yellow Sugar..... _____

Cane Aphid

Midge..... _____

Sorghum Webworm..... _____

Spider Mite..... _____

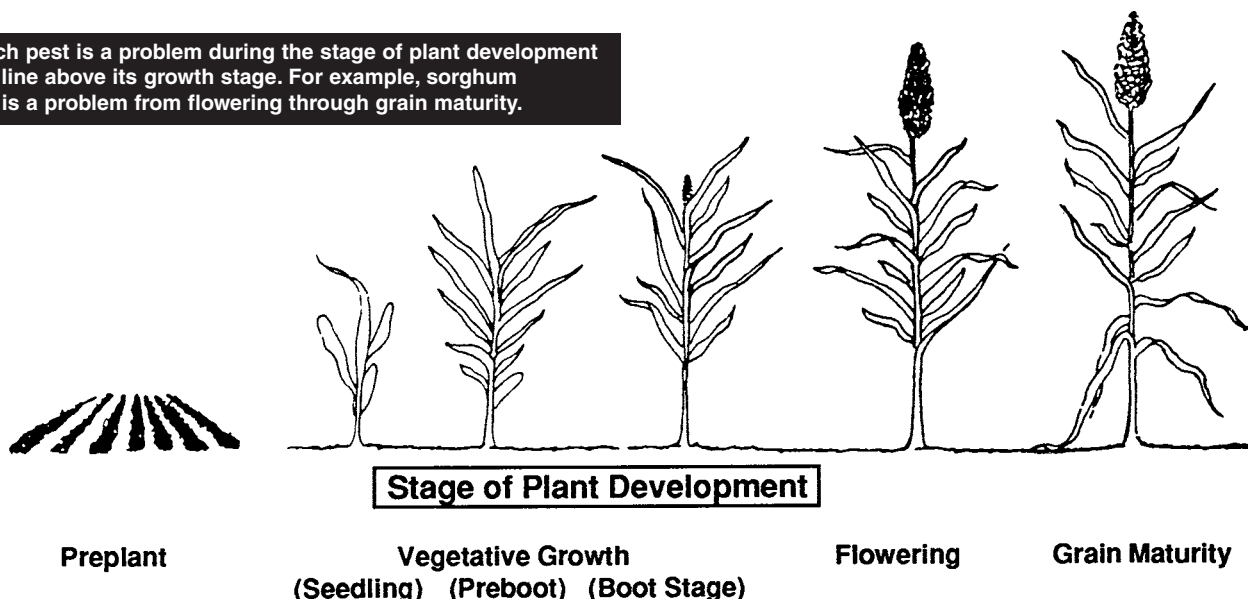
Chinch Bug..... _____

Fall Armyworm..... _____

Corn Earworm..... _____

Stink Bug..... _____

NOTE: Each pest is a problem during the stage of plant development under the line above its growth stage. For example, sorghum webworm is a problem from flowering through grain maturity.



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