



Current Report

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Management of Insect and Mite Pests in Sorghum

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Sorghum pests, if not controlled when thresholds are exceeded, will reduce yield and quality of grain and forage. Pesticides should not be used as a substitute for good agronomic practices or as “preventative insurance” because it is rarely economically or environmentally justifiable. Many sorghum pest problems can be avoided by implementing an Integrated Pest Management (IPM) plan that includes preventive pest management practices, such as planting high-quality, vigorous, Oklahoma-proven hybrid seed; planting it at the proper time for optimal health and yield, providing proper fertilization and weed control; and, when possible, keeping sorghum fields as far away as possible from wheat.

The information herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Cooperative Extension Service is implied.

Pesticide recommendations in this publication were correct as of the “Modified Date” but always check the label that came with the purchased insecticide for the most current rates and restrictions

The first name listed is the trade name of a product registered for use in corn for the listed pest. The name in

(parentheses) listed below the trade name is the name of the active ingredient. The active ingredient name is provided because in many cases, there are other registered products containing the same active ingredient that may cost less, so producers should compare prices.

The number [in brackets] following a product is its Mode of Action number [MOA]. The more frequently insecticides with the same MOA are used, the more likely resistance will occur. This number provides an easy way to select different modes of action to avoid selecting for pests that are resistant to a certain mode of action.

Refer to the following OSU publications for additional information.

- CR2162 Grain Sorghum Performance Trials in Oklahoma, 2015
- EPP-7157 Field Key to Larvae in Sorghums
- EPP-7196 Grasshopper Management in Rangeland, Pastures, and Crops
- PSS-2113 Grain Sorghum Production Calendar
- PSS-2166 Use of Glyphosate as a Harvest Aid in Early Planted Grain Sorghum
- PT-2005-2010 Grain Sorghum Performance Trials in Oklahoma.

Management of Insect and Mite Pests in Sorghum

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
Chinch bug Adults are 1/8-inch long, black with white wings that are folded over the back into an “hour glass” shape. Nymphs are reddish to brown, with a white stripe across their “shoulders.”	Planting Time		Seed treatments will generally provide three weeks of suppression. Use seed treatment if sorghum has suffered regular losses from chinch bug infestations. Do not feed leftover treated seed to livestock. Check table on last page for grazing and harvest restrictions for seed treatments.
	Gaucho 600 [4A] (imidacloprid)	6.4 fl oz/cwt seed (0.25 lb ai/cwt seed)	
	Cruiser 5FS [4A] (thiamethoxam)	5.1 to 7.6 fl oz/cwt seed (0.2 to 0.3 lb ai/A)	
	Poncho 600 [4A] (clothianidin)	5.1 to 6.4 fl oz/cwt seed (0.20 to 0.25 lb ai/A)	Best control is obtained when insecticide is applied by ground, with nozzles directed at the base of the plants using a minimum of 20 to 30 gallons of water.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
Chinch bug (cont'd)	Post-Plant		
Damage: Feed at base of plants, in between leaf sheath and stem. Chinch bugs often migrate from small grains to sorghum. Feeding may kill small seedlings.	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb ai/A)	Do not apply more than 0.15 lb ai/season. 21-day wait for grazing or harvest.
	Baythroid XL [3] (beta-cyfluthrin)	2.0 to 2.8 fl oz (0.019 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 38 fl oz	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre.
Threshold: two to three bugs per plant on seedlings. Treat if large numbers are moving in to sorghum from grain. A border spray 30 to 60 feet wide on the margins of the field may be of value if chinch bug numbers are high in an adjacent wheat field.	Delta Gold [3] (deltamethrin)	1.3 to 1.9 fl oz (0.015 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Fastac EC [3] (alpha-cyhalothrin)	3.2 to 3.9 fl oz (0.020 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for forage.
	Karate with Zeon [3] (lambda-cyhalothrin)	1.92 fl oz (0.03 lb ai/A)	30-day wait for harvest or grazing.
	Lorsban 4E [1B] (chlorpyrifos)	1 to 2 pt (0.5 to 1 lb ai/A)	30- to 60-day wait for grazing or harvest.
	Mustang MAXX EC [3] (zeta-cypermethrin)	3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	3.84 fl oz (0.015 lb ai/A)	30-day wait for grazing or harvest.
	Sevin XLR [1A] (carbaryl)	1 to 2 qt (1 to 2 lb ai/A)	Sevin may cause spidermite buildup. 21-day wait for forage, 14-day wait for harvest or grazing.
	Stallion [1B, 3] (chlorpyrifos +zeta-cypermethrin)	9.25 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.
Corn earworm (Headworm)			Check labels, some state that product is only effective on very small (1 st and 2 nd instars) caterpillars.
Up to 1 inch. Color varies from green, to brown to yellow and pink.	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb ai/A)	Do not apply more than 0.15 lb ai/season. 21-day wait for grazing or harvest.
Damage: Feed in whorl and ripening seed in head. Yield loss from whorl feeding is negligible. Are capable of causing damage to seed in head until grain reaches soft dough stage.	Baythroid XL [3] (beta-cyfluthrin)	1.3 to 2.8 fl oz (0.010 to 0.022 lb ai/A)	1 st and 2 nd instar only; 14-day wait for grazing or harvest.
	Besiege [28,3] (chlorantraniliprole + lambda-cyhalothrin)	6.0 to 10.0 fl oz	30-day wait for harvest.
	Blackhawk [5] (spinosad)	1.5 to 3.3 fl oz (0.034 to 0.094 lb ai/A)	14-day wait for grazing, 7 days for harvest.
Threshold: Two or more larvae per head before hard dough. A dynamic threshold that is based on plant population and crop value and control costs can be determined by accessing the sorghum headworm calculator http://entopl.okstate.edu/shwweb/index.htm	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	19 to 38 fl oz	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre.
	Concero [5,3] (spinosad + gamma-cyhalothrin)	2 to 2.85 fl oz/Acre (64 to 45 acres per gallon)	30-day wait for harvest or grazing.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
Corn earworm (Headworm) (cont'd)	Coragen [28] (chlorantraniliprole)	3.5 to 7.5 fl oz (0.045 to 0.098 lb ai/A)	1-day wait for harvest or grazing.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	14-day wait for grazing or harvest.
	Diamond 0.8 EC [15] (novaluron)	9 to 12 fl oz	7-day wait for grazing, 14-day wait for grain; reapplication may be needed.
	Fastac EC [3] (alpha-cypermethrin)	1.8 to 3.8 fl oz (0.012 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for forage.
	Karate with Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	30-day wait for grazing or harvest.
	Lorsban 4E [1B] (chlorpyrifos)	2 pt (1 lb ai/A)	30- to 60-day wait for grazing or harvest.
	Lannate LV [1A] (methomyl)	0.75 to 1.5 pt (0.225 to 0.45 lb ai/A)	14-day wait for grazing or harvest.
	Mustang MAXX EC [3] (zeta-cypermethrin)	1.76 to 4.0 fl oz (0.011 to 0.025 lb ai/A)	14-day wait for harvest, 45 days for grazing.
	Proaxis ^r 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	30-day wait for grazing or harvest.
	Sevin XLR [1A] (carbaryl)	1 to 2 qt (1 to 2 lb ai/A)	No wait for grazing, 21 days for harvest.
Stallion [1B,3] (chlorpyrifos +zeta-cypermethrin)	9.25 to 11.75 oz	30 day wait for harvest, 45 days for forage.	
Corn leaf aphid Bluish-green, soft-bodied aphid with black legs, antennae and cornicles. Typically found in whorl. <u>Damage:</u> Feed in whorl and may cause some delay of whorl emergence if numbers are high. Can mechanically transmit Maize Dwarf Mosaic virus disease. <u>Threshold:</u> Corn leaf aphids rarely cause significant yield loss, so no thresholds have been established.	Planting Time Gaucho 600 [4A] (imidacloprid) Cruiser 5FS [4A] (thiamethoxam) Poncho 600 [4A]	 6.4 fl oz/cwt seed (0.25 lb ai/cwt seed) 5.1 to 7.6 fl oz/cwt seed (0.2 to 0.3 lb ai/A) 5.1 to 6.4 fl oz/cwt seed (0.20 to 0.25 lb ai/A)	 Do not feed leftover treated seed to livestock. Check table on last page for grazing and harvest restrictions for seed treatments. Research indicates that yield losses occur only where corn leaf aphids cause stand loss on seedling plants. Chemical treatments, including seed treatments, are not likely to reduce potential for infection by Maize Dwarf Mosaic Virus because it can be transmitted within 30 seconds after an aphid begins feeding. Texas research suggests that corn leaf aphids serve as a food source for lady beetles which can help prevent greenbug outbreaks.
	Post-Plant Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin) Dimethoate 4E [1B] (dimethoate) Fastac EC [3] (alpha-cypermethrin) Lorsban 4E [1B] (chlorpyrifos)	 7 to 13 fl oz 0.5 to 1 pt (0.25 to 0.5 lb ai/A) 3.2 to 3.8 fl oz (0.02 to 0.025 lb ai/A) 0.5 to 1 pt (0.25 to 0.5 lb ai/acre)	 30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre. 28-day PHI. 14-day PHI for harvest, 45-PHI for grazing or forage. 30-day wait for grazing or harvest.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
Corn leaf aphid (cont'd)			
	Sivanto 200 SL [4D] (flupyradifurone)	7.0 to 10.5 fl oz (0.09 to 0.137 lb ai/A)	7-day wait for grazing, 21-day wait for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.
Cutworms			
Robust caterpillars that "roll" up when disturbed and prefer to live underground.	Asana XL [3] (esfenvalerate)	5.8 to 9.6 fl oz (0.03 to 0.05 lb ai/A)	Do not apply more than 0.15 lb ai/season. 21-day wait for grazing or harvest.
	Baythroid XL [3] (beta-cyfluthrin)	1.0 to 1.3 fl oz (0.008 to 0.010 lb ai/A)	14-day wait for grazing or harvest.
<u>Damage:</u> Cutworms generally feed at night, and live under the soil during the day. Plants will be cut at or slightly above the soil level.	Besiege[28,3] (chlorantraniliprole + lambda-cyhalothrin)	5.0 to 6.0 fl oz	30-day wait for harvest.
<u>Threshold:</u> Scout fields at seedling emergence. Treat when worms are less than 1/2-inch long and skips are noticed.	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 38 fl oz	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre.
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	14-day wait for grazing or harvest.
	Diamond 0.8 EC [15] (novaluron)	9 to 12 fl oz	7-day wait for forage, 14-day wait for grain, reapplication may be needed.
	Fastac EC [3] (alpha-cypermethrin)	1.3 to 3.8 fl oz (0.008 to 0.025 lb ai/A)	14-day PHI for harvest, 45- day PHI for grazing or forage.
	Karate with Zeon [3] (lambda-cyhalothrin)	0.96 to 1.28 fl oz (0.015 to 0.02 lb ai/A)	30-day wait for grazing or harvest.
	Lorsban 4E [1B] (chlorpyrifos)	1 to 2 pt (0.5 to 1 lb ai/A)	30- to 60-day wait for grazing or harvest.
	Mustang MAXX EC [3] (zeta-cypermethrin)	1.28 to 4.0 fl oz (0.008 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	1.92 to 2.56 fl oz (0.0075 to 0.01 lb ai/A)	30-day wait for grazing or harvest.
	Stallion [1B, 3] (chlorpyrifos +zeta-cypermethrin)	3.75 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.
Fall armyworm (Headworm)			
Large, striped, non-bristled caterpillar up to 1.5 inches. Has a light-colored inverted "Y" on head. or	Baythroid XL [3] (beta-cyfluthrin)	1.3 to 2.8 fl oz (0.010 to 0.022 lb ai/A)	Check labels, some state that product is only effective on very small (1 st and 2 nd instars) caterpillars. 1 st and 2 nd instar only; 14-day wait for grazing harvest.
<u>Damage:</u> Feed in whorl, and ripening seed in head. Yield loss from whorl feeding is negligible. Can damage seed in head until grain reaches soft dough stage.	Blackhawk [5] (spinosad)	1.5 to 3.3 fl oz (0.034 to 0.094 lb ai/A)	14-day wait for grazing, 7-day wait for harvest.
	Besiege [28,3] (chlorantraniliprole + lambda cyhalothrin)	6.0 to 10.0 fl oz	30-day wait for harvest.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
Fall armyworm (Headworm) (cont'd)			
<p>Threshold: Two or more larvae per head before hard dough. Open-headed varieties are less susceptible to attack than tight-headed varieties. A dynamic threshold that is based on plant population and crop value and control costs can be determined by accessing the sorghum headworm calculator http://entoplp.okstate.edu/shwweb/index.htm</p>	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 38 fl oz	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre.
	Concero [5,3] (spinosad + gamma-cyhalothrin)	2.85 fl oz/Acre (45 acres per gallon)	30-day wait for harvest or grazing.
	Coragen [28] (chlorantraniliprole)	3.5 to 7.5 fl oz (0.045-0.098 lb ai/A)	1-day wait for harvest or grazing.
	Delta Gold [3] (deltamethrin)	1.3 to 1.9 fl oz (0.015 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Diamond 0.8 EC [15] (novaluron)	9 to 12 fl oz	7-day wait for grazing, 14-day wait for grain, reapplication may be needed.
	Fastac EC [3] (alpha-cypermethrin)	1.8 to 3.8 fl oz (0.012 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for grazing or forage.
	Intrepid 2F [18] (methoxyfenozide)	8 to 10 fl oz (0.12 to 0.16 lb ai/A)	21-day PIH for grain or stover harvest, 3-day wait for forage.
	Karate with Zeon [3] (lambda-cypermethrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	30-day wait for grazing or harvest.
	Lorsban 4E [1B] (chlorpyrifos)	1 to 2 pt (0.5 to 1 lb ai/A)	30- to 60-day wait for grazing or harvest.
	Lannate LV[1A] (methomyl)	0.75 to 1.5 pt (0.225 to 0.45 lb ai/A)	14-day wait for grazing or harvest.
Mustang MAXX EC [3] (zeta-cypermethrin)	1.76 to 4.0 fl oz (0.011 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.	
Proaxis' 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	30-day wait for grazing or harvest.	
Sevin XLR [1A] (carbaryl)	1 to 2 qt (1 to 2 lb ai/A)	No wait for grazing, 21-day wait for harvest.	
Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.	
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<p>False chinch bug Adults 1/8-inch long, dirty gray, with brown or black markings and piercing mouthparts.</p>	Baythroid XL [3] (cyfluthrin)	1.3 to 2.8 fl oz (0.010 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Diamond 0.8 EC [15] (novaluron)	9 to 12 fl oz	7-day wait for grazing, 14-day wait for grain reapplication may be needed.
<p>Damage: Feed in groups. Large numbers may cause wilting of heads or small plants.</p>	Fastac EC [3] (alpha-cyhalothrin)	3.2 to 3.9 fl oz (0.02 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for grazing or forage.
	Mustang MAXX EC [3] (zeta-cypermethrin)	3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.
<p>Threshold: 140 or more per head.</p>	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 fl oz	30-day wait for harvest, 45-day wait for forage.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>	
<p>Grasshopper One to two inches, outer wings leathery, inner wings clear or colored. Enlarged hind legs designed for jumping.</p> <p>Damage: Chew leaves, leaving ragged edges or completely chew leaf blade. Damage emerging seed heads causing yield loss.</p> <p>Threshold: 15 to 20 per square yard. If nymph populations exceed threshold field borders (25 to 40 per square yard), treat before they move into sorghum.</p> <p>These products are for application in sorghum; See EPP-7196: Grasshopper Management in Rangeland, Pastures, and Crops for treating non-crop areas.</p>	Baythroid XL [3] (beta-cyfluthrin)	2 to 2.8 fl oz (0.019 to 0.022 lb ai/A)	14-day wait for grazing or harvest.	
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre.	
	Coragen [28] (chlorantraniliprole)	2.0 to 5.0 fl oz (0.026 to 0.065 lb ai/A)	1-day wait for harvest or grazing.	
	Delta Gold [3] (deltamethrin)	1.0 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	14-day wait for grazing or harvest.	
	Dimethoate 4E [1B] (dimethoate)	1 pt (0.5 lb ai/A)	Only one post-plant application per season.	
	Fastac EC [3] (alpha-cyhalothrin)	3.2 to 3.9 fl oz (0.02 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for grazing or forage.	
	Karate with Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	30-day wait for grazing or harvest.	
	Lorsban 4E [1B] (chlorpyrifos)	0.5 to 1 pt (0.25 to 0.5 lb ai/A)	30-day wait for grazing or harvest.	
	Mustang MAXX EC [3] (zeta-cypermethrin)	3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.	
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	30-day wait for grazing or harvest.	
Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.		
<p>Greenbug Lime-green, soft bodied aphid with darker green stripe down back. Tips of legs, cornicles and most of antennae are black.</p> <p>Damage: Injury can occur anytime from seedling emergence through soft dough stage. Greenbug feeding causes reddening of leaves which die as populations increase.</p> <p>Threshold: See thresholds listed at end of publication. Need to treat is dependent upon greenbug numbers, plant size, variety, growing conditions and the presence of predators and parasites.</p>	Seed Treatment		Do not feed leftover treated seed to livestock. Check table on last page for grazing and harvest restrictions for seed treatments.	
	Attendant 600 [4A] (imidacloprid)	6.4 fl oz/cwt seed (0.25 lb ai/cwt seed)		
	Cruiser 5FS [4A] (thiamethoxam)	5.1 to 7.6 fl oz/cwt seed (0.2 to 0.3 lb ai/A)		
	Poncho 600 [4A] (clothianidin)	5.1 to 6.4 fl oz/cwt seed (0.20 to 0.25 lb ai/A)		
	Planting Time			
	Counter 15G [1B]	"Lock 'n Load" or "Smartbox" applicator		Do not place granules in contact with seed. 50-day wait for grazing, 100-day wait for harvest. needed.
	Post-Plant			
	Dimethoate 4E [1B] (dimethoate)	0.5 to 1 pt (0.25 to 0.5 lb ai/A)		28-day wait for harvest or grazing.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	13 to 38 fl oz		30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre. See additional instructions on label.
	Fastac EC [3] (alpha-cyhalothrin)	3.2 to 3.9 fl oz (0.02 to 0.025 lb ai/A)		14-day PHI for harvest, 45-day wait for grazing or forage.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
Greenbug (cont'd)			
It is better to base treatment decision on presence of plant damage than on greenbug numbers alone.	Lorsban 4E [1B] (chlorpyrifos)	0.5 to 2 pt (0.25 to 1 lb ai/A)	30- to 60 -day wait for grazing or harvest.
	Malathion 5E [1B] (malathion)	1.5 pt (0.93 lb ai/A)	7-day PHI for grain. Do not feed or graze forage, hay or straw to livestock.
	Sivanto 200 SL [4D] (flupyradifurone)	7.0 to 10.5 fl oz (0.09 to 0.137 lb ai/A)	7-day wait for forage, 21-day wait for harvest.
	Stallion [1B,3] (chlorpyrifos + zeta-cypermethrin)	9.25 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.
Lesser cornstalk borer			
Caterpillar ¼-inch long when mature. Slender, blue-green with brown bands around each body segment. Make silken tunnels at feeding site.	Concero [5,3] (spinosad + gamma-cyhalothrin)	2 to 2.85 fl oz/Acre (64 to 45 acres per gallon)	30-day wait for harvest or grazing.
	Delta Gold [3] (deltamethrin)	1.3 to 1.9 fl oz (0.015 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
<u>Damage</u> Tunnels in roots and stems. Occurs in May through June.	Karate with Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	30-day wait for grazing or harvest.
	Fastac EC [3] (alpha-cyhalothrin)	3.2 to 3.9 fl oz (0.02 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for grazing or forage.
	Lorsban 4E [1B] (chlorpyrifos)	1 to 2 pt (0.5 to 1 lb ai/A)	30- to 60-day wait for grazing or harvest.
<u>Threshold</u> Treat before larva bore into stalk.	Mustang MAXX EC [3] (zeta-cypermethrin)	3.2 to 4.0 fl oz (0.02 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	30-day wait for grazing or harvest.
	Stallion [1B, 3] (chlorpyrifos +zeta-cypermethrin)	9.25 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.
Panicle feeding bugs			
Include stink bugs and leaf-footed bugs. Stink bugs: shield shaped bugs ranging from ½- to ¾-inch long. Leaf-footed bug: Brown, oblong about ¾-inch long with each hindleg leaf-like.	Baythroid XL [3] (beta-cyfluthrin)	1.3 to 2.8 fl oz (0.010 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Besiege [28,3] (chlorantraniliprole + lambda cyhalothrin)	6.0 to 10.0 fl oz	30-day wait for harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	19 to 38 fl oz	30- to 60-day wait depending on amount of application.
<u>Damage:</u> Feed on seed, causing blasted heads, shrunken damaged seed. Most damage occurs before seed reaches hard dough stage.	Concero [5,3] (spinosad + gamma-cyhalothrin)	2 to 2.85 fl oz/Acre (64 to 45 acres per gallon)	30-day wait for harvest or grazing.
	Delta Gold [3] (deltamethrin)	1.5 to 1.9 fl oz (0.018 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Fastac EC [3] (alpha-cyhalothrin)	1.8 to 3.8 fl oz (0.018 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for grazing or forage.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
Panicle feeding bugs (cont'd)			
<u>Thresholds:</u>			
Milk stage: 5 bugs /head.			
Soft Dough: 9 bugs/head.	Karate with Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	30-day wait for grazing or harvest.
	Mustang MAXX EC [3] (zeta-cypermethrin)	1.76 to 4.0 fl oz (0.011 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	30-day wait for grazing or harvest.
	Stallion [1B, 3] (chlorpyrifos +zeta-cypermethrin)	5.0 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.
Sorghum midge			
Tiny, fragile orange-bodied fly that is active in early to mid-morning.			Check labels. May need to apply a second treatment three to five days after first. Uniform planting date is an option for management.
<u>Damage:</u> Damaged heads appear to be "blasted" or "blighted" from high temperatures, infertility or drought. Damage from sorghum midge generally restricted to sorghum that blooms after August 15.	Asana XL [3] (esfenvalerate)	2.9 to 5.8 fl oz (0.015 to 0.03 lb ai/A)	Do not apply more than 0.15 lb ai/season. 21-day wait for grazing or harvest.
	Baythroid XL [3] (beta-cyfluthrin)	1.0 to 1.3 fl oz (0.008 to 0.010 lb ai/A)	14-day wait for grazing or harvest.
	Blackhawk [5] (spinosad)	1.5 to 3.3 fl oz (0.034 to 0.094 lb ai/A)	14-day wait for grazing, 7-day wait for harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	7 to 13 fl oz	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre.
<u>Threshold:</u> Check fields before 11 am, when flies are most active Treat when 25 to 30% of heads have begun bloom and adults average one or more per head.	Delta Gold [3] (deltamethrin)	1.3 to 1.9 fl oz (0.015 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Diamond 0.8 EC [15] (novaluron)	9 to 12 fl oz	7-day wait for grazing, 14-day wait for grain, reapplication may be needed.
	Fastac EC [3] (alpha-cypermethrin)	1.3 to 3.8 fl oz (0.008 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing or forage.
	Karate with Zeon [3] (lambda-cyhalothrin)	0.96 to 1.28 fl oz (0.015 to 0.02 lb ai/A)	30-day wait for grazing or harvest.
	Lorsban 4E [1B] (chlorpyrifos)	0.5 pt (0.25 lb ai/A)	30-day wait for grazing or harvest.
	Lannate LV [1A] (methomyl)	0.75 to 1.5 pt (0.225 to 0.45 lb ai/A)	14-day wait for grazing or harvest.
	Mustang MAXX [3] (zeta-cypermethrin)	1.28 to 4.0 fl oz (0.008 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	1.92 to 2.56 fl oz (0.0075 to 0.01 lb ai/A)	30-day wait for grazing or harvest.
	Stallion [1B, 3] (chlorpyrifos +zeta-cypermethrin)	3.75 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
<p>Sorghum webworm Fuzzy, reddish to brown worms in head.</p> <p><u>Damage:</u> Caterpillars feed on the seed, and hollow it out. Open-headed varieties are less susceptible than tight-headed varieties to attack.</p> <p><u>Threshold:</u> Five or more arvae per head before hard dough stage.</p>	Baythroid XL [3] (beta-cyfluthrin)	1.3 to 2.8 fl oz (0.010 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Besiege [28,3] (chlorantraniliprole + lambda cyhalothrin)	6.0 to 10.0 fl oz	30-day wait for harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	19 to 38 fl oz	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre.
	Coragen [28] (chlorantraniliprole)	3.5 to 7.5 fl oz (0.045 to 0.098 lb ai/A)	1-day wait for harvest or grazing.
	Delta Gold [3] (deltamethrin)	1 to 1.5 fl oz (0.012 to 0.018 lb ai/A)	14-day wait for grazing or harvest.
	Diamond 0.8 EC [15] (novaluron)	9 to 12 fl oz	7-day wait for grazing, 14-day wait for grain reapplication may be needed.
	Fastac EC [3] (alpha-cypermethrin)	1.8 to 3.8 fl oz (0.012 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for grazing or forage.
	Karate with Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	30-day wait for grazing or harvest.
	Lorsban 4E [1B] (chlorpyrifos)	1 pt (0.5 lb ai/A)	30-day wait for grazing or harvest.
	Mustang MAXX EC [3] (zeta-cypermethrin)	1.76 to 4.0 fl oz (0.011 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.
<p>Southwestern corn borer Full grown caterpillars are white with prominent dark spots on body.</p> <p><u>Damage:</u> Tunnels throughout stalk. May girdle mature stalks.</p> <p><u>Threshold:</u> Chemical control usually not warranted.</p>	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	30-day wait for grazing or harvest.
	Stallion [1B, 3] (chlorpyrifos + zeta-cypermethrin)	5.0 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.
	Blackhawk [5] (spinosad)	1.5 to 3.3 fl oz (0.034 to 0.094 lb ai/A)	14-day wait for grazing, 7-day wait for harvest.
	Baythroid XL [3] (cyfluthrin)	1.3 to 2.8 fl oz (0.010 to 0.022 lb ai/A)	14-day wait for grazing or harvest.
	Besiege [28,3] (chlorantraniliprole + lambda cyhalothrin)	6.0 to 10.0 fl oz	30-day wait for harvest.
	Blackhawk [5] (spinosad)	1.5 to 3.3 fl oz (0.034 to 0.094 lb ai/A)	14-day wait for grazing, 7-day wait for harvest.
	Cobalt [1B,3] (chlorpyrifos + gamma-cyhalothrin)	19 to 38 fl oz	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre.
	Concero [5,3] (spinosad + gamma-cyhalothrin)	2 to 2.85 fl oz	30-day wait for harvest or grazing.
	Fastac EC[3] (alpha-cypermethrin)	1.8 to 3.8 fl oz (0.012 to 0.025 lb ai/A)	14-day PHI for harvest, 45-day wait for grazing or forage.
	Intrepid 2F [18] (methoxyfenozide)	8 to 10 fl oz (0.12 to 0.16 lb ai/A)	21-day PIH for grain or stover harvest, 3-day wait for forage.

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
Southwestern corn borer (cont'd)			
	Karate with Zeon [3] (lambda-cyhalothrin)	1.28 to 1.92 fl oz (0.02 to 0.03 lb ai/A)	30-day wait for grazing or harvest.
	Lorsban 4E [1B] (chlorpyrifos)	1.5 to 2 pt (0.75 to 1 lb ai/A)	60-day wait for grazing or harvest.
	Mustang MAXX EC [3] (zeta-cypermethrin)	1.76 to 4.0 fl oz (0.011 to 0.025 lb ai/A)	14-day wait for harvest, 45-day wait for grazing.
	Proaxis 0.5 CS [3] (gamma-cyhalothrin)	2.56 to 3.84 fl oz (0.01 to 0.015 lb ai/A)	30-day wait for grazing or harvest.
	Sevin XLR [1A] (carbaryl)	1.5 quarts (1.5 lb ai/A)	No wait for grazing, 21-day wait for harvest.
	Stallion [1B, 3] (chlorpyrifos +zeta-cypermethrin)	5.0 to 11.75 oz	30-day wait for harvest, 45-day wait for forage.
Spidermites		Post-Plant	
Small, less than 1/100-inch long. Cause brown stippling of leaves.	Comite II [14] (propargite)	24 to 36 fl oz (1.125 to 1.6875 lb ai/A)	30-day wait for grazing, 60 days for harvest.
<u>Damage:</u> Causes stippling of leaves; severe infestations can kill leaves.	Dimethoate 4E [1B] (dimethoate)	1 pt (0.5 lb ai/A)	Only one post-plant application per season.
<u>Threshold:</u> No threshold established. Treat if majority of plants are infested with large, increasing mite infestations. Control is not be justified after head reaches hard dough stage	Onager [10A] (hexythiazox)	10 to 24 fl oz (0.078 to 0.1875 lb ai/A)	30-day waiting period for harvest, do not graze.
	Supracide 2E [1B] (methidathion)	2 pt (0.5 lb ai/A)	30-day wait for grazing or harvest (24c label, OK050003).
Sugarcane aphid		Planting Time	
Whitish to light yellow, soft bodied aphid. Tips of legs, cornicles, and most of antennae are black. Colonies occur on underside of leaves, starting from the lower leaves.			
Damage: Injury can occur anytime from seedling emergence through harvest, but is more likely to occur from boot through soft dough. Heavy feeding causes early leaf senescence and reduces seed fill. Aphids produce large amounts of honeydew, which can affect harvest operations.			
Threshold: Economic injury levels have not yet been determined, so suggested treatment threshold is 30 to 40 percent of plants are infested. Arkansas suggests threshold of 25% of plants with 50 aphids per leaf.			
	Cruiser 5FS [4A] (thiamethoxam)	5.1 to 7.6 fl oz/cwt seed (0.2 to 0.3 lb ai/A)	Check table on last page for grazing and harvest restrictions for seed treatments.
		Post-Plant	

<i>Pest, Damage and Treatment Threshold</i>	<i>Insecticide, Formulation, [MOA Group] & (Active Ingredient)</i>	<i>Rate of Product (or AI) per Acre</i>	<i>Comments</i>
	*Dimethoate 4E [1B] (dimethoate)	0.5 to 1 pint (0.25 to 0.5 lb ai/A)	*moderately effective, 28-day waiting period.
	*Lorsban 4E [1B] (chlorpyrifos)	0.5 to 2 pt (0.25 to 1 lb ai/A)	*moderately effective, 30- to 60-day wait for grazing or harvest.
	Sivanto 200 SL [4D] (flupyradifurone)	4.0 to 7.0 fl oz (0.05 to 0.09 lb ai/A)	7-day wait for grazing, 21-day wait for harvest.
	Transform WD [4C] (sulfoxaflor)	0.75 to 1.5 oz (0.023 to 0.047 lb ai/A)	7-day waiting for grazing, 14-day wait for harvest. Do not spray less than three days before bloom, or until seed set. (Section 18 emergency use registration, expires 11/30/2017).
White grub Large, "C" shaped grub with a white body and a brown head.	NA	NA	No insecticide is currently registered for white grub control. Re-planting may be the best option.
<u>Damage:</u> Grubs feed on roots of seedling plants. Damage potential is dependent on planting date and speed of growth of the plant.			
<u>Threshold:</u> No treatment is available. An average of one grub per square foot may cause stand loss.			
Wireworm Hard-shelled, smooth, cylindrical, yellowish to brown worms. Two- to six-year life cycle. More common in sorghum planted into a sod or grass pasture.	Seed Treatment		Do not feed leftover treated seed to livestock. Check table on last page for grazing and harvest restrictions for seed treatments.
	Gaucho 600 [4A] (imidacloprid)	6.4 fl oz/cwt seed (0.25 lb ai/cwt seed)	
	Cruiser 5FS [4A] (thiamethoxam)	5.1 to 7.6 fl oz/cwt seed (0.2 to 0.3 lb ai/A)	
	Poncho 600 [4A] (clothianidin)	5.1 to 6.4 fl oz/cwt seed (0.20 to 0.25 lb ai/A)	
<u>Damage:</u> Feed on seed, seedling. Cause stunting and stand loss.	Planting Time		
<u>Threshold:</u> Seed treatments are available. Treat if field history indicates a problem.	*Counter 15G [1B]	Apply per label.	* Counter 15 G can be used as a planting time treatment except in the Panhandle, but it requires a "Smartbox" or "Lock 'n Load" applicator, and has the potential to damage plants, and interact with several ALS-inhibiting herbicides. Check label for restrictions.

Pre-harvest Intervals and grazing restrictions

Asana XL	21-day PHI
Batallion/Delta Gold	14-day wait for grazing or harvest
Baythroidr XL	14-day PHI, 14 days grazing
Besiege	30-day PHI for harvest
Blackhawk	7-day PHI for harvest, 14 days for grazing
Cobalt	30-day wait for applications of 26 fl oz/A or less, 60-day wait for applications over 26 fl oz/Acre
Comite II	30-day PHI for silage, 60 days for grain harvest.
Concero	30-day PHI
Coragen	1-day PHI for harvest or grazing
Counterr 15G	100-day PHI for grain, 50 days for grazing
Cruiserr 5FS	no grazing restriction
Diamond 0.8 EC	7-day wait for grazing, 14 days for grain
Dimethoate	28-day PHI for grain or grazing, do not apply after heading.
Fastac	14-day PHI for harvest, 45-day PHI for forage/grazing
Karate with Zeon	30-day PHI for harvest or grazing
Lannate	14-day PHI for harvest or grazing
Lorsban 4E	30-60 day PHI for harvest or grazing, depending on rate applied.
Malathion	7-day PHI for grain. Do not feed or graze forage, hay or straw to livestock.
Mustang MAXX EC	14-day PHI for harvest, 45 days for grazing
Onager	30-day PHI for harvest, do not graze.
Poncho	no grazing restriction
Proaxis	30-Day PHI for harvest or grazing
Sevin XLR	21-day PHI for harvest, 0 days for forage.
Sivanto	21-day PHI for harvest, 7 days for forage
Stallion	30-day wait for harvest, 45 days for forage
Transform WD	14 day PHI for harvest, 7 days for forage

* MOA group numbers in brackets [#] following the insecticide name are used to designate the mode of action of the insecticide according to the classification system developed by the Insecticide Resistance Action Committee, (IRAC) in 2011. It is intended to help in the selection of insecticides for preventative resistance management. If you make multiple applications for a specific pest during a growing season, simply select a registered insecticide with a different number for each application. To further delay resistance from developing, integrate other control methods into your pest management programs.

Treatment Thresholds * For Greenbugs On Sorghum

Plant Size	When to Treat	
	Texas thresholds	Kansas thresholds
0 to one-leaf stage	20% of plants visibly damaged	25 to 50 greenbugs per plant
Three-leaf stage	20% of plants visibly damaged	50 to 100 greenbugs per plant
Five-leaf stage	Visible damage on leaves, (red spots, yellow leaves) but before any entire leaves are killed on 20% of plants	150 to 300 greenbugs per plant
Mid-whorl stage	Visible damage on leaves (red spots yellow leaves), but before any entire leaves are killed on 20% of plants	300 to 600 greenbugs per plant
Boot to heading	Death of one functional leaf	700 to 1000 greenbugs per plant
Heading through soft dough	Death of two functional leaves	700 to 1000 greenbugs per plant

The pesticide information presented in this publication was current with federal and state regulations at the time of revision. **READ and FOLLOW** all LABEL directions.

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