



IPM-0429

Grain Sorghum

Insect, Disease, and Weed Control
Recommendations for 2018–2019



NOTE: The 2018 recommendations in this report are the most current available to Alabama Extension. Information from 2018 is clearly identified. This report will be updated as new information becomes available. Some of the recommendations have already been updated for 2019.

INSECT CONTROL (2018 RECOMMENDATIONS)

Grain sorghum is attacked by a number of insect pests, including a new pest, the sugarcane aphid, *Melanaphis sacchari*. Sugarcane aphid is now the key pest of sorghum. DO NOT plant sorghum if you cannot afford to scout the crop weekly and apply at least two applications of insecticide for this and other sorghum pests.

For more information on sugarcane aphid, see Sugarcane Aphid: A New Sorghum Pest in North America (<http://betteryield.agrilife.org/publications/>). Watch the blog on Alabamacrops.com (or download the app) to get the most up-to-date information on sorghum insects and their management including any Section 18 labels for additional insecticides that are effective against sugarcane aphids. Or subscribe to the Alabama IPM Newsletter by visiting www.aces.edu/IPMCommunicator.

Many insecticides are registered for use on grain sorghum for control of whorl worms, headworms, grasshoppers, and sorghum midge. Unfortunately, many of these insecticides disrupt the community of beneficial insects that help control sugarcane aphid. Using these broad spectrum insecticides can flare aphids (cause the number of aphids to increase rapidly). If you are planting a variety that is susceptible to sugarcane aphid (and most of them are), **AVOID USING BROAD SPECTRUM INSECTICIDES IF AT ALL POSSIBLE**. Insecticides that are more selective and less harsh on natural enemies are highlighted in Table 3.

“Sorghum Insects and Their Management” (http://www.caes.uga.edu/publications/pubDetail.cfm?pk_id=7797) by David Buntin, University of Georgia, provides excellent information on the biology and management of sorghum pests, other than sugarcane aphid. It should be required reading if you plan to grow sorghum, because it provides valuable tips on insect action thresholds as well as on how to reduce risk of insect infestation.

The Sorghum Checkoff Program provides many resources on sorghum pest management, including the latest list of varieties with resistance to sugarcane aphid. See <http://sorghumcheckoff.com/pest-management/>.

Insect Pest Management Tips for Grain Sorghum

- Plant early if you can. The later you plant, the more insect problems you encounter.
- Choose a variety that is resistant to sugarcane aphid.
- Use an insecticide seed treatment to protect the sorghum for a few weeks from various soil insect pests as well as the sugarcane aphid.
- Scout the crop at least once a week.

Organic Insecticides That Can Be Applied to Grain Sorghum

Organic producers may want to consider the following insecticides, most, if not all, of which are OMRI approved. Read the insecticide label to make sure it meets your needs. The following products contain azadirachtin: Azera, Azatrol, Neemix 4.5, and Ecozin Plus. The following products contain *Bacillus thuringiensis*: Biobit HP (subsp. *kurstaki* strain ABTS- 351), Dipel DF (subsp. *kurstaki* strain ABTS-351), Javelin WG (subsp. *kurstaki* strain SA-11), and Xentari (subsp. *aizawai* strain ABTS- 1857). Surround WP contains kaolin. Microthiol Disperss and Yellow Jacket Special Dusting Sulfur contain sulfur. Gemstar LC contains an insecticidal virus. Venerate XC Bioinsecticide contains *Burkholderia* spp. strain A396. Pest Out contains cottonseed, clove, and garlic oils. Ecotec contains rosemary and peppermint oils. Biolink Insect and Bird Repellent contains garlic. Entrust and Entrust SC contain spinosad. Other formulations of spinosad can be found. Mycotrol ESO and BotaniGard ES contain *Beauveria bassiana* strain GHA. Grandevo contains *Chromobacterium subtsugae* strain PRAA4-1.

PyGanic Crop Protection EC 1.4 and PyGanic Crop Protection EC 5.0 insecticides are OMRI approved and contain natural pyrethrins. Other insecticides contain pyrethrins, but also contain piperonyl butoxide and are not considered organic. Gemstar LC contains polyhedral inclusion bodies of the nuclear polyhedrosis virus of corn earworm. Other organic insecticides may be available. Be sure to check the labels to see if they meet the requirements for your cropping system.

Forage Sorghum + Sudangrass

For information on forage sorghum, sudangrass, and other temporary summer grazing, see Temporary Grazing: Temporary Summer Grazing Insect Control, part of the Georgia Pest Management Handbook at <http://www.caes.uga.edu/departments/entomology/extension/pest-management-handbook.html> or the Pasture and Forage Section of the Louisiana Insect Pest Management Guide at http://www.lsuagcenter.com/portals/communications/publications/management_guides/insect_guide.

Table 1. Seed Treatments for Control of Seedling Insect Pests in Grain Sorghum, 2016

Insecticide and Formulation	Rate
clothianidin	
PONCHO 600, NIPSIT INSIDE	5.1 to 6.4 fl. oz. per 100 lb. seed
clothianidin + <i>Bacillus firmus</i>	
PONCHO VOTiVO	6.13 fl. oz. per 100 lb. seed
imidacloprid	
AXCESS, MACHO 600 ST, DYNASHIELD IMIDACLOPRID 5, NITRO SHIELD, ATTENDANT 480 FS, NITRO SHIELD IV, GAUCHO 600, IMIDACLOPRID 5, SENATOR 600 FS, SHARDA IMIDACLOPRID 5SC, RESONATE 600ST	6.4 fl. oz. per 100 lb. seed
NITROSHIELD IV	8 fl. oz. per 100 lb. seed
imidacloprid + metalaxyl	
CONCUR	5 oz. per 100 lb. seed
imidacloprid + metalaxyl+carboxin	
LATITUDE	5 oz. per 100 lb. seed
thiamethoxam	
CRUISER 5FS	5.1 to 7.6 fl. oz. per 100 lb. seed

Table 2. Examples of Broad-Spectrum At-Planting Insecticides for Insect Pests of Sorghum Seeds and Seedlings

Insecticide (Trade Names)	Rates of Formulated Product	Pests Controlled Include
chlorpyrifos (Lorsban 15G) ¹	8 oz./1000 row ft.	Southern corn rootworm, chinch bugs, ants, cutworm, lesser cornstalk borer
phorate (THIMET 20-G SMARTBOX or LOCKBOX or EZLOAD)	4.5–6 oz./1000 row ft.	greenbugs
terbufos (Counter 20G Lock'n'Load) ¹	4.5–6 oz. 1000 row ft.	Southern corn rootworm, wireworms, white grubs, aphids

See the insecticide label for specific use instructions, including whether product is to be applied in-furrow, as a T-band, or broadcast.

¹ Other trade names available see Table 4.

Table 3. Suggestions for Postemergence Grain Sorghum Insect Control

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
APHIDS (SUGARCANE APHID, YELLOW SUGARCANE APHID, CORN LEAF APHID, GREENBUG)					
flupyradifurone SIVANTO PRIME	18.3–32	4–7 fl. oz.	0.05–0.09	7 (forage) 21 (grain)	Controls sugarcane aphid.
chlorpyrifos LORSBAN ADVANCED (RESTRICTED USE)	4–8	1–2 pt.	0.47–0.94	30 (1 pt. or less) 60 (> 1 pt.)	Do not apply to sweet sorghum; may give helpful control under light population pressure.
malathion CHEMINOVA MALATHION 57% Other trade names ¹	53	1.5 pt.	0.93	7	May give helpful control for sugarcane aphid on the head at the end of the season.
sulfoxaflor TRANSFORM WG	–	–	–	–	Check with your pesticide dealer, your Alabama Cooperative Extension System agronomic crops agent, or the Alabama Department of Agriculture and Industries to see if there is a Section 18 for 2018 to control sugarcane aphids.
WHORL WORMS + HEADWORMS (ARMYWORMS, FALL AND TRUE; CORN EARWORM; SORGHUM WEBWORM)					
alpha-cypermethrin FASTAC EC Other trade names ¹	34–71	1.8–3.8 fl.oz.	0.012–0.025	14 (grain, stover) 45 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–98	1.3–2.8 fl.oz.	0.01–0.022	14	Baythroid XL is a RESTRICTED USE pesticide. Use highest rate for fall armyworms.
carbaryl SEVIN XLR PLUS Other trade names ¹	2–4	1–2 qt.	1–2	14 (silage, grazing) 21 (fodder, grain)	
chlorantraniliprole PREVATHON Other trade names ¹	6–9	14–20 fl.oz.	0.05–0.07	1	Does not flare sugarcane aphid.
chlorpyrifos LORSBAN ADVANCED LORSBAN 75WG Other trade names ¹	4–8 0.75–1.5 A/lb.	1–2 pt. 0.67–1.33 lb.	0.47–0.93 0.5–1	30 (1 pt. or less) 60 (> 1 pt.)	Use on true armyworms only. See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3.4–12	11–38 fl.oz.	0.21–0.74 + 0.011–0.038	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + gamma-cyhalothrin COBALT Other trade names ¹	3.4–10	13–38 fl.oz.	0.25–0.74 + 0.004–0.013	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt is a RESTRICTED USE pesticide.

¹ See Table 4 for other trade names.

Table 3. Suggestions for Postemergence Grain Sorghum Insect Control (cont.)

Insecticide and Formulation	Acres per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
WHORL WORMS + HEADWORMS (ARMYWORMS, FALL AND TRUE; CORN EARWORM; SORGHUM WEBWORM (cont.))					
chlorpyrifos + zeta-cypermethrin STALLION	11–26	5–11.75 fl.oz.	0.11–0.25 + 0.01–0.025	30 (grain, stover) 45 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ¹	46–98	1.3–2.8 fl.oz.	0.020–0.044	14	Tombstone is a RESTRICTED USE pesticide. Use high rate for fall armyworm.
deltamethrin DELTA GOLD 1.5 EC	67–128	1.0–1.9 fl.oz.	0.012–0.022	14	Delta Gold is a RESTRICTED USE pesticide. Use higher rate for <i>Spodoptera</i> armyworms.
esfenvalerate ASANA XL Other trade names ¹	13–22	5.8–9.6 fl.oz.	0.03–0.05	21	Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ¹	83–125	1.02–1.54 fl.oz.	0.01–0.015	30	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ¹	67–100	1.28–1.92 fl.oz.	0.02–0.03	30	Warrior II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	30	Besiege is a RESTRICTED USE pesticide.
methomyl LANNATE LV Other trade names ¹	5–11	0.75–1.5 pt.	0.22–0.45	14	Lannate is a RESTRICTED USE pesticide.
methoxyfenozide INTREPID 2F Other trade names ¹	13–16	8–10 fl.oz.	0.12–0.16	21 (grain or stover) 3 (forage or sweet sorghum stalk)	
novaluron DIAMOND 0.83 EC Other trade names ¹	10.7–14.2	9–12 fl.oz.	0.06–0.08	7 (forage) 14 (grain, stover)	
spinosad BLACKHAWK Other trade names ¹	4.8– 10.6/lb.	1.5–3.3 oz.	0.034–0.074	21 (grain) 3 (forage, fodder)	Use higher rates for heavier infestations. Time applications to peak egg hatch. Does not flare sugarcane aphid.
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.046 + 0.01–0.015	30	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE Other trade names ¹	32–73	1.76–4 fl.oz.	0.011–0.025	14 (grain, stover) 45 (forage)	Mustang Maxx is a RESTRICTED USE pesticide.
CHINCH BUGS					
<i>General Comments: Apply insecticide as a directed spray to the base of plants in at least 15 to 20 gallons of water per acre. See Table 2 for suggested seed treatments and Table 4 for at-planting insecticides for control of chinch bugs.</i>					
alpha-cypermethrin FASTAC EC Other trade names ²	34–40	3.2–3.8 fl.oz.	0.02–0.025	14 (grain, stover) 45 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–64	2.0–2.8 fl.oz.	0.019–0.022	14	Baythroid XL is a RESTRICTED USE pesticide.

¹ See Table 4 for other trade names.

Table 3. Suggestions for Postemergence Grain Sorghum Insect Control (cont.)

Insecticide and Formulation	Acres Per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
CHINCH BUGS (cont.)					
carbaryl SEVIN XLR PLUS Other trade names ¹	2–4	1–2 qt.	1–2	14 (silage, grazing) 21 (grain, fodder)	
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ¹	4–8 0.75–1.5 A/lb.	1–2 pt. 0.67–1.33 lb.	0.47–0.93 0.5–1	30 (1 pt. or less) 60 (> 1 pt.)	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–12	11–38 fl.oz.	0.21–0.74 + 0.011–0.013	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + gamma-cyhalothrin COBALT Other trade names ¹	3.4–10	13–38 fl.oz.	0.25–0.74 + 0.004–0.013	30 (26 fl. oz. or less) 60 (> 26 fl. oz.)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION	11–14	9.25–11.75 fl.oz.	0.2–0.25 + 0.02–0.025	30 (grain, stover) 45 (forage)	Stallion is a RESTRICTED USE pesticide
cyfluthrin TOMBSTONE Other trade names ¹	46–64	2.0–2.8 fl.oz.	0.038–0.044	14	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	67–98	1.3–1.9 fl.oz.	0.015–0.022	14	Delta Gold is a RESTRICTED USE pesticide.
esfenvalerate ASANA XL Other trade names ¹	13–22	5.8–9.6 fl.oz.	0.03–0.05	21 (harvest) —	Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ¹	83	1.54 fl.oz.	0.015	30	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ¹	67	1.92 fl.oz.	0.03	30	Warrior II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13	10 fl.oz.	0.03 + 0.06	30	Besiege is a RESTRICTED USE pesticide.
spinosad + gamma-cyhalothrin CONSERO	42	1.5 fl.oz. of each product	0.046 + 0.015	30	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE Other trade names ¹	32–40	3.2–4 fl.oz.	0.02–0.025	14 (grain, stover) 45 (forage)	Mustang Maxx is a RESTRICTED USE pesticide.
CUTWORMS					
<i>See Tables 2 and 4 for suggested seed treatments and broad-spectrum preplant and at-planting insecticides for control of cutworms.</i>					
alpha-cypermethrin FASTAC EC Other trade names ²	34–98	1.3–3.8 fl.oz.	0.008–0.025	14 (grain, stover) 45 (forage)	Fastac EC is a RESTRICTED USE pesticide.

¹ See Table 4 for other trade names.

Table 3. Suggestions for Postemergence Grain Sorghum Insect Control (cont.)

Insecticide and Formulation	Acres Per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
CUTWORMS (cont.)					
<i>See Tables 2 and 4 for suggested seed treatments and broad-spectrum preplant and at-planting insecticides for control of cutworms.</i>					
beta-cyfluthrin BAYTHROID XL	98–128	1.0–1.3 fl.oz.	0.008–0.01	14	Baythroid XL is a RESTRICTED USE pesticide.
carbaryl SEVIN XLR PLUS Other trade names ¹	2	2 qt.	2	21 (grain, fodder) 14 (grazing, silage)	
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ¹	4–8 0.75–1.5 A/lb.	1–2 pt. 0.67–1.33 lb.	0.47–0.93 0.5–1	30 (1 pt. or less) 60 (> 1 pt.)	See label for detailed instructions. Can be applied preplant, at plant, or preemergence. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	3–12	11–38 fl.oz.	0.21–0.74 + 0.01–0.038	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + gamma-cyhalothrin COBALT Other trade names ¹	3.4–10	13–38 fl.oz.	0.25–0.74 + 0.004–0.013	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION	11–34	3.75–11.75 fl.oz.	0.08–0.25 + 0.008–0.025	30 (grain, stover) 45 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ¹	98–128	1.0–1.3 fl.oz.	0.016–0.020	14	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	85–128	1–1.5	0.012–0.018	14	Delta Gold is a RESTRICTED USE pesticide. Can be applied pre- or postemergence.
esfenvalerate ASANA XL Other trade names ¹	13–22	5.8–9.6 fl.oz.	0.03–0.05	21	Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ¹	125–166	0.77–1.02 fl.oz.	0.0075–0.01	30	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ¹	100–133	0.96–1.28 fl.oz.	0.015–0.020	30	Warrior II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	21–26	5–6 fl.oz.	0.016–0.02 + 0.03–0.04	30	Besiege is a RESTRICTED USE pesticide.
novaluron DIAMOND 0.83 EC Other trade names ¹	10.7–14.2	9–12 fl. oz.	0.06–0.08	7 (forage) 14 (grain, stover)	
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.046 + 0.01–0.015	30	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.

¹ See Table 4 for other trade names.

Table 3. Suggestions for Postemergence Grain Sorghum Insect Control (cont.)

Insecticide and Formulation	Acres Per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
CUTWORMS (cont.)					
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE Other trade names ¹	32–100	1.28–4 fl.oz.	0.008–0.025	14 (grain, stover) 45 (forage)	Mustang Maxx is a RESTRICTED USE pesticide. Can be applied at planting or prior to planting.
GRASSHOPPERS					
alpha-cypermethrin FASTAC EC Other trade names ¹	32–40	3.2–3.9 fl.oz.	0.017–0.025	14 (grain, stover) 45 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–64	2.0–2.8 fl.oz.	0.019–0.022	14	Baythroid XL is a RESTRICTED USE pesticide.
carbaryl SEVIN XLR PLUS Other trade names ¹	3–8	0.5–1.5 qt.	0.5–1.5	14 (silage, grazing) 21 (grain, fodder)	Use lower rate of Sevin for young grasshoppers or sparse vegetation; use higher rate for larger grasshoppers or thicker vegetation.
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ¹	8–16 1.5–3 A/lb.	0.5–1 pt. 0.33–0.67 lb.	0.23–0.47 0.25–0.5	30 (1 pt. or less) 60 (> 1 pt.)	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	10–21	6–13 fl.oz.	0.1–0.25 + 0.006–0.013	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION	11–14	9.25–11.75 fl.oz.	0.2–0.25 +0.02–0.025	30 (grain, stover) 45 (forage)	Stallion is a RESTRICTED USE pesticide.
chlorpyrifos + gamma-cyhalothrin COBALT Other trade names ¹	10–18	7–13 fl.oz.	0.14–0.25 + 0.002–0.004	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ¹	46–64	2.0–2.8 fl.oz.	0.038–0.044	14	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC Other trade names ¹	85–128	1.0–1.5 fl.oz.	0.012–0.018	14	Delta Gold is a RESTRICTED USE pesticide.
dimethoate DIMETHOATE 4E Other trade names ¹	8	16 fl.oz.	0.5 lb.	28	
gamma-cyhalothrin DECLARE Other trade names ¹	83–125	1.02–1.54 fl.oz.	0.01–0.015	30	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ¹	67–100	1.28–1.92 fl.oz.	0.02–0.03	30	Warrior II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	30	Besiege is a RESTRICTED USE pesticide.
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.046 + 0.01–0.015	30	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.

¹ See Table 4 for other trade names.

Table 3. Suggestions for Postemergence Grain Sorghum Insect Control (cont.)

Insecticide and Formulation	Acres Per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
GRASSHOPPERS (cont.)					
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE Other trade names ¹	32–46	2.8–4 fl.oz.	0.017–0.025	14 (grain, stover) 45 (forage)	Mustang Maxx is a RESTRICTED USE pesticide.
GREEN JUNE BEETLE GRUBS (IN FIELDS WHERE BROILER LITTER HAS BEEN USED)					
carbaryl SEVIN XLR PLUS Other trade names ¹	—	1–1.5 qt.	1–1.5	21 (grain, fodder) 14 (grazing, silage)	Treat on the surface of the soil when there is more than one grub per square foot in the fall prior to planting. Spring treatment when soil temperature is cold is not as effective as an application made in the fall.
SORGHUM MIDGE					
alpha-cypermethrin FASTAC EC Other trade names ¹	34–98	1.3–3.8 fl.oz.	0.008–0.025	14 (grain, stover) 45 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	98–128	1.0–1.3 fl.oz.	0.008–0.01	14	Baythroid XL is a RESTRICTED USE pesticide.
chlorpyrifos LORSBAN ADVANCED LORSBAN 75 WG Other trade names ¹	16 3 A/lb.	0.5 pt. 0.33 lb.	0.23 0.23	30 (1 pt. or less) 60 (> 1 pt.)	See label for detailed instructions. Lorsban Advanced is a RESTRICTED USE pesticide. Lorsban 75WG is not.
chlorpyrifos + lambda-cyhalothrin COBALT ADVANCED	10–21	6–13 fl.oz.	0.12–0.25 + 0.006–0.013	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt Advanced is a RESTRICTED USE pesticide.
chlorpyrifos + gamma-cyhalothrin COBALT Other trade names ¹	10–18	7–13 fl.oz.	0.14–0.25 + 0.002–0.004	30 (26 fl.oz. or less) 60 (> 26 fl.oz.)	Cobalt is a RESTRICTED USE pesticide.
chlorpyrifos + zeta-cypermethrin STALLION	11–34	3.75–11.75 fl.oz.	0.08–0.25 + 0.008–0.025	30 (grain, stover) 45 (forage)	Stallion is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ¹	98–128	1.0–1.3 fl.oz.	0.016–0.020	14	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	67–98	1.3–1.9 fl.oz.	0.015–0.022	14	Delta Gold is a RESTRICTED USE pesticide.
dimethoate DIMETHOATE 4E Other trade names ¹	16–32	0.25–0.5 pt.	0.125–0.25	28	
esfenvalerate ASANA XL Other trade names ¹	22–44	2.9–5.8 fl.oz.	0.015–0.03	21	Asana is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ¹	125–166	0.77–1.02 fl.oz.	0.0075–0.01	30	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ¹	100–133	0.96–1.28 fl.oz.	0.015–0.02	30	Warrior II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	21–26	5–6 fl.oz.	0.016–0.02 + 0.03–0.04	30	Besiege is a RESTRICTED USE pesticide.

¹ See Table 4 for other trade names.

Table 3. Suggestions for Postemergence Grain Sorghum Insect Control (cont.)

Insecticide and Formulation	Acres Per Gallon	Amount of Formulation per Acre	Lb. Active Ingredient Per Acre	Minimum Days from Last Application to Harvest or Grazing	Comments
SORGHUM MIDGE (cont.)					
methomyl LANNATE LV Other trade names ¹	5–11	0.75–1.5 pt.	0.22–0.45	14	Lannate is a RESTRICTED USE pesticide.
novaluron DIAMOND 0.83EC Other trade names ¹	11–14	9–12 fl.oz.	0.12–0.16	14 (grain or stover) 7 (forage)	
spinosad BLACKHAWK Other trade names ¹	4.8–10.6 A/lb.	1.5–3.3 oz.	0.034–0.074	21 (grain) 3 (forage, fodder, hay)	
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.046 + 0.01–0.015	30	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE Other trade names ¹	32–100	1.28–4 fl.oz.	0.008–0.025	14 (grain, stover) 45 (forage)	Mustang Maxx is a RESTRICTED USE pesticide.
MITES					
dimethoate DIMETHOATE 4E Other trade names ¹	8	1 pt.	0.5	28	
propargite COMITE	3.5–5.3	24–36 fl.oz.	1.1–1.7	60 (grain) 30 (silage)	Comite is a RESTRICTED USE pesticide.
STINK BUGS, LEAF FOOTED BUGS, FALSE CHINCH BUGS ON GRAIN HEADS					
alpha-cypermethrin FASTAC EC Other trade names ¹	34–71	1.8–3.8 fl.oz.	0.012–0.025	14 (grain, stover) 45 (forage)	Fastac EC is a RESTRICTED USE pesticide.
beta-cyfluthrin BAYTHROID XL	46–98	1.3–2.8 fl.oz.	0.010–0.022	14	Baythroid XL is a RESTRICTED USE pesticide.
cyfluthrin TOMBSTONE Other trade names ¹	46–98	1.3–2.8 fl.oz.	0.020–0.044	14	Tombstone is a RESTRICTED USE pesticide.
deltamethrin DELTA GOLD 1.5 EC	67–85	1.5–1.8 fl.oz.	0.018–0.022	14	Delta Gold is a RESTRICTED USE pesticide.
gamma-cyhalothrin DECLARE Other trade names ¹	83–125	1.02–1.54 fl.oz.	0.01–0.015	30	Declare is a RESTRICTED USE pesticide.
lambda-cyhalothrin WARRIOR II with Zeon Technology Other trade names ¹	67–100	1.28–1.92 fl.oz.	0.02–0.03	30	Warrior II is a RESTRICTED USE pesticide.
lambda-cyhalothrin + chlorantraniliprole BESIEGE	13–21	6–10 fl.oz.	0.02–0.03 + 0.04–0.06	30	Besiege is a RESTRICTED USE pesticide.
spinosad + gamma-cyhalothrin CONSERO	42–64	1–1.5 fl.oz. of each product	0.03–0.46 + 0.01–0.015	30	Consero is a RESTRICTED USE pesticide. It is a co-pack of two insecticides that must be applied together.
zeta-cypermethrin MUSTANG MAXX EC INSECTICIDE Other trade names ¹	32–73	1.76–4 fl.oz.	0.011–0.025	14 (grain, stover) 45 (forage)	Mustang Maxx is a RESTRICTED USE pesticide.

¹ See Table 4 for other trade names.

Table 4. Insecticides Labeled for Use on Sorghum, Including Worker Protection and Harvest or Grazing Intervals

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
alpha-cypermethrin MoA Group 3A* (grain sorghum + millet)					
FASTAC CS (Restricted Use)	0.83 lb./gal.	capsule suspension	12	14 (grain, stover) 45 (forage)	yes ¹
FASTAC EC (Restricted Use)	0.83 lb./gal.	emulsifiable concentrate	12	14 (grain, stover) 45 (forage)	yes ¹
beta-cyfluthrin MoA Group 3A (sorghum)					
BAYTHROID XL (Restricted Use)	1 lb./gal.	emulsifiable concentrate	12	14	yes ³
carbaryl MoA Group 1A (grain sorghum)					
SEVIN 4F	4 lb./gal.	liquid suspension	12	21 (grain, fodder) 14 (grazing, silage)	yes ²
SEVIN XLR PLUS	4 lb./gal.	liquid suspension	12	Same as above	yes ²
CARBARYL 4L, others	4 lb./gal.	liquid suspension	12	Same as above	yes ²
chlorantraniliprole MoA Group 28 (grain sorghum, forage sorghum, sudangrass)					
DUPONT CORAGEN	1.67 lb./gal.	suspension concentrate	4	1	no
DUPONT PREVATHON	0.43 lb./gal.	suspension concentrate	4	1	no
chlorpyrifos MoA Group 1B (grain sorghum) Do not treat sweet varieties of sorghum.					
LORSBAN 4E (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	30 (1 pt. or less) 60 (> 1 pt./A)	yes ¹
LORSBAN ADVANCED (Restricted Use)	3.755 lb./gal.	water emulsion	24	Same as above	yes ¹
GOVERN 4E (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
HATCHET (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
CHLORPYRIFOS 4E AG, others (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
NUFOS 4E (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
YUMA 4E (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
WARHAWK (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
WHIRLWIND (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
LORSBAN 75WG	12 oz./lb.	water dispersable granule	24	30 (0.67 lb./A or less) 60 (> 0.67 lb./A)	yes ¹
LORSBAN 15G	2.4 oz./lb.	granular	24	not specified	yes ¹
LORSBAN 15G SMARTBOX	2.4 oz./lb.	granular	24	not specified	yes ¹
SAURUS 15G	2.4 oz./lb.	granular	24	not specified	yes ¹
CHLORPYRIFOS 15G	2.4 oz./lb.	granular	24	not specified	yes ¹
CPF 4E (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	30 (1 pt. or less) 60 (>1 pt./A)	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

² BEE CAUTION: May kill honey bees and other bees in substantial numbers. Do not apply this product to target crops or weeds in bloom. This product is highly toxic to bees exposed to direct treatment or residues on crops or weeds in bloom. This product may show residual toxicity to honeybees, especially in humid climates and under slow drying conditions. Notifying beekeepers within 1 miles of treatment area at least 48 hours before product is applied will allow them to take additional steps to protect their bees. Limiting applications to times when bees are least active, e.g., within 2 hr of sunrise or sunset, will minimize risk to bees.

³ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds on which bees are actively foraging. Additional information may be obtained by consulting your Cooperative Extension Service.

* MoA = Mode of Action classification from the Insecticide Resistance Action Committee (www.iraac-online.org). Insecticides with different MoAs should be used for insecticide resistance management.

Table 4. Insecticides Labeled for Use on Sorghum, Including Worker Protection and Harvest or Grazing Intervals

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
chlorpyrifos MoA Group 1B (grain sorghum) Do not treat sweet varieties of sorghum.(cont.)					
ERASER (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
WARHAWK CLEARFORM (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
VULCAN (Restricted Use)	4 lb./gal.	emulsifiable concentrate	24	Same as above	yes ¹
chlorpyrifos + gamma-cyhalothrin MoA Group 1B + MoA Group 3A (grain sorghum) Do not use on sweet sorghum.					
BOLTON (Restricted Use)	2.5 + 0.083 lb./gal.	emulsifiable concentrate	24	30 (26 fl.oz./A or less) 60 (> 26 fl.oz./A)	yes ¹
COBALT (Restricted Use)	2.5 + 0.045 lb./gal.	emulsifiable concentrate	24	30 (26 fl.oz./A or less) 60 (> 26 fl.oz./A)	yes ¹
chlorpyrifos + lambda-cyhalothrin MoA Group 1B + MoA Group 3A (grain sorghum) Do not use on sweet sorghum.					
COBALT ADVANCED (Restricted Use)	2.5 + 0.13 lb./ gal.	emulsifiable concentrate	24	30 (26 fl.oz./A or less) 60 (> 26 fl.oz./A)	yes ¹
chlorpyrifos + zeta-cypermethrin MoA Group 1B + MoA Group 3A (grain sorghum) Do not use on sweet sorghum.					
STALLION BRAND (Restricted Use)	2.75 + 0.275 lb./gal.	emulsifiable concentrate	24	30 (grain, stover) 45 (forage)	yes ¹
clothianidin MoA Group 4A					
PONCHO 600	5 lb./gal.	seed treatment	Not specified	Not specified	minimize planter dust
ACCELERON IC-609	5 lb./gal.	seed treatment	Not specified	Not specified	yes ⁴
NIPSIT INSIDE	5 lb./gal.	seed treatment	12	Not specified	yes ⁴
clothianidin + <i>Bacillus firmus</i> MoA Group 4A					
PONCHO VOTIVO	4.17 + 0.84 lb./gal.	seed treatment	Not specified	Not specified	yes ⁴
cyfluthrin MoA Group 3A					
TOMBSTONE (Restricted Use)	2 lb./gal.	emulsifiable concentrate	12	14	yes ¹
TOMBSTONE HELIOS (Restricted Use)	2 lb./gal.	emulsifiable concentrate	12	14	yes ¹
deltamethrin MoA Group 3A					
DELTA GOLD 1.5 EC (Restricted Use)	1.5 lb./gal.	emulsifiable concentrate	12	14	yes ¹
dimethoate MoA Group 1B (grain sorghum)					
DIMETHOATE 4E	4 lb./gal.	emulsifiable concentrate	48	28	yes ¹
DIMATE 4E	4 lb./gal.	emulsifiable concentrate	48	28	yes ¹
DIMETHOATE 400, others	4 lb./gal.	emulsifiable concentrate	48	28	yes ¹
DIMETHOATE 4EC	4 lb./gal.	emulsifiable concentrate	48	28	yes ¹
DIMETHOATE LV-4	4 lb./gal.	emulsifiable concentrate	48	28	yes ¹
esfenvalerate MoA Group 3A (grain sorghum)					
ASANA XL (Restricted Use)	0.66 lb./gal.	emulsifiable concentrate	12	21	yes ¹
S-FENVALOSTAR (Restricted Use)	0.66 lb./gal.	emulsifiable concentrate	12	21	yes ¹
ZYRATE (Restricted Use)	0.66 lb./gal.	emulsifiable concentrate	12	21	yes ¹
flupyradifurone MoA Group 4D (sorghum)					
SIVANTO PRIME	1.67 lb./gal.	soluble liquid	4	7 (forage, hay) 21 (grain, stover)	yes ⁵

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

⁴ This compound is highly toxic to bees exposed directly (contact). Ensure that planting equipment is functioning properly in accordance with manufacturing recommendations to minimize seed coat abrasion during planting to reduce dust which can drift to blooming crops or weeds.

⁵ Toxic to adult bees in laboratory studies via oral exposure, however, not toxic to bees through contact exposure. Field studies conducted with this product have shown no effects on honeybee colony development.

Table 4. Insecticides Labeled for Use on Sorghum, Including Worker Protection and Harvest or Grazing Intervals

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
gamma-cyhalothrin MoA Group 3A (grain sorghum)					
DECLARE (Restricted Use)	1.25 lb./gal	microencapsulated suspension	24	30	yes ¹
PROAXIS (Restricted Use)	0.5 lb./gal.	microencapsulated suspension	24	30	yes ¹
imidacloprid MoA Group 4A (sorghum, millet)					
NITRO SHIELD	5 lb./gal.	liquid used as seed treatment	12	45	yes ⁶
MACHO 600 ST	5 lb./gal.	liquid used as seed treatment	12	45	yes ¹
GAUCHO 600	5 lb./gal.	liquid used as seed treatment	12	45	no
AXCESS	5 lb./gal.	liquid used as seed treatment	12	45	no
NITRO SHIELD IV	4 lb./gal.	liquid used as seed treatment	12	45	yes ⁶
SHARDA IMIDACLOPRID 5SC	5 lb./gal.	liquid used as seed treatment	12	45	yes ⁴
DYNA-SHIELD IMIDACLOPRID 5	5 lb./gal.	liquid used as seed treatment	12	45	yes ⁴
RESONATE 600 ST	5 lb./gal.	liquid used as seed treatment	12	45	yes ⁶
SENATOR 600 FS	5 lb./gal.	liquid used as seed treatment	12	45	no
ATTENDANT 480 FS	4 lb./gal.	liquid used as seed treatment	12	45	yes ⁴
imidacloprid + metalaxyl MoA Group 4A					
CONCUR SEED TREATMENT	4 oz./lb. + 0.16 oz./lb.	dust used as seed treatment	24	Not specified	no
imidacloprid + carboxin and metalaxyl MoA Group 4A					
LATITUDE	4 oz. + 2.2 oz. + 0.16 oz./lb.	dust used as seed treatment	24	45	no
lambda-cyhalothrin MoA Group 3A (grain sorghum)					
GRIZZLY Z INSECTICIDE (Restricted Use)	1 lb./gal.	capsule suspension	24	30	yes ¹
WARRIOR II with ZEON TECHNOLOGY (Restricted Use)	2.08 lb./gal.	capsule suspension	24	30	yes ¹
KENDO (Restricted Use)	1 lb./gal.	emulsifiable concentrate	24	30	yes ¹
LAMCAP	1 lb./gal.	capsule suspension	24	30	yes ¹
WILLOWOOD LAMBDA-CY IEC (Restricted Use)	1 lb./gal.	emulsifiable concentrate	24	30	yes ¹
LAMDA CY AG (Restricted Use)	1 lb./gal.	emulsifiable concentrate	24	30	yes ¹
LAMDA-CY EC (Restricted Use)	1 lb./gal.	emulsifiable concentrate	24	30	yes ¹
LAMBDASTAR (Restricted Use)	1 lb./gal.	emulsifiable concentrate	24	30	yes ¹
LAMBDASTAR ICS (Restricted Use)	1 lb./gal.	capsule suspension	24	30	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

⁴ This compound is highly toxic to bees exposed directly (contact). Ensure that planting equipment is functioning properly in accordance with manufacturing recommendations to minimize seed coat abrasion during planting to reduce dust which can drift to blooming crops or weeds.

⁶ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift if bees are visiting the treatment area. Ensure that planting equipment is functioning properly in accordance with manufacturer specifications to minimize seed coat abrasion during planting to reduce dust, which can drift to blooming crops or weeds.

Table 4. Insecticides Labeled for Use on Sorghum, Including Worker Protection and Harvest or Grazing Intervals

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
lambda-cyhalothrin MoA Group 3A (Grain sorghum) (cont.)					
LAMBDASTAR PLUS (Restricted Use)	2 lb./gal.	aqueous-based formulation	24	30	yes ²
LAMBDA-T (Restricted Use)	1 lb./gal.	capsule suspension	24	30	yes ¹
L-C INSECTICIDE	1 lb./gal.	emulsifiable concentrate	24	30 (grain) Do not graze or harvest for fodder, silage, or hay	yes ¹
NUFARM LAMBDA CYHALOTHRIN IEC (Restricted Use)	1 lb./gal.	emulsifiable concentrate	24	30	yes ¹
PARADIGM (Restricted Use)	1 lb./gal.	capsule suspension	24	30	yes ¹
PROVINCE (Restricted Use)	1 lb./gal.	capsule suspension	24	30	yes ¹
PROVINCE II (Restricted Use)	2.08 lb./gal.	capsule suspension	24	30	yes ¹
RAVAGE (Restricted Use)	1 lb./gal.	emulsifiable concentrate	30	30	yes ¹
SILENCER (Restricted Use)	1 lb./gal.	emulsifiable concentrate	24	30	yes ¹
SILENCER VXX (Restricted Use)	1 lb./gal.	capsule suspension	24	30	yes ¹
PROVINCE II (Restricted Use)	2.08 lb./gal.	capsule suspension	24	30	yes ¹
GRIZZLY TOO (Restricted Use)	2.08 lb./gal.	capsule suspension	24	30	yes ¹
lambda-cyhalothrin + chlorantraniliprole MoA Group 3A + MoA Group 28 (Grain Sorghum)					
BESIEGE (Restricted Use)	0.417 lb. + 0.835 lb./ gal.	capsule suspension plus soluble concentrate	24	30	yes ¹
malathion MoA Group 1B (Grain Sorghum)					
MALATHION 5, 5E, 57EC, others	5 lb./gal.	emulsifiable concentrate	12	7	yes ¹
GOWAN MALATHION, 8 others	8 lb./gal.	emulsifiable concentrate	12	7	yes ¹
CHEMINOVA MALATHION 57%	5 lb./gal.	emulsifiable concentrate	12	7	yes ¹
FYFANON	5 lb./gal.	emulsifiable concentrate	12	7	yes ¹
FYFANON ULV AG	9.9 lb./gal.	emulsifiable concentrate	12	7	yes ¹
FYFANON 8 LB EMULSION	8 lb./gal.	emulsifiable concentrate	12	7	yes ¹
methomyl MoA Group 1A (Sorghum including sudangrass, not for sweet sorghum)					
DUPONT LANNATE LV (Restricted Use)	2.4 lb./gal.	water soluble liquid	48	14	yes ¹
DUPONT LANNATE SP (Restricted Use)	14.4 oz./lb.	water soluble packet	48	14	yes ¹
NUDRIN LV (Restricted Use)	2.4 lb./gal.	water soluble liquid	48	14	yes ¹
NUDRIN SP (Restricted Use)	14.4 oz./lb.	water soluble packet	48	14	yes ¹
ANNIHILATE LV (Restricted Use)	2.4 lb./gal.	water soluble liquid	48	14	yes ¹
ANNIHILATE SP (Restricted Use)	14.4 oz./lb.	water soluble bags	48	14	yes ¹
CORRIDA 29 SL (Restricted Use)	2.4 lb./gal.	water soluble liquid	48	14	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

² In order to minimize the possibility of developmental effects on pollinator larvae, including honey bee brood, do not use Diamond 0.83 EC on blooming crops.

Table 4. Insecticides Labeled for Use on Sorghum, Including Worker Protection and Harvest or Grazing Intervals

Insecticide and Trade Name	A.I./ Formulated Product	Formulation	Restricted Entry Interval (hr)	Minimum Days from Last Application to Harvest or Grazing	Bee Hazard Restriction
CORRIDA 90 WSP (Restricted Use)	14.4 oz./lb.	water soluble bags	48	14	yes ¹
methoxyfenozide (Grain and Sweet Sorghum) MoA Group 18					
INTREPID	2 lb./gal.	flowable liquid	4	2 (grain or stover) 3 (forage or sweet sorghum stalk)	no
TROUBADOUR	2 lb./gal.	flowable liquid	4	21 (grain or stover) 3 (forage or sweet sorghum stalk)	
novaluron MoA Group 15 (Grain Sorghum)					
DIAMOND 0.83 EC, others	0.83 lb./gal.	emulsifiable concentrate	12	7 (forage) 14 (grain and stover)	yes ⁷
phorate MoA Group 1B (Grain Sorghum)					
THIMET 20-G SMARTBOX OR LOCK'N'LOAD OR EZLOAD (Restricted Use)	3.2 oz./lb.	granular	48	30	no
propargite MoA Group 12C					
COMITE II (Restricted Use)	6 lb./gal.	emulsifiable concentrate	48	60 (grain) 30 (silage)	no
spinosad MoA Group 5 (sorghum, millet)					
BLACKHAWK	5.8 oz./lb.	wettable powder	4	21 (grain, straw) 3 (forage, fodder, hay)	yes ⁸
ENTRUST	12.8 oz./lb.	wettable powder	4	Same as above	yes ⁸
ENTRUST SC	2 lb./gal.	soluble concentrate	4	Same as above	yes ⁸
SPINTOR 2 SC	2 lb./gal.	soluble concentrate	4	Same as above	yes ⁸
spinosad + gamma-cyhalothrin MoA Group 5 + MoA Group 3A (sorghum)					
CONSERO (Restricted Use)	4 lb./gal. + 1.25 lb./ gal.	co-pack containing 0.5 gallon of each insecticide	24	30	yes ¹
terbufos MoA Group 1B (Grain sorghum)					
COUNTER 20G LOCK'N'LOAD OR SMARTBOX (Restricted Use)	3.2 oz./lb.	granular	48	50 (forage) 100 (grain or fodder)	no
thiamethoxam MoA Group 4A (sorghum)					
CRUISER 5FS	5 lb./gal.	seed treatment	12	Not specified	yes ⁹
zeta-cypermethrin MoA Group 3A (Grain sorghum)					
MUSTANG MAXX EC INSECTICIDE (Restricted Use)	0.8 lb./gal.	emulsifiable concentrate	12	14 (grain, stover) 45 (forage), silage	yes ¹
RESPECT INSECTICIDE OR RESPECT EC INSECTICIDE (Restricted Use)	0.8 lb./gal.	emulsifiable concentrate	12	14 (grain, stover) 45 (forage)	yes ¹

¹ This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

⁷ Because of its mode of action as an insect growth regulator and since it is not systemic, Diamond 0.83EC has no direct effect on fully developed adult stages, such as bees and other beneficial pollinators. However, in order to minimize the possibility of transient effects on honeybee brood development, do not use Diamond 0.83EC on blooming crops when bees are actively foraging.

⁸ This product is toxic to bees exposed to treatment during the 3 hours following treatment. Do not apply to blooming, pollen-shedding, or nectar-producing parts of plants if bees may forage on the plants during this time period.

⁹ Thiamethoxam is highly toxic to bees exposed to direct treatment and effects may be possible as a result of exposure to translocated residues in blooming crops.

Other products may be available. Always read the label to make sure the specific crop is listed and to determine what rate to use. Insect Pest Management section prepared by Kathy L. Flanders, Extension Entomologist, Professor, Department of Entomology and Plant Pathology, Auburn University.

DISEASE CONTROL (2019 RECOMMENDATIONS)

Diseases may have a significant impact on the yield and grain quality of sorghum. While the risk of yield loss is greatest with the leaf blight and stalk (peduncle) rot phases of anthracnose, other diseases that can impact sorghum yield include Fusarium stalk rot and gray leaf spot. Forage sorghum varieties are particularly susceptible to anthracnose. Anthracnose, rough leaf spot, and zonate leaf spot are common and sometimes damaging diseases on sweet sorghum. Other than frequent

showers, factors that influence crop susceptibility to diseases include sorghum cropping frequency, tillage practices, and variety selection. During periods of extended drought stress, charcoal rot may reduce the yield and increase lodging in grain sorghum.

For a brief description of the diseases commonly found on sorghum in Alabama, see <http://www.aces.edu/dept/grain/sorghumDIS.php>.

Table 1. Grain Sorghum Disease Control

Chemical Name	Rate per 1,000 Row Ft.	Comments
SEED ROT AND SEEDLING DISEASE		
azoxystrobin QUADRIS FLOWABLE	0.4–0.8 fl.oz.	At-plant in-furrow spray for control of rhizoctonia and pythium seedling blight. Apply in 3 to 7 gallons of water at planting and direct spray into the seed furrow before seed is covered. Use higher rate when conditions favor disease. May help suppress charcoal rot.
LEAF SPOTS AND BLIGHTS		
azoxystrobin QUADRIS FLOWABLE AFRAME	6.0–15.5 fl.oz.	For control of anthracnose, charcoal rot, gray leaf spot on forage and grain sorghum. Begin applications prior to disease development and repeat 14 to 21 days later as needed. Use higher rate when conditions are favorable for disease on susceptible host. Make no more than two consecutive applications of Quadris Flowable or other Group 11 fungicide (Qol). See label for additional information concerning resistance management with Qol fungicides. See label for additional instructions.
azoxystrobin + propiconazole QUILT	14 fl.oz.	For control of anthracnose and gray leaf spot on forage and grain sorghum. For anthracnose and gray leaf spot control, apply prior to disease development and repeat as needed. Make no more than two consecutive applications of Quilt or other Group 11 fungicide (Qol). See label for additional information concerning resistance management with Qol fungicides. See label for additional instructions.
QUILT XCEL AZOXY PROP XTRA	10.5–14 fl.oz.	For control of anthracnose, ergot, gray leaf spot, northern corn leaf blight, ladder spot, and zonate leaf spot on sorghum. Apply at first sign of disease and repeat after 14 days as needed. DO NOT apply more than 56 fluid ounces per acre of Quilt Xcel.
fluxapyroxad + pyraclostrobin PRIAXOR	4–8 fl.oz.	For control of anthracnose, gray and cercospora leaf spot, northern leaf blight, rust, southern leaf blight, and bipolaris leaf spot. Make an application prior to disease development. Limit one application per season.
flutriafol TOPGUARD	7–14 fl.oz.	For control of anthracnose, gray leaf spot, leaf blight, rough leaf spot, zonate leaf spot. Apply when conditions favor disease development and again 14 days later as needed. Make no more than two (2) applications per season.
flutriafol + azoxystrobin TOPGUARD EQ	5–7 fl.oz.	For control of anthracnose, gray leaf spot, leaf spot, latter leaf spot, rough spot, target spot, and zonate leaf spot. Make first application when conditions favor disease development and repeat as needed if conditions remain favorable for disease development. Do not make more than two (2) applications per year. Do not apply within 30 days of harvest.
picoxystrobin APROACH	6–12 fl.oz.	For control of anthracnose, gray leaf spot, and rust on sorghum and sorghum spp. Apply prior to disease development and continue at 7- to 14- day intervals when disease pressure is high, DO NOT apply after flowering. DO NOT make more than two sequential applications before switching to a fungicide with a different mode of action.

Disease Control section prepared by Austin K. Hagan, Extension Plant Pathologist, Professor, Department of Entomology and Plant Pathology, Auburn University.

GRAIN SORGHUM WEED CONTROL (2018 RECOMMENDATIONS)

Weeds compete with grain sorghum for light, water, and nutrients. If weeds are not properly controlled, they will reduce yields and quality of the crop and be problematic during harvest.

Grain Sorghum and Johnsongrass

Johnsongrass is in the same family as grain sorghum, which means it is closely related to grain sorghum, making it difficult, if not impossible, to control. Do not plant grain sorghum in fields that are heavily infested with johnsongrass. No herbicides are available that will control johnsongrass in grain sorghum.

Atrazine and Water Quality

Atrazine is a Restricted Use Pesticide because of ground and surface water concerns. Atrazine can travel through the soil and can enter groundwater, which may be used as drinking water. Atrazine has been found in groundwater. Users are advised not to apply atrazine to sand and loamy sand soils where the water table (groundwater) is close to the surface and where these soils are very permeable (i.e., well-drained). These restrictions apply to all formulations and all atrazine-containing products.

Mixing, Loading, and Application

Atrazine must not be mixed or loaded within 50 feet of intermittent streams and rivers, natural or impounded lakes, and reservoirs or any wells, including abandoned wells, drainage wells, and sink holes. Atrazine must not be applied within 66 feet of points where field surface water runoff enters perennial or intermittent streams and rivers or within 200 feet of natural or impounded lakes and reservoirs. If atrazine is applied to highly erodible land, the 66-foot buffer or setback from runoff entry points must be planted to a crop or seeded with grass or other suitable crop. See atrazine label for additional restrictions.

Application Rates

** Highly erodible soils (as defined by NRCS)—using conservation tillage practices (at least 30% plant residue coverage at planting), apply a maximum of 4 pt./A. If residue is less than 30%, apply a maximum of 3.2 pt./A.

** Not highly erodible soils. With no limit on the amount of plant residue, apply a maximum of 4 pt./A.

*MOA=Mechanism of action. Herbicides with different MOAs should be used in weed resistance management. See Table 4.

Table 2. Grain Sorghum Weed Control

Herbicide Trade Name	Herbicide Common Name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
BURNDOWN (NO-TILL/REDUCED TILL)								
Clarity/Vision/Banvel/ Sterling Blue/Clash/ Detonate/Diablo/ Dicamba DMA salt/ Rifle/Strut	dicamba	24 hr/30 d	8 fl. oz.	0.25 lb.	4	Apply at least 15 days before sorghum planting.	Annual broadleaf weeds.	See label for tank-mixing partners and adjuvant requirements. Do not apply in tank mixtures with Lorsban herbicide. It may be applied in split applications: burndown followed by postemergence or preharvest; or postemergence followed by preharvest. Do not exceed 8 fl. oz./A per application or a total of 16 fl. oz./A per season.
Gramoxone SL/others	paraquat	24 hr/48 d	2–4 pt.	0.5–1.0 lb.	22	Apply before sorghum emerges.	Annual broadleaf weeds and grasses.	Use a non-ionic surfactant and apply in 20–30 gallons of spray solution per acre. Use the higher rate for harder-to-kill weeds. Complete coverage is essential for good weed desiccation. See label for specific application instructions and tank-mixing partners.
Sharpen	safinufenacil	12 hr/70 d	1–2 fl. oz.	0.022–0.045 lb.	14	Apply for burndown, preplant, or PRE control before crop emerges.	Horseweed and other broadleaf weeds.	An MSO is a required adjuvant for use with this product. See label for specifics. Tank-mix with glyphosate or Gramoxone SL for best burndown results.
Various*	glyphosate	4 hr/7 d	32–64 fl. oz. (3 lb. ae) 22–43 fl. oz. (4.5 lb. ae)	0.75–1.5 lb. ae	9	Apply before, at planting, or immediately after planting but before crop emerges.	Broadleaf and grass weeds.	Adjuvant recommendations vary by glyphosate brand. See label for tank mixing partners. Tank mixes must follow the most restrictive REI/PHIs. Use lower rate on smaller, easy-to-kill weeds; increase rate with larger weeds and perennials.
Verdict	safinufenacil + dimethenamid-P	12 hr/70 d	5–10 fl. oz.	0.218–0.436 lb.	14 + 15	Apply burndown, preplant, or PRE to grain sorghum that has been treated with an approved chloroacetamide seed safener such as Concep III.	Horseweed and other broadleaf weeds.	Tank-mix with glyphosate or Gramoxone SL for best burndown results. See label for additional tank-mix partners and adjuvant system required. Verdict rate depends on soil texture and organic matter content.
PREEMERGENCE								
Bicep II Magnum	atrazine + S-metolachlor	24 hr/ N/A	Coarse soils: do not use Medium soils: 2.1–2.33 qt. Fine soils: 2.33–2.58 qt.	Coarse soils: do not use Medium soils: 0.045–0.106 lb. Fine soils: 0.106–0.177 lb.	5 + 15	Apply preplant, PPI, or PRE to grain sorghum.	Annual grasses and broadleaf weeds.	Do not use on medium soils (loam, silt loam, silt) with less than 1.0% organic matter. For preplant applications, apply within 14 days before planting. Do not use unless your seed has been treated with Concep or Screen seed safener. See label for tank-mixing partners.

Table 2. Grain Sorghum Weed Control (cont.)

Herbicide Trade Name	Herbicide Common Name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
PREEMERGENCE (cont.)								
Bullet, Lariat	alachlor + atrazine	12 hr/N/A	Coarse soils: 2.5 qt. Medium soils: 2.75 qt. Fine soils: 3.0 qt.	Coarse soils: 2.5 lb. Medium soils: 2.75 lb. Fine soils: 3.0 lb.	5 + 15	Apply before crop emergence.	Annual grasses and broadleaf weeds.	See label for tank-mixing partners.
Callisto	mesotrione	12 hr/60 d	6.0–6.4 fl.oz.	0.012–0.0125 lb.	27	Apply more than 7d before planting, but not more than 21, will reduce risk of injury. Can apply PRE or PPI.	Annual broadleaf weeds	Do not apply to coarse-textured soils.
Cinch/Brawl II/Charger Max/Dual II/Magnum/Medal II/	S-metolachlor	24 hr/75 d	Coarse soils: 1.0–1.33 pt. Medium soils: 1.33–1.5 pt. Fine soils: 1.33–1.67 pt.	Coarse soils: 0.96–1.27 lb. Medium soils: 1.27–1.43 lb. Fine soils: 1.27–1.6 lb.	15	Apply at planting.	Annual grasses and broadleaf weeds.	Do not use unless your seed has been treated with Concep or Screen seed safener. Tank mixtures are permitted only in states where the tank-mix partner is registered. Check label for tank-mix partners.
Cinch ATZ	atrazine + S-metolachlor	24 hr/N/A	Coarse soils: do not use Medium soils: 3.2–4.2 pt. Fine soils: 3.2–4.2 pt.	Coarse soils: do not use Medium soils: 2.2–2.9 lb. Fine soils: 2.2–2.9 lb.	5 + 15	Apply before crop emergence.	Annual grasses and broadleaf weeds.	Do not use unless your seed has been treated with Concep or Screen seed safener. Tank mixtures are permitted only in states where the tank-mix partner is registered. Check label for tank-mix partners.
Degree Xtra	acetolachlor + atrazine	12 hr/60 d	2.0–2.9 qt.	0.124 - 0.18 lb.	15 + 5	Preplant, PPI, and PRE	Annual grass and small-seeded broadleaf control	Do not use unless seed is treated with a safener for grain sorghum.
Lexar, Lumex, Lumax EZ	S-metolachlor + atrazine + mesotrione	24 hr/	3 qt	2.78 lb.	5 + 27 + 15	Preemergence up to 21d before planting.	Grasses and broadleaf weeds.	This is a Restricted Use Pesticide. Do not apply on sandy soils. Sorghum seed must be treated with Concep III herbicide safener before planting. Add an NIS at 0.25% v/v or a COC at 1% v/v if weeds are present at time of application.

Table 2. Grain Sorghum Weed Control (cont.)

Herbicide Trade Name	Herbicide Common Name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
PREEMERGENCE (cont.)								
Outlook	dimethenamid-P	12 hr/80 d	Coarse soils: 12–14 fl.oz. Medium- to fine-textured soils: 14–18 fl.oz.	0.56–0.66 lb. 0.66–0.84 lb	15	Preplant, PPI, and pre-emergence	Grasses and small-seeded broadleaves	See label for approved tank mixes. May use a split application.
Sharpen	safinufenacil	12 hr/70 d	1–2 fl. oz.	0.022–0.045 lb.	14	Apply PRE control before crop emerges.	Small- and large-seeded broadleaf weeds.	If weeds are present at the time of application, add glyphosate or gramoxone. An MSO is a required adjuvant for use with this product if weeds are present. See label for specifics.
Verdict	safinufenacil + dimethenamid-P	12 hr/70 d	5–10 fl. oz.	0.218–0.436 lb.	14 + 15	Apply PRE control before crop emerges.	Broadleaf and grass weeds.	If weeds are present at the time of application, add glyphosate or gramoxone. An MSO is a required adjuvant for use with this product if weeds are present. See label for specifics. Seed must have been treated with an approved chloroacetamide seed safener such as Concep III.
POSTEMERGENCE								
Aim EC, Aim EW	carfentrazone-ethyl	12 hr/21 d	0.5 fl. oz. (Aim EC) 0.5–0.8 fl. oz. (Aim EW)	0.008 lb. (Aim EC) 0.008–0.013 lb. (Aim EW)	14	Apply from 4 inches tall to just prior to boot stage.	Broadleaf weeds.	Always add a nonionic surfactant at 0.25% v/v (2 pints per 100 gallons of spray solution) having at least 80% active ingredient. Do not use crop oil concentrates or methylated seed oils. See label for tank-mixing partners.
Atrazine	atrazine	12 hr/45 d	2.0 qt.–4L 2.2 lb.–90%	2.0 lb.	5	Apply after sorghum is completely emerged but before 12 inches tall and before weeds are more than 1.5 inches tall.	Most annual grasses and broadleaf weeds.	Do not apply to sand or loamy sand, or injury may occur. Do not exceed 2 pounds of active ingredient per acre per year. Do not use when sorghum is under stress or crop is wet and succulent from recent rainfall. See label for restrictions. Follow directions for crop rotation.

Table 2. Grain Sorghum Weed Control (cont.)

Herbicide Trade Name	Herbicide Common Name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
POSTEMERGENCE (cont.)								
Banvel, Clarity, Sterling Blue, Vision	dicamba	24 hr/30 d	8 fl. oz.	0.25 lb.	4	Apply over the top from emergence to 15 inches tall. Best performance will be when sorghum is in 3- to 5-leaf stage and weeds are smaller than 3 inches tall. If sorghum is larger than 8 inches tall, use drop nozzles.	Most broadleaf weeds.	Use caution to prevent drift and injury to sensitive crops. Do not use adjuvants. Do not apply by air.
Basagran	bentazon	48 hr/N/A	1.5-2 pt. (4 lb./gal.) 1.2-1.6 pt. (5 lb./gal.)	0.75-1 lb.	6	Apply after sorghum has completely emerged but before boot stage.	Most broadleaf weeds less than 4 inches tall.	Refer to label for specific weed sizes. Rainfall within 4 hours after application may reduce effectiveness. See label or adjuvant requirements and tank-mixing partners.
Buctril	bromoxynil	24 hr/	0.5-0.75 pt.	0.25-0.38 lb.	6	Apply between the 3-leaf stage but prior to the preboot stage (growth stage 4).	Most broadleaf weeds in the 2- to 4-leaf stage.	Do not add spray additives or mix with fluid fertilizers. See label for tank-mixing partners. Applications prior to the 3-leaf growth stage may result in increased crop leaf burn. Less drift potential than dicamba or 2,4-D.
Degree Xtra	acetolachlor + atrazine	12 hr/60 d	2.0-2.9 qt.	0.124 - 0.18 lb.	15 + 5	Apply post to grain sorghum before the crop exceeds 11 inches in height (in general, 5-6 leaf stage).	Grasses and small-seeded broadleaves.	This is a Restricted Use Pesticide. See label for approved tank mixes. May use a split-application.
Facet L	quinchlorac	12 hr/	22-32 fl. oz.	0.115 - 0.151 lb.	4 + 26	Apply POST (plants up to 12 inches tall)	Annual grass and broadleaf weeds	For best annual grass control, apply with atrazine at 0.5-1.0 lb ai./A when weeds are less than 2 inches tall. Do not use liquid fertilizer as a carrier for POST application of Facet L to grain sorghum.
Huskie	pyrasulfotole + bromoxynil + octanoate + bromoxynil heptanoate	24 hr/60 d	12.8 - 16 fl. oz.	0.21 - 0.26 lb.	6 + 27	Apply between 3-leaf up to 30 inches and/or prior to flag leaf emergence.	Certain broadleaf weeds.	Huskie is an EC so see label for tank mix partners. For optimal activity, add 1 pound of AMS per acre.

Table 2. Grain Sorghum Weed Control (cont.)

Herbicide Trade Name	Herbicide Common Name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
POSTEMERGENCE (cont.)								
Outlook	dimethenamid-P	12 hr/80 d	Coarse soils: 12–14 fl.oz. Medium- to fine-textured soils: 14–18 fl.oz.	0.56–0.66 lb. 0.66–0.84 lb.	15	Postemergence up to 12 inches in grain sorghum	Grasses and small-seeded broadleaves.	This is a Restricted Use Pesticide. See label for approved tank mixes. May use a split-application.
Prowl H2O	pendimethalin	24 hr/60 d	Coarse soil: 1.5 pt Medium soil: 2.0 pt Fine soil: 3.0 pt	Coarse soil: 0.5–0.74 lb. Medium soil: 0.74–1.0 lb. Fine soil: 0.74–1.5 lb.	3	Cultivate to throw soil around stems and protect brace roots when sorghum is a minimum of 4" in height and immediately spray with Prowl. Use drop nozzles if sorghum foliage will prevent uniform coverage of the soil surface. Can spray as late as the last cultivation.	Annual grasses and small-seeded broadleaf weeds.	Prowl H2O will not control emerged weeds. Rainfall/irrigation of 0.5" to 1.0" can be used instead of mechanical cultivation. Herbicide must be applied to weed-free soil.
Sandea, Profine 75	halosulfuron	12 hr/30 d	0.67 - 1 oz.	0.031 - 0.476 lb.	2	Apply at the 2-leaf through layby stage (before grain head emerges)	nutsedges, grasses, broadleaves	Do not make more than one application per use per season. See label for tank-mix partners. Use an NIS, COC in the spray mixture.
Zest WDG	nicosulfuron	4 hr/see label	0.67-1.33 oz.	0.031 - 0.062 lb.	2	Apply to emerged grain sorghum containing the INZEN technology that is up to 20 inches tall. Applications from fifth leaf stage.	crabgrass, broadleaf signalgrass, johnsongrass, panicums.	May only be used on INZEN grain sorghum. Applications made at approximately five leaf to flag leaf visible provides the best crop tolerance. Must use a COC at 1% v/v or NIS at 0.25% v/v.

Table 2. Grain Sorghum Weed Control (cont.)

Herbicide Trade Name	Herbicide Common Name	REI/PHI (Hours or Days)	Rate/Acre Broadcast		Herbicide Group	Time of Application	Weeds Controlled	Comments
			Formulation	Active Ingredient				
POSTEMERGENCE (cont.)								
2,4-D (various trade names)	2,4-D	48 hr/30 d	1.0 - 1.5 pt	0.5 - 0.7 lb.	4	Apply over the top of grain sorghum that is 5-15 inches tall. Use drop nozzles if sorghum is more than 8 inches in height. Use a non-ionic surfactant at 0.25% v/v or a crop oil concentrate at 1% v/v.	Most annual broadleaf weeds.	Use caution to prevent drift and injury to sensitive crops. Do not apply during boot, bloom, or early dough stages or apply in fluid fertilizers. Do not use the ester formulations to prevent drift to susceptible crops.
HARVEST AID								
Aim	carfentrazone-ethyl	12 hr/3 d	1 fl. oz.	0.016 lb.	14	Apply when grain is fully mature, when black layer has formed, and when kernels are hard.	Desiccation of broadleaf weeds, such as pigweeds and morningglories	Coverage is essential for good control. Use a minimum of 10 gallons of finished spray per acre for ground applications. An NIS, MSO, or COC is required. May be tank mixed with glyphosate to improve control of grasses and other weeds.
glyphosate 3 lb. ae 4 lb. ae 5 lb. ae	glyphosate	4 hr/7 d	32-64 oz. 24-48 oz. 19-38 oz.	19-38 oz.	9	Apply when grain reaches 30% moisture or less and black layer has formed.	Desiccation of broadleaf weeds, grasses, and green vegetation.	Allow a minimum of 7 days before harvest. Do not use on sorghum grown for seed as a reduction in seed germination or vigor may occur. See label for use as all glyphosate formulations may be labeled for this use.
Sodium Chlorate, Defol 5, others	sodium chlorate		4.8 qt. (5 lb./gal.) 3.2 qt. (7.5 lb./gal.)	5-7.5 lb.		Apply when sorghum has reached 25% or less moisture.	Desiccation of grasses.	Make application on a sunny day when air temperature is above 85 degrees and humidity is below 65%. Apply 7 to 10 days before planned harvest date.
Rate of herbicides are given for broadcast application. Band application reduces the amount needed per acre of crop and can be determined by the formula:								
$\frac{\text{Band Width} \times \text{Broadcast Rate} = \text{Band Rate}}{\text{Row Width}}$								
For example, the amount of AATrex 4L needed for a broadcast application to a light sandy soil is 2 quarts per acre. The amount needed to treat a 20-inch band on a 30-inch row would be $20/30 \times 2 \text{ qt./A} = 1.33 \text{ qt./A}$ on a 20-inch band								

Table 3. Weed Response to Grain Sorghum Herbicides

Herbicides	Clarity	Gramoxone SL	Glyphosate	Sharpen	Verdict	Bicep II Magnum	Dual II Magnum
Application Timing	BURNDOWN					PRE	
Site of Action Group	4	22	9	14	14 + 15	5 + 15	15

Weeds

PERENNIAL WEEDS							
bermudagrass	N	P	G	N	N	N	N
johnsongrass, rhizome	N	P	E	N	N	N	N
nutsedge, purple	N	P	F	N	N	N	N
nutsedge, yellow	N	P	F	N	P	F–G	F–G
ANNUAL GRASSES							
crabgrass, large	N	F	G	N	G	E	E
crowfootgrass	N	F	E	N	F		E
goosegrass	N	F	E	N	F	E	E
fall panicum	N	F	G	N	F	E	E
foxtail	N	F	E	N	G	E	
johnsongrass (seedling)	N	F	E	N	G	G	G
signalgrass, broadleaf	N	F	G	N	G	G	G
Texas panicum	N	F	G	N	F	F–G	P–F
BROADLEAF WEEDS							
beggarweed, Florida	G	E	E				F
bristly starbur	E	E	E				P
black nightshade	E	E	E	E	E	G	G
cocklebur	E	E	E	E	E	F	P
crotalaria, showy	G	E	E	E	E	P	P
croton, tropic	G	E	E				P
groundcherries	E	E	E	E	E	G	G
jimsonweed	E	E	E	E	E		P
lambsquarters, common	E	E	E	E	E	E	F
morningglories sp.	E	E	F	E	E	G	P
pigweed	G–E	E	E	E	E	E	G
prickly sida	E	E	E	E	E	F	F
pusley, Florida	E	E	E				G–E
ragweed, common	E	E	E	E	E	E	F
ragweed, giant	E	E	E	G	G	F	P
sicklepod	E	E	E	P	P	F	P
smartweed	G	E	E	E	E	E	G
velvetleaf	G	E	E	E	E	F	P

N = No control

P = < 70% control

F = 70–80% control

G = 80–90% control

E = 90% control

¹ Will not control ALS-resistant ryegrass² Weeds must not be larger than 2 inches at time of application.

Table 3. Weed Response to Small Grain Herbicides (cont.)

Herbicides	Cinch ATZ	Atrazine	Basagran	Buctril	2,4-D	Zest WDG
Application Timing	PRE	POST				
Site of Action Group	5 + 15	5	6	6	4	2
Weeds						
PERENNIAL WEEDS						
bermudagrass	N	N	N	N	N	G-E
johnsongrass, rhizome	N	N	N	N	N	G
nutsedge, purple	N	N	P	N	N	N
nutsedge, yellow	F-G	N	G	N	N	N
ANNUAL GRASSES						
crabgrass, large	E	F	N	N	N	E
crowfootgrass			N	N	N	F
goosegrass	E	P	N	N	N	F
fall panicum	E	P	N	N	N	E
foxtail	E		N	N	N	E
johnsongrass (seedling)	G	P	N	N	N	E
signalgrass, broadleaf	G	F	P	N	N	E
Texas panicum	F-G		N	N	N	E
BROADLEAF WEEDS						
beggarweed, Florida		G	G	G	P	N
bristly starbur		E	E	G	G	N
black nightshade	G	G	P	G	G	N
cocklebur	F	E	E	E	E	N
crotalaria, showy	P	G	P		G	N
croton, tropic		G	P		G	N
groundcherries	G	F	P	G	G	N
jimsonweed		E	E		E	N
lambquarters, common	E	E	P	G	G	N
morningglories sp.	G	E	F	F	E	N
pigweed	E	E	P	G	G	N
prickly sida	F	E	F-G	G	F	N
pusley, Florida		G	P	G-E	G	N
ragweed, common	E	E	P	F	G	N
ragweed, giant	F	F	P	N	E	N
sicklepod	F	F-G	N	P	G	N
smartweed	E	G	F	G	P	N
velvetleaf	F	F	G	G	G	N

N = No control

P = < 70% control

F = 70–80% control

G = 80–90% control

E = 90% control

¹ Will not control ALS-resistant ryegrass² Weeds must not be larger than 2 inches at time of application.

Table 3. Weed Response to Small Grain Herbicides (cont.)

Herbicides	Aim
Application Timing	HARVEST AID
Site of Action Group	14

Weeds

PERENNIAL WEEDS	
bermudagrass	N
johnsongrass, rhizome	N
nutsedge, purple	N
nutsedge, yellow	N
ANNUAL GRASSES	
crabgrass, large	N
crowfootgrass	N
goosegrass	N
fall panicum	N
foxtail	N
johnsongrass (seedling)	N
signalgrass, broadleaf	N
Texas panicum	N
BROADLEAF WEEDS	
beggarweed, Florida	
bristly starbur	
black nightshade	N
cocklebur	F
crotalaria, showy	
croton, tropic	
groundcherries	
jimsonweed	
lambsquarters, common	G
morningglories sp.	G
pigweed	G
prickly sida	P
pusley, Florida	
ragweed, common	
ragweed, giant	P
sicklepod	N
smartweed	F
velvetleaf	E

N = No control

P = < 70% control

F = 70–80% control

G = 80–90% control

E = 90% control

¹ Will not control ALS-resistant ryegrass² Weeds must not be larger than 2 inches at time of application.

Weed Control section prepared by Joyce Tredaway Ducar, Extension Specialist, Assistant Professor, Department of Crop, Soil and Environmental Sciences, Auburn University.



FOR MORE INFORMATION on pesticides, pesticide safety, or submitting samples for analysis, see the following publications in the IPM series:
IPM 1293, "Safety." Safety contact information; worker protection standards; the safe use, handling, and storage of pesticides
IPM 1294, "Submitting Samples." Procedures for submitting samples for diagnosis, analysis, and identification
IPM 1295, "General Pesticide Information." Federal and state restricted use pesticide lists; pesticides and water quality
IPM 1317, "Appendix." Pesticide guidelines for agronomic crops, including preharvest intervals; rain-free requirements; grazing restrictions; crop rotation guidelines; and the names, classifications, and toxicities of pesticides.

2018–2019 IPM-0429

For more information, contact your county Extension office. Visit www.aces.edu/directory.

Use pesticides **only** according to the directions on the label. Follow all directions, precautions, and restrictions that are listed. Do not use pesticides on plants that are not listed on the label

The pesticide rates in this publication are recommended **only** if they are registered with the Environmental Protection Agency or the Alabama Department of Agriculture and Industries. If a registration is changed or canceled, the rate listed here is no longer recommended. Before you apply **any** pesticide, check with your county Extension agent for the latest information.

Trade names are used **only** to give specific information. The Alabama Cooperative Extension System does not endorse or guarantee any product and does not recommend one product instead of another that might be similar.

Alabama Cooperative Extension System (Alabama A&M University and Auburn University) is committed to affirmative action, equal opportunity and the diversity of its workforce. Educational programs serve all people regardless of race, color, national origin, age, disability, sex, gender identity, marital status, family/parental status, religion, sexual orientation, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program.

© 2019 by the Alabama Cooperative Extension System. All rights reserved.

www.aces.edu