GRAIN SORGHUM INSECT CONTROL

David Buntin, Research/Extension Entomologist

PEST	INSECTICIDE	MOA	AMOUNT OF FORMULATION PER ACRE	LB ACTIVE INGREDIENT PER ACRE	REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
DO NOT USE *methomyl* (Lannate Annihilate) on sweet sorghum varieties. Many products are not labeled for use on sweet sorghum for syrup production. Also see the section for temporary summer grazing insect control.						
Soil Insects: White grubs, wireworms, seed maggots, rootworms, fire ants	**SEED TREATMENTS**					Apply Counter granules in a 7" band over the row at planting and lightly incorporate. DO NOT APPLY COUNTER GRANULES IN DIRECT CONTACT WITH THE SEED. Control of white grubs may be variable. Commercial seed treatment. Generally effective against wire-worms, seed maggots, and fire ants. Seed treatments may not provide effective control of white grubs.
	imidacloprid Gaucho 600, Attendant 600, Axcess, Senator, other brands	4A	6.4 fl oz/100 lb of seed	0.25/100 lb	12 H/ 45 D grazing	
	thiamethoxam Cruiser 5FS	4A	5.1–7.6 oz/100 lb seed	0.2/100 lb	12 H/ 45 D	
	clothianidin Poncho 600, NipsIt Inside 5	4A	5.1–6.4 fl oz/100 lb seed	0.2–0.25/100 lb	12 H/ –	
	AT-PLANTING TREATMENT					
	terbufos Counter Lock n' Load 20 G	1B	5.2 oz/1000 ft row	varies with row width	48 H/ 100 D	
Cutworms, Lesser cornstalk borer	**AT-PLANTING TREATMENT**					**CUTWORMS:** Asana, Adjourn, Baythroid, Delta Gold, and cyhalothrin products also can be applied broadcast at or immediately before planting or applied in a narrow band over the row at planting. Use full rate for broadcast applications or concentrate lower labeled dosage rate in the treated band. **LESSER CORNSTALK BORER:** Apply liquid formulations in a band over the row at planting and lightly incorporate. Broadcast application is not effective. Seed treatments as listed for soil insects may provide suppression of lesser cornstalk borer.
	alpha-cypermethrin Fastac, other brands 0.83 (Cutworm only)	3A	2.6–3.6 oz	0.017–0.023	12 H/ 14 D	
	beta-cyfluthrin Baythroid XL 1EC (Cutworm only)	3A	1.3 fl oz	0.01	12 H/ 0 D	
	deltamethrin Delta Gold 1.5EC	3A	1.8 fl oz	0.025	12 H/ 7 D	
	esfenvalerate Asana XL, Adjourn 0.6 6EC	3A	5.8–9.6 fl oz	0.03–0.05	12 H/ 21 D	
	gamma cyhalothrin Declare 1.25 Proaxis 0.5	3A	1.02–1.54 fl oz 2.56–3.84 fl oz	0.01–0.015	24 H/ 7 D	
	lambda cyhalothrin Warrior II Zeon 2.08 Silencer, Lambda, others 1	3A	1.28–1.92 fl oz 2.56–3.84 fl oz	0.02–0.03	12 H/ 7 D	

GRAIN SORGHUM INSECT CONTROL

PEST	INSECTICIDE	MOA	AMOUNT OF FORMULATION PER ACRE	LB ACTIVE INGREDIENT PER ACRE	REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
Aphids (Sorghum Aphid, Greenbug, and Corn Leaf Aphid)	**SEED TREATMENTS**					Greenbug and corn leaf aphid seldom require control on sorghum in Georgia. Sorghum aphid (formerly sugarcane aphid) can cause serious losses to susceptible sorghum hybrids if not controlled. **Seed Treatments:** Products listed will provide 25–40 day control of aphids. For sorghum aphid use *thiamethoxam* or *clothianidin* products at the highest rate listed. *Imidacloprid* products are not specifically listed for sorghum aphid control.
	imidacloprid Gaucho 600, Attendant 600, Axcess, Senator, other brands	4A	6.4 fl oz/ 100 lb of seed	0.25–100 lb	12 H/ 45 D Grazing	
	thiamethoxam Cruiser 5FS	4A	5.1–7.6 fl oz/ 100 lb seed	0.062–0.093 mg/seed	12 H/ 45 D	
	clothianidin Poncho 600, NipsIt Inside 5	4A	5.1–6.4 fl oz/ 100 lb seed	0.2–0.25/100 lb	12 H/ –	
	AT-PLANTING TREATMENTS					
	flupradifurone Sivanto Prime (in-furrow)	4D	6.0–10.0 fl oz	0.078–0.13	4 H/ 45 D	
	POST-EMERGENCE TREATMENTS					Post-emergence application: **GREENBUG:** Treat when greenbugs are present and killing 3 leaves/ plant before boot stage. **CORN LEAF APHID:** Treat when a large population occurs and leaves are dying. **SORGHUM (FORMERLY SUGARCANE) APHID:** Consult with local county Extension office for the latest recommendations. In general treat when infestations reach 40 aphids/leaf OR when pre-boot stage 20% of plants are infested and large numbers are present. Good spray coverage is critical, minimum of 10 GPA by ground and 5 GPA by air. *Dimethoate* products may not provide more than 7 days control. *Malathion* may give partial control of sorghum aphid on the head at the end of the season. Sivanto Prime can be applied in-furrow, below the seed line, via chemigation, and as a foliar spray. **NOTE:** Sefina should be used before populations reach treatment thresholds and increase to damaging levels. Not effective once aphid infestations reach large numbers.
	afidopyropen Sefina 0.42DC (see note)	9D	6.0 fl oz	0.02	12 H/ 14 D	
	dimethoate Dimethoate 400, 4EC	1B	0.5–1.0 pt	0.25–0.5	48 H/ 28 D	
	flupyradifurone Sivanto Prime	4D	4–10 fl oz	0.052–0.13	4 H/ 21 D	
	malathion Malathion, 57% other brands	1B	1.5 pt	0.93	12 H/ 7 D	
	sufloxaflor Transform WG	4C	1.0–1.5 oz	0.031–0.047	24 H/ 7 D	
Chinch bug and False chinch bug (on seedlings), Billbugs, Sugarcane beetles	**SEED TREATMENTS**					**CHINCH BUG, FALSE CHINCH BUG:** In seedlings up to 6" tall, treat when 2 or more adults are found on 20% of seedlings. On taller plants, treat when 75% of the plants are infested, OR 5 or more chinch bugs/ plant are present. For post-emergence applications, use at least 20 gal/A as a band directed at the base of plants. At planting, treatments generally are effective for 20–30 days after planting. Control after the boot stage is rarely effective. **BILLBUGS, SUGARCANE BEETLES:** Adult beetles burrow into stems at or below soil line killing main stems. Treat when 10% of plants are damaged and beetles are present. For post-emergence applications, use at least 20 gal/A as a band directed at the base of plants. Rescue treatments for sugarcane beetle are not effective.
	imidacloprid Gaucho 600, Attendant 600, Axcess, Senator, other brands	4A	6.4 fl oz/ 100 lb of seed	0.25/100 lb	12 H/ 45 D grazing	
	thiamethoxam Cruiser 5FS	4A	5.1–7.6 fl oz/ 100 lb seed	0.25/100 lb	12 H/ 45 D	
	clothianidin Poncho 600, NipsIt Inside 5	4A	5.1–6.4 fl oz/ 100 lb seed	0.2–0.25/100 lb	12 H/ —	

PEST	INSECTICIDE	MOA	AMOUNT OF FORMULATION PER ACRE	LB ACTIVE INGREDIENT PER ACRE	REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
Chinch bug and False chinch bug (on seedlings), Billbugs, Sugarcane beetles (*continued*)	**POST-EMERGENCE TREATMENTS**					
	alpha-cypermethrin Fastac, other brands 0.83	3A	2.6–3.6 oz	0.017–0.023	12 H/ 14 D	
	beta-cyfluthrin Baythroid XL 1EC	3A	2.8 fl oz	0.022	12 H/ 14 D	
	cyfluthrin Tombstone 2	3A	2.8 fl oz	0.044	12 H/ 21 D	
	deltamethrin Delta Gold 1.5EC	3A	1.9 fl oz	0.022	12 H/ 14 day	
	gamma cyhalothrin Declare 1.25 Proaxis 0.5	3A	1.54 fl oz 3.84 fl oz	0.015	24 H/ 30 D	
	lambda cyhalothrin Warrior II Zeon 2.08 Silencer, Lambda, others 1	3A	1.92 fl oz 3.84 fl oz	0.03	24 H/ 30 D	
	zeta-cypermethrin Mustang Maxx, other brands	3A	4 fl oz	0.025	12 H/ 14 D	
European corn borer	Materials labeled for "foliage feeding larvae" will give helpful control.					Treat if numerous egg masses are found in the field (treat just before eggs hatch), or if shot-hole type leaf feeding by newly hatched larvae appears in 25% of the plants in a field. Insecticides are not effective once larvae bore into the plant stem. Use products listed for foliage-feeding larvae.
Foliage-feeding Larvae: armyworms, fall armyworm, corn earworm Headworms (larvae feeding on grain heads): fall armyworm, corn earworm, sorghum webworm	*alpha-cypermethrin* Fastac 0.83 (Cutworm only)	3A	1.8–3.8 fl oz	0.012–0.025	12 H/ 14 D	**ARMYWORM, FALL ARMYWORM, CORN EARWORM IN WHORL:** **Seedling plants:** treat when stand loss reaches 10%, OR 30% or more plants are infested. **Whorl stage plants:** do not initiate controls unless 40% or more of the plants in a field are infested. Economic losses probably do not occur unless population levels exceed l larvae per plant. Apply spray by ground directing spray into whorls using cone nozzles with large droplet size and at least 15 gal/A of spray. For large infestation use tank mix of OP insecticide (Lannate) plus pyrethroid (Asana/Adjourn, Baythroid, Delta Gold, l*ambda/ gamma cyhalothrin*, Mustang, Tombstone). Pyrethroid insecticides alone are usually not effective for fall armyworm. **FALL ARMYWORM, CORN EARWORM, SORGHUM WEBWORM, FEEDING ON GRAIN HEADS:** Treat when an average of 1 or more (½" or larger) corn earworms or fall armyworms are found per grain head. For sorghum webworm, treat when an average of 5 or more small (¼") larvae are found per grain head. Higher dosages within the rate range may be needed to effectively control corn earworm or fall armyworms. Pyrethroid insecticides may not be effective for sorghum webworm. Performance of pyrethroids used for corn earworm management may vary due to insecticide resistance. **SORGHUM WEBWORM:** Due to resistance, pyrethroid insecticides may not be effective against sorghum webworm. **NOTE:** Tracer is most effective against smaller larvae.
	beta-cyfluthrin Baythroid XL 1EC	3A	2.8 fl oz	0.022	12 H/ 14 D	
	carbaryl Sevin, other brands 4	1A	1–2 qt	1–2	12 H/ Grain = 21 D Grazing = 14 D	
	chlorantraniliprole Prevathon 0.43 Vantacor 5.0	28	14–20 fl oz 1.2–2.5 fl oz	0.047–0.067 0.047–0.098	4 H/ 14 D	
	deltamethrin Delta Gold 1.5EC	3A	1.8 fl oz	0.025	12 H/ 14 D	
	esfenvalerate Asana XL, Adjourn 0.6 6EC (Earworms on heads only)	3A	9.6 fl oz	0.05	12 H/ 21 D	
	gamma cyhalothrin Declare 1.25	3A	1.54 fl oz 3.84 fl oz	0.015	24 H/ 30 D	
	lambda cyhalothrin Warrior II Zeon 2.08 Silencer, Lambda, others 1	3A	1.92 fl oz 3.84 fl oz	0.03	24 H/ 30 D	

GRAIN SORGHUM INSECT CONTROL

PEST	INSECTICIDE	MOA	AMOUNT OF FORMULATION PER ACRE	LB ACTIVE INGREDIENT PER ACRE	REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
Foliage-feeding larvae: armyworms, fall armyworm, corn earworm Headworms (larvae feeding on grain heads): fall armyworm, corn earworm, sorghum webworm (*continued*)	*methomyl* Lannate, Annihilate 2.4 LV	1A	0.75–1.5 pt	0.225–0.45	48 H/ 14 D	**Note:** Diamond for sorghum webworm, fall armyworm, stink bugs. Apply at egg hatch to 2nd instar larvae. Use high rate for large larvae.
	methoxyfenozide Intrepid 2F	18	4–12 fl oz	0.06–0.19	4 H/ 21 D	
	novaluron Diamond		6–12 fl oz	0.038–0.077	12 H/ 14 D	
	spinosad Blackhawk 36%	5	1.7–3.3 oz	0.038–0.075	4 H/ 21 D	
	zeta-cypermethrin Mustang Maxx, other brands	3A	4 fl oz	0.025	12 H/ 14 D	
Mites	*propargite* Comite II 6	12C	1.5–2.25 pt	1.125–1.6875	7 D/ 30 D	Mites seldom require control on grain sorghum in Georgia. Treat if infestations become widespread and leaf discoloration is evident. Control after the boot stage rarely is effective. **Comite II:** Use minimum of 20 gal/A by ground application and 5 gal/A for aerial application. Only apply to dry foliage. Do not tank mix with other products. Do not use an oil-based surfactant. Due to large number of sorghum varieties, treating a small test plot is recommended to check for phytotoxicity before treating a large area.
	dimethoate Dimethoate 4EC, 400 Dimethoate 2.67EC	1B	1 pt 1.5 pt	0.5	48 H/ 28 D	
Sorghum midge	*alpha-cypermethrin* Fastac, other brands 0.83	3A	1.3–3.8 fl oz	0.008–0.025	12 H/ 14 D	Treat when an average of 1 adult/head is observed after 25–30% of the heads are blooming. Treat again 5–10 days later if there are still many heads blooming and at least 1 midge/ head is found. The susceptible period for midge damage is the bloom period; treatment for midge after this time is too late. Remember that insecticidal controls are directed at the adult midge. The eggs or larvae of the pest cannot be killed inside the glumes with insecticide applications. If a "borderline" economic infestation of sorghum midge exists and there is good yield potential, spray. When an economic infestation exists, spray immediately. A delay of a few days may result in considerable damage. **NOTE:** Some brands of *dimethoate* do not allow application after heading. Pyrethroid insecticides are not effective against sugarcane aphid and may flare infestations. If sorghum (sugarcane) aphid is present tank mix the pyrethroid (3A) product for midge control with Sivanto Prime as listed in the aphid section.
	beta-cyfluthrin Baythroid XL 1EC	3A	1–1.3 fl oz	0.008–0.01	12 H/ 14 D	
	cyfluthrin Tombstone 2	3A	1–1.3 fl oz	0.016–0.020	12 H/ 14 D	
	deltamethrin Delta Gold 1.5 EC	3A	1.3–1.9 fl oz	0.015–0.025	12 H/ 14 D	
	dimethoate Dimethoate, Cygon 4 EC, 400 Dimethoate 2.67 EC	1B	0.25–0.5 pt 0.75 pt	0.125–0.25 0.25	48 H/ 28 D	
	esfenvalerate Asana XL, Adjourn 0.6 6 EC	3A	2.9–5.8 fl oz	0.015–0.03	12 H/ 21 D	
	gamma cyhalothrin Declare 1.25 Proaxis 0.5	3A	0.77–1.02 fl oz 1.90–2.56 fl oz	0.0075–0.01	24 H/ 30 D	
	lambda cyhalothrin Warrior II Zeon 2.08 Silencer, Lambda, others 1	3A	0.96–1.28 fl oz 1.9–2.56 fl oz	0.015–0.02	24 H/ 30 D	

PEST	INSECTICIDE	MOA	AMOUNT OF FORMULATION PER ACRE	LB ACTIVE INGREDIENT PER ACRE	REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
Sorghum midge (*continued*)	*methomyl* Lannate, Annihilate 2.4 LV	1A	0.75–1.5 pt	0.225–0.45	48 H/ 14 D	
	zeta-cypermethrin Mustang Maxx	3A	1.76–3.2 fl oz	0.011–0.02	12 H/ 14 D	
Stink bugs, Leaffooted bugs, False chinch bugs on grain heads	*alpha-cypermethrin* Fastac, other brands 0.83	3A	3.8 fl oz	0.025	12 H/ 14 D	**STINK BUGS, LEAFFOOTED BUGS:** Treat if combined numbers of adults and large nymphs exceed 3 bugs per head at milk stage or 6 bugs per head at soft dough stage. Damage not important during hard dough stage. **FALSE CHINCH BUG:** For grain head infestations, treat if populations exceed 100 bugs per grain head at milk stage. Damage not important during medium to hard dough stages. Pyrethroid insecticides are not effective against sorghum aphid and may flare infestations. If sorghum aphid is present tank mix the pyrethroid (3A) product with Sivanto Prime as listed in the aphid section.
	beta-cyfluthrin Baythroid XL 1EC	3A	1.3–2.8 fl oz	0.01–0.022	12 H/ 14 D	
	cyfluthrin Tombstone 2	3A	1–1.3 fl oz	0.016–0.020	12 H/ 14 D	
	deltamethrin Delta Gold 1.5EC	3A	1.5–1.8 fl oz	0.018–0.025	12 H/ 14 D	
	gamma cyhalothrin Declare 1.25 Proaxis 0.5	3A	1.28–1.54 fl oz 3.20–3.84 fl oz	0.0125–0.015	24 H/ 30 D	
	lambda cyhalothrin Warrior II Zeon 2.08 Silencer, Lambda, others 1	3A	1.6–1.92 fl oz 3.2–3.84 fl oz	0.025–0.03	24 H/ 30 D	
	zeta-cypermethrin Mustang Maxx, other brands	3A	1.76–3.2 fl oz	0.011–0.02	12 H/ 14 D	

PREMIXED OR CO-PACKED INSECTICIDES:

Products listed are available as premixes or co-packages of two insecticide active ingredients.
User should check mixture labels for active ingredient, specific use rates, target pests, and precautions.

BRAND NAME (ACTIVE INGREDIENTS)	RANGE OF FORMULATION RATES
Besiege (*lambda cyhalothrin*, *chlorantraniliprole*)	5–10 fl oz/A
Hero (*zeta-cypermithrin*, *bifenthrin*)	2.6–5.5 fl oz/A
Steed (*zeta-cypermithrin*, *bifenthrin*)	2.5–4.7 fl oz/A
Consero (*lambda cyhalothrin*, *spinosad*)	2–3 fl oz/A

GRAIN SORGHUM WEED CONTROL

Eric P. Prostko, Extension Agronomist—Weed Science

HERBICIDE	MOA	BROADCAST RATE/ACRE: AMOUNT OF FORMULATION	BROADCAST RATE/ACRE: POUNDS ACTIVE INGREDIENT	REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
BURNDOWN (REDUCED TILLAGE)					
2,4-D amine numerous trade names 3.8 lb ae/gal	4	16–24 oz	0.475–0.713	48 H/ 30 D	Tank-mix with *glyphosate* or *paraquat* to improve burndown control of broadleaf weeds, especially wild radish. Apply at least **29 days** before planting sorghum. **Rain-free period = 6 hours.**
paraquat 2 lb/gal 3 lb/gal	22	30–60 oz 20–40 oz	0.47–0.94	24 H/ Grain 48 D Forage 20 D	Apply before, at, or immediately after planting but before crop emergence. Use low rate of *paraquat* if emerged annual weeds are less than 4" tall and high rate if emerged annual weeds are 4–6" tall. Add non-ionic surfactant at 0.25% v/v. *Paraquat* usually will not suppress bermudagrass, johnsongrass or other perennial weeds well enough to permit high yields. Can be tank-mixed with Dual or Warrant (**Concep** treated seed only). ****All applicators of paraquat must be certified applicators and complete the EPA's training program before mixing, loading and applying.** Refer to the following website for more information: **https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators**
glyphosate numerous trade names 3 lb ae/gal 3.73 lb ae/gal 4 lb ae/gal 4.17 lb ae/gal 4.50 lb ae/gal 4.80 lb ae/gal 5 lb ae/gal	9	 32–64 oz 26–52 oz 24–48 oz 23–46 oz 21–42 oz 20–40 oz 19–38 oz	0.75–1.50 ae	4 H/ 7 D	Apply before, at, or immediately after planting but before crop emergence. Use low rate of *glyphosate* to control emerged annual grass and broadleaf weeds; high rate for control of emerged johnsongrass and bermudagrass. Can be tank-mixed with Dual or Warrant (**Concep** treated seed only).
dicamba Banvel, Clarity, Sterling, Vision 4SL	4	8 oz	0.25	24 H/ 30 D	Tank-mix with *glyphosate* or *paraquat* to improve burndown control of broadleaf weeds in reduced tillage system, especially where marestail/horseweed is a problem. **Must be applied at least 14 days before planting sorghum. Rain-free period is 4 hours.**
PREEMERGENCE[1]					
metolachlor Stalwart, Parallel PCS, Me-Too-Lachlor 8EC	15	16 oz	1.0	24 H/ 75 D	**Use only with sorghum seed that has been treated by the seed company with Concep.** If sorghum seed are not properly treated, metolachlor will severely injure sorghum. Apply after planting before weeds and sorghum emerge. Metolachlor can be applied with fluid fertilizer. **Can also be applied POST for residual weed control (Dual Magnum formulation only).** The generic formulations of metolachlor (Parallel, Stalwart, Me-Too-Lachlor) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some UGA field trials.
S-metolachlor Dual Magnum 7.62EC (various trade names)		16 oz	0.96		
acetochlor Warrant 3ME	15	48 oz	1.13	12 H/ Forage 60 D	**Use only with sorghum seed that has been treated by the seed company with Concep.** Can be applied preemergence up to 11" tall sorghum. Will provide residual control of many annual grass weeds and certain annual broadleaf weeds, especially crabgrass, Florida pusley, and Palmer amaranth. Weed control will be similar to Dual Magnum. Can be tank-mixed with glyphosate or paraquat for use as a burndown in minimum tillage systems. Warrant does not control emerged weeds. For the following soil types, do not apply Warrant within 50 feet of any well where the depth to groundwater is 30 feet or less : sands < 3% OM; loamy sands < 2% OM; sandy loams < 1% OM. These restrictions do not apply for areas more than 50 feet from a well or if groundwater is more than 30 feet below land surface.

1. *Nitrogen* solutions or complete fluid fertilizers may replace all or part of the water as a carrier for some preemergence herbicides. Proper agitation is necessary. Follow label instructions concerning tests for potential compatibility problems. Do not use fluid fertilizers with postemergence herbicides since possible crop injury may occur from the use of the fluid fertilizer.

HERBICIDE	MOA	BROADCAST RATE/ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
PREEMERGENCE[1] (*continued*)					
dimethenamid-P Outlook 6EC	15	12.8 oz	0.60	12 H/ Forage 60D Grain 80D	Can be applied PPI, PRE, or POST (up to 12" tall). Can only be used if grain sorghum seed has been treated with **CONCEP**. Will provide residual control of certain annual grasses, yellow nutsedge (supression) and Palmer amaranth. Outlook, similar to Dual Magnum and Warrant, will cause temporary crop injury in the form of stunting/leaf wrapping/buggy whipping under cool, wet conditions.
CENTER PIVOT IRRIGATION APPLICATION					
metolachlor Stalwart, Parallel PCS Me-To-Lachlor 8EC	15	16 oz	1.03		May be applied by injection through center pivot irrigation systems. Apply in maximum of 1/2" water/A on coarse textured soils. Apply after planting but before sorghum and weeds emerge. Equipment must have appropriate check valves or other suitable devices in the system to ensure that the herbicide solution cannot siphon back into water supply. **Use Dual only with Concep treated sorghum seed.** The generic formulations of metolachlor (Parallel, Stalwart, Me-Too-Lachlor) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some UGA field trials.
S-metolachlor Dual Magnum 7.62EC Cinch 7.64EC (various trade names)	15	16 oz	0.96		
dimethenamid-P Outlook 6EC	15	12.8 oz	0.60	12 H/ Forage 60D Grain 80D	Can be applied PPI, PRE, or POST (up to 12" tall). Can only be used if grain sorghum seed has been treated with CONCEP. Will provide residual control of certain annual grasses, yellow nutsedge (supression) and Palmer amaranth. Outlook, similar to Dual Magnum and Warrant, will cause temporary crop injury in the form of stunting/leaf wrapping/buggy whipping under cool, wet conditions.
POSTEMERGENCE					
atrazine numerous trade names 80W 90DG 4L	5	 30 oz 27 oz 48 oz	1.5	12 H/ Forage 45 D	Generally, sorghum is less tolerant of atrazine than corn. Apply with crop oil concentrate (1% V/V) after sorghum reaches the **three-leaf stage but not after 12".** Controls broadleaf weeds 2–3" tall and newly emerged (1-leaf) annual grasses. **DO NOT** use on sands or loamy sands. **DO NOT** apply with fluid fertilizers or crop injury may occur. **DO NOT** apply when sorghum is under stress from cold wet weather, poor fertility, or other factors, or when crop is wet and tender from recent rainfall. Follow label directions for crop rotation. **Rain-free period is 2 hours.**
atrazine + *S-metolachlor* Bicep II Magnum 5.5SC	5 + 15	 42–51 oz	1.04–1.24 + 0.77–0.96	24 H/ —	Apply to sorghum from the 3 leaf stage (3 visible collars) up to 12" in height. Add a COC at 1% v/v (1 gal/100 gal). Some transient leaf burn is likely but will not affect yield. Do not apply with fluid fertilizer. If Bicep II Magnum is unavailable, Atrazine 4L at 48 oz/A + Dual Magnum 7.62EC at 16 oz/A can be used POST (3 leaf stage up until 12"). Do not use COC or other adjuvants with this specific tank-mixture.
2,4-D amine numerous trade names 3.8 lb/gal	4	16 oz	0.48	48 H/ 30 D	Sorghum is not as tolerant to 2,4-D as corn. Apply over-the-top for control of annual broadleaf weeds when sorghum is 6-8" tall. Arrange nozzles to keep spray out of crop whorl. If sorghum is 8-15" tall, apply as directed spray-see recommendation under POSTEMERGENCE (Directed Spray). Sorghum is most subject to 2,4-D injury from over-the-top treatments, use of high rates or applications made during high soil moisture and high air temperatures. **DO NOT** (a) apply during boot, bloom, or early dough stages, or (b) apply in fluid fertilizers. Use only the amine formulation to help prevent drift to susceptible crops. **DO NOT** use with adjuvants.
bentazon Basagran/Broadloom 4 lb/gal	6	24-32 oz	0.75–1	48 H/ Forage 12 D	Apply over-the-top when sorghum has 1-5 leaves. Grain sorghum is tolerant at all stages of growth up to, and including the early boot stage. Can be tank-mixed with atrazine if necessary. **DO NOT** apply to grain sorghum that is heading or blooming. Add oil concentrate (1% v/v) according to label directions for the weed species present. **DO NOT** apply more than 2 pt/A of bentazon per season. **DO NOT** apply with fluid fertilizers. R**ain-free period is 4 hours.**

1. *Nitrogen* solutions or complete fluid fertilizers may replace all or part of the water as a carrier for some preemergence herbicides. Proper agitation is necessary. Follow label instructions concerning tests for potential compatibility problems. Do not use fluid fertilizers with postemergence herbicides since possible crop injury may occur from the use of the fluid fertilizer.

GRAIN SORGHUM WEED CONTROL

HERBICIDE	MOA	BROADCAST RATE/ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
POSTEMERGENCE (*continued*)					
bromoxynil Buctril 2E	6	16–24 oz	0.25–0.38	24 H/ Forage 45 D	Apply over-the-top when sorghum has 3 leaves (up to pre-boot stage). Controls cocklebur, bristly starbur, smartweed and certain other broadleaf weeds less than 3" tall. **DO NOT** add spray additives or mix with fluid fertilizers. Spray when sorghum foliage is dry to decrease risk of sorghum leaf burn. Temporary sorghum leaf burn may occur.
pyrasulfotole + *bromoxynil* Huskie 2.06EC	6 + 27	12.8–16 oz	0.03–0.04 + 0.18–0.22	24 H/ Grain 60 D Forage 7 D	For broadleaf weed control including annual morningglory and Palmer amaranth. Especially useful where *atrazine*/ALS/*glyphosate* resistant pigweed are present. Apply from 3 leaf stage up to 30" tall and/or prior to flag leaf emergence, whichever comes first. Huskie will cause temporary crop stunting, leaf burn, and chlorosis (bleaching/whitening). Injury lasts for approximately 3 weeks. Tank-mix with *atrazine* 4L (16 to 32 oz/A) to improve broadleaf control (up to 12" tall sorghum) and reduce initial sorghum injury. Include a NIS at 0.25% v/v (1 qt/100 gals) Do not tank-mix with Lorsban. Crop rotation restrictions for Huskie alone: wheat, barley, oats, annual ryegrass—1 month; soybean, grain sorghum—4 months; canola, corn—9 months; cotton, peanut—field bioassay. Refer to *atrazine* crop rotation restrictions if used in a tank-mix. **Rain-free period is 1 hour.**
dicamba Banvel, Clarity, Sterling, Vision 4 lb/gal	4	8 oz	0.25	24 H/ 30 D	Apply over-the-top when sorghum is in the 3 leaf stage to 8" tall. If sorghum is 8–15". tall, apply only as a directed spray-see recommendation under POSTEMERGENCE (Directed Spray). **DO NOT** apply to sorghum grown for seed production. Make only one POST application per season. Prevent drift to susceptible crops. Do not graze or feed treated sorghum forage or silage prior to mature grain stage. Do not use adjuvants. If *dicamba* is applied during periods of rapid growth, temporary leaf rolling and plant leaning may occur. **Rain-free period is 4 hours.**
halosulfuron Profine, Sandea 75DF	2	0.67 oz	0.032	12 H/ Forage 30 D	Controls many annual broadleaf weeds and suppression of nutsedge. Can be applied over-the-top from the 2 leaf stage through layby stage of grain sorghum (before grain head emergence). Can be tank-mixed with *dicamba*, *2,4-D*, Buctril, or *atrazine*. The use of NIS (0.25% v/v) or COC (1% v/v) is recommended. Rotational restrictions include the following: barley, oats, rye, wheat—2 months; cotton—4 months; peanuts—6 months; soybeans—9 months; onions—18 months. Refer to product label for additional crop rotation information. **Rain-free period is 4 hours.**
imazamox ImiFlex 1AS	2	6 OR 9 oz/A (6 oz/A—POST) (9 oz/A—PRE)	0.047–0.070	4 H/ 0 D	**ONLY FOR USE ON IGROWTH™ SORGHUM VARIETIES.** Use of ImiFlex on non-tolerant varieties will result in sorghum death. Only 1 application can be applied either PRE or POST (20 inches). When applied POST, use COC (1% v/v) or NIS (0.25% v/v). DO NOT replant IGrowth™ sorghum in consecutive years. Will not control ALS-resistant Palmer amaranth. **Rain-free period is 1 hour.** Crop rotations: soybean = 0 months; field corn = 8.5 months; cotton/peanut/tobacco = 9 months; sorghum = 18 months; wheat = 3 months; rye = 4 months. *****Limited IGrowth™ grain sorghum variety performance data for the SE are available.**
nicosulfuron Zest 75WDG	2	0.67 oz	0.031	4 H/ Forage/Grazing: soft dough stage 7 Grain/Stover: mature grain stage 9	**ONLY FOR USE ON INZEN™ GRAIN SORGHUM VARIETIES.** Can be applied up to 20" tall grain sorghum. Tank-mix with *atrazine*. If tank-mixed with *atrazine*, can only be applied up to 12" tall grain sorghum. Use in combination with a COC (1% v/v) and liquid UAN (2 qt/A). Zest works best when following a PRE application of Dual Magnum or Outlook or Warrant (**Concep**-treated seed). If tank-mixed with *2,4-D* or *dicamba*, use a NIS (0.25% v/v). In UGA research, Zest has caused temporary crop injury (stunting, chlorosis). Crop rotation restrictions: corn—0 months; soybean—15 days; wheat/barley/oats—4 months; cotton/peanut—10 months; sorghum (non-ALS-resistant cultivars)—10 months; sorghum (ALS-resistant cultivars)—18 months. **Rain-free period is 4 hours.** ****Limited INZEN™ grain sorghum variety performance data for the SE are available.**

HERBICIDE	MOA	BROADCAST RATE/ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
POSTEMERGENCE (*continued*)					
quizalofop-P FirstAct 0.83EC	1	8–12 oz	0.052–0.078	12 H/ 45 D	For POST control of annual/perennial grasses. **CAN ONLY BE USED ON DOUBLETEAM™ SORGHUM VARIETIES.** Application to non-tolerant sorghum varieties will result in sorghum death. Do not apply FirstAct until sorghum has reached 8-leaf growth stage (approximately 11–12" sorghum) or significant crop injury may occur. Apply in 15 GPA in combination with a COC @ 1% v/v (1 gal/100 gal). Apply broadleaf herbicides such as *atrazine* or *2,4-D* at least 7 days before applying FirstAct. Two applications, 7 days apart, are allowed with a maximum total rate of 21 oz/acre/year. **Rain-free period = 1 hour.** ****Limited DoubleTeam™ sorghum variety performance data for the SE are available.**
POSTEMERGENCE (DIRECTED SPRAY)					
2,4-D amine 3.8 lb/gal	4	8–16 oz	0.24–0.48	48 H/ 30 D	Apply as a directed spray to sorghum 8–15" tall. Use low rate if applications are made under conditions of high soil moisture and high air temperatures. **DO NOT** (a) apply during boot, bloom, or early dough stages, or (b) apply in fluid fertilizers. Use only the amine formulation and prevent drift to susceptible crops. **Rain-free period = 6 hours.**
dicamba Banvel, Clarity, Sterling, Vision 4 lb/gal	4	8 oz	0.25	24 H/ 30 D	If sorghum is 8–15" tall, apply only as a directed spray. **DO NOT** apply to sorghum grown for seed production. Make only one POST application per season. Prevent drift to susceptible crops. Do not graze or feed treated sorghum forage or silage prior to mature grain stage. Do not use adjuvants. If dicamba is applied during periods of rapid growth, temporary leaf rolling and plant leaning may occur. **Rain-free period is 4 hours.**
linuron 4L 50DF (Lorox/Linex)	7	16–32 oz 1–2 lb	0.5–1	24 H/ 75 D	Apply as a directed spray after sorghum is 12" tall. Use low rate when sorghum is 12–15" tall, and a sprayer equipped with skids, shoes, or shields. Use the high rate when sorghum is 15" tall and weeds are up to 4" in height. Make only one application per season. Add nonionic surfactant (0.5 % v/v).
paraquat 2SL 3SL	22	16–32 oz 11–21 oz	0.25–0.50	24 H/ Grain 48 D Forage 20 D	Apply with a nonionic surfactant (1 qt/100 gals. spray solution) when sorghum is at least 12" tall. Use low rate for weeds less than 2" tall; high rate for weeds 2–3" tall. DO NOT apply with (a) drop nozzles mounted on a boom or (b) fluid fertilizers. Use 20–40 gals of water/A and do not exceed 30 psi pressure. Do not spray higher than 3" on the sorghum stalks. Can also be used with hooded-sprayer. **All applicators of paraquat must be certified applicators and complete the EPA's training program before mixing, loading and applying Refer to the following website for more information: **https://www.epa.gov/pesticide-worker-safety/paraquat-dichloride-training-certified-applicators**
carfentrazone Aim 2EC	14	0.5–1 oz	0.08–0.016	12 H/ Leaf Collars 6 D	Use Aim for the post-directed control of annual morningglory (except smallflower), pigweed, and tropical spiderwort. Add NIS at 0.25% v/v (1 qt/100 gals). Use drop nozzles or other spray methods to minimize the amount of Aim deposited on sorghum leaves or in whorl. Aim provides no residual control. **Rain-free period for Aim is 6–8 hours.**
POSTEMERGENCE—INCORPORATED (CULTI-SPRAY)					
pendimethalin Prowl/Pendimax 3.3EC Prowl H20 3.8 ACS	3	19–29 oz 24 oz	0.50–0.75 0.71		These treatments will provide residual control of annual grasses, including Texas panicum. They will not control existing grasses. They should be used to augment other weed control tactics. When using either of the treatments, the following steps must be followed: 1. The herbicides must be applied to weed free soil. 2. Sorghum brace roots must be protected by soil thrown to the base of the stalk with a sweep or rolling cultivator prior to application. 3. The herbicides can be applied over-the-top or with drop nozzles, depending on sorghum size. Pendimethalin can be applied from the 4" growth stage up until layby. Trifluralin can be applied when the sorghum is 8–24" tall. 4. A shallow follow-up cultivation is required after application to minimize herbicide loss. Rainfall or irrigation amounts of 0.5–1" can be used instead of mechanical cultivation.
trifluralin (various trade names) 4EC	3	16 oz	0.50		

GRAIN SORGHUM WEED CONTROL

HERBICIDE	MOA	BROADCAST RATE/ACRE		REI/PHI (Hours or Days)	REMARKS AND PRECAUTIONS
		AMOUNT OF FORMULATION	POUNDS ACTIVE INGREDIENT		
HARVEST AID					
carfentrazone Aim 2EC	14	1 oz	0.016	12 H/ 3 D	For the pre-harvest desiccation of pigweed and morninglories (*Ipomoea sp.*). Can be applied by ground or air. Use with a crop oil concentrate at 1% v/v (1 gal/100 gal). Can be tank-mixed with *glyphosate* to improve the spectrum of control.
glyphosate (various trade names) 3 lb ae/gal 3.73 lb ae/gal 4 lb ae/gal 4.17 lb ae/gal 4.50 lb ae/gal 4.80 lb ae/gal 5 lb ae/gal	9	 32–64 oz 26–52 oz 24–48 oz 23–46 oz 21–42 oz 20–40 oz 19–38 oz	0.75–1.50 ae	4 H/ 7 D	Apply when grain moisture is 30% or less. Do not use on sorghum grown for seed because a reduction in seed germination or vigor may occur. Not all formulations of *glyphosate* may be labeled for this use. Refer to specific product label.
sodium chlorate Defol 5 (others)		154 oz	6.0	12H/ 14D	Can be applied by air (5–7 GPA) or ground (10–20 GPA). Use as a harvest aid to desiccate trashy weeds. Apply at least 14 days before anticipated harvest date. Use the low dilution rates when weeds are small and the crop canopy is fairly open. Desiccation of morningglory and other vines may be erratic. **DO NOT** graze treated fields or feed fodder, forage or residual grain within 14 days of application. *Sodium chlorate* works better if applied when temperature and humidity are high.

HERBICIDE PROGRAMS FOR MANAGING HERBICIDE-RESISTANT PALMER AMARANTH IN GRAIN SORGHUM

PREEMERGENCE[1]	EARLY POSTEMERGENCE[2] (OVER THE TOP)	POSTEMERGENCE DIRECTED[3]	HOODED SPRAYER
Dual Magnum or Warrant or Outlook	Atrazine or Huskie + Atrazine	*2,4-D* or *dicamba*[4]	Paraquat (various trade names)

1. **Must use Concep-treated seed.**
2. 3-leaf sorghum up until 12" in height.
3. 8–15" tall sorghum.
4. Various formulations of *2,4-D* and *dicamba* are available. Refer to specific product label for rates, timings, and application requirements (nozzles, GPA, wind speed, ground speed, etc.).

GRAIN SORGHUM WEED RESPONSE TO HERBICIDES

Eric P. Prostko, Extension Agronomist—Weed Science

	DUAL MAGNUM[1,2]	OUTLOOK[2]	WARRANT[2]	*ATRAZINE*	LINEX/ LOROX	*PARAQUAT*	*2,4-D*	*DICAMBA*	ZEST[3]	FIRSTACT[4]	IMIFLEX[5]	BUCTRIL	HUSKIE	SANDEA/ PROFINE	BASAGRAN
	PRE	PRE	PRE	POST	PDS	PDS	POST/ PDS	POST/ PDS	POST	POST	POST	POST	POST	POST	POST
PERENNIAL WEEDS															
johnsongrass, rhizome	P	P	P	P	P	P	P	P	G–E	E	G	P	P	P	P
nutsedge, purple	P	P	P	P	P–F	P	P	P	P–F	P	P	P	P	F–G	P
nutsedge, yellow	F–G	F	F	P	P–F	P	P	P		P	F–G	P	P	F–G	F–G
ANNUAL GRASSES															
crabgrass	E	E	E	P–F	G	G	P	P	P	F–G	P–F	P	P	P	P
crowfootgrass	E	E	E	P	E	G	P	P	G–E	G	F	P	P	P	P
goosegrass	E	E	E	P	E	G	P	P	G–E	F–G	F	P	P	P	P
fall panicum	G	G	G	P	E	G	P	P	G–E	G	G	P	P	P	P
johnsongrass (seedling)	P	P	P	P	G	G	P	P	G–E	E	G–E	P	P	P	P
sandbur	F–G	F–G	F–G	F	E	G	P	P	G–E		F	P	P	P	P
signalgrass, broadleaf	F–G	F–G	F–G	P	G	G	P	P	G	G–E	G	P	P	P	P
Texas panicum	P–F	P–F	P–F	P	G	E	P	P	G–E	F–G	P–F	P	P	P	P
BROADLEAF WEEDS															
bristly starbur	P	P	P	E	G	G	G	E		P		G	G	G	E
citronmelon	P	P	P	G	E	F	E	E		P				P–F	P
cocklebur	P	P	P	E	E	G	E	E	P–F	P	G–E	E	G–E	G	E
cowpea	P	P	P	G	G	G	E	E		P					P
crotalaria	P	P	P	G	E	G	G	G		P					P
croton, tropic	P	P	P	G	G	G	G	G		P	P				P
Florida beggarweed	F	F	F	G	E	G	P	G	G	P		G	G	P	P
Florida pusley	G–E	G–E	G–E	G	G	F–G	G	G	P–F	P		G–E	G–E		P
jimsonweed	P	P	P	E	E	G	E	E	F–G	P	G–E		G		E
lambsquarters	F	F–G	F–G	E	E	F–G	E	E	F–G	P	G	G	G	F	P

GRAIN SORGHUM WEED RESPONSE TO HERBICIDES

	DUAL MAGNUM[1,2]	OUTLOOK[2]	WARRANT[2]	*ATRAZINE*	LINEX/ LOROX	*PARAQUAT*	*2,4-D*	*DICAMBA*	ZEST[3]	FIRSTACT[4]	IMIFLEX[5]	BUCTRIL	HUSKIE	SANDEA/ PROFINE	BASAGRAN
	PRE	PRE	PRE	POST	PDS	PDS	POST/ PDS	POST/ PDS	POST	POST	POST	POST	POST	POST	POST
BROADLEAF WEEDS *(continued)*															
morninglories	P	P	P	E	G	G	G–E	E	F–G	P	F–G	G	G–E	P	F
Pigweed	G	G	G	E	E	G	G–E	G–E	G–E	P	P–G	G	G	F–G	P
ALS-resistant	G	G	G	E	E	G	G–E	G–E	P	P	P	G	G	P	P
Atrazine-resistant	G	G	G	P	E	G	G–E	G–E	G–E	P	G	G	G	F–G	P
prickly sida	F	F		E	G	F–G	E	E	P	P	G	G	G	F	F–G
purslane	G	G		E	G	G	G	E		P					P
ragweed, common	F	F	F	E	E	G	E	E	P–F	P	F	G	G	G	F
sesbania, hemp	P	P		F–G	G	P–F	G	E	P–F	P		G	G	F–G	P
sicklepod	P	P	P	G	E	G	E	E	P–F	P	P	P	P	P	P

Key to response symbols:

E—Excellent control, weed kill 90% or above

G—Good control, weed kill 80% or above

F—Fair control, weed kill 70% or above

P—Poor control, less than 70% control

If no symbol is given, weed response is unknown.

Ratings are based upon average to good soil/weather conditions and for POST herbicides, timely applications (weeds < 3" tall).

1. The generic formulations of *metolachlor* (Parallel, Stalwart, Me-Too Lachlor) have not provided the same length of residual control of certain weeds as similar rates of Dual Magnum formulations in some UGA field trials.
2. Use only where **Concep**-treated grain sorghum seed is planted
3. Zest = Only for use on Inzen™ sorghum varieties
4. FirstAct = only for use on DoubleTeamTM varieties.
5. ImiFlex = only for use on IGrowthTM varieties. PRE = Preemergence

POST = Postemergence over-the-top

PDS = Postemergence directed spray

SUMMARY OF FORAGE/SILAGE RESTRICTIONS FOR SORGHUM HERBICIDES

Eric P. Prostko, Extension Agronomist—Weed Science

HERBICIDE	TIMING	FORAGE/SILAGE RESTRICTION
atrazine Aatrex	POST	45 D
carfentrazone Aim	PDIR or hooded sprayer	Applied prior to boot stage
bentazon Basagran	POST	12 D
dicamba Clarity	POST	37 D
s-metolachlor Dual Magnum	PRE	75 D (if applied POST)
quizalofop[1] FirstAct	POST	45 D
paraquat Gramoxone	PDIR or hooded sprayer	20 D
imazamox[2] ImiFlex	PRE or POST	0 D
bromoxynil + *pyrasulfotole* Huskie	POST	7 D
halosulfuron Sandea	POST	30 D
acetochlor Warrant	PRE	60 D
2,4-D amine Weedar 64	POST	30 D
nicosulfuron[3] Zest	POST	Forage may be cut and livestock may be grazed once the crop has reached the mature forage stage (soft dough growth stage 7).

1. Only for use in DoubleTeam™ system (*quizalofop*-resistant cultivars)
2. Only for use in Igrowth™ system (IMI-resistant cultivars)
3. Only for use in Inzen™ system (ALS-resistant cultivars)

PRE = Preemergence
POST = Postemergence over-the-top
PDIR = Postemergence directed

SORGHUM DISEASE CONTROL

Alfredo Martinez Espinoza, Extension Plant Pathologist

DISEASE	CHEMICAL AND FORMULATION	MOA	RATE PRODUCT PER ACRE	REI	REMARKS AND PRECAUTIONS
Anthracnose, Ergot, Ladder Leaf Spot, Gray Leaf Spot, Northern Leaf Blight, Rough Spot, Rust, Southern Leaf Blight, Target Leaf Spot, Zonate Leaf Spot, and Sheath Blight	*azoxystrobin* Quadris	11	6.2–15.5 fl oz	4 H	Check label for specific diseases. Begin applications prior to disease development. Use higher rates under conditions favorable for severe disease pressure, dense canopies, or when susceptible varieties are planted. Do not apply within 14 days of harvest.
	azoxystrobin + *propiconazole* Quilt Qilt xcel	11 + 3	14 fl oz	12 H	For Ergot, make first application at or just prior to flowering. Do not graze livestock or cut for green chop or silage within 30 days of application. Do not apply within 30 days of harvest for forage. Do not apply within 21 days of harvest for grain or stover.
	flutriafol Topguard	3	7–14 fl oz	12 H	For Ergot, make first application at or just prior to flowering. For all other diseases, apply preventative or when conditions are favorable for disease development. No single application may exceed 14 fl oz of product. Do not apply more than 2 applications per year. Do not apply within 30 days of harvest for stover forage or grain.
	fluoxapyroxad + *pyraclostrobin* Priaxor Xemium	7 + 11	4–8 fl oz	12 H	Do not apply more than 8 fl oz of product per acre per year. Maximum number of applications per season = 1. Minimum time from application to harvest = 21 days.
	fluoxapyroxad + *pyraclostrobin* + *propiconazole* Nexicor Xemium	7 + 11 + 3	7–13 fl oz	12 H	For optimal disease control, begin applications of Nexicor prior to disease development. Do not graze sorghum forage, green chop, or silage within 30 days of last application. Do not feed or graze grain sorghum and stover within 21 days of last treatment.
	mefentrifluconazole + *pyraclostrobin* Veltyma	3 + 11	7–10 fl oz	12 H	Do not apply more than 10 fl oz per acre per application. Do not make more than one application per acre per year.
	picoxystrobin Aproach	11	6–12 fl oz	12 H	Begin applications prior to disease development and make a second application on a 7–14 day interval depending on targeted disease. The minimum pre-harvest interval between the last application and harvest is 7 days for forage and 14 days for hay.
	propiconazole Tilt	3	3–4 fl oz	12 H	For Ergot only. Make application at or just prior to flowering. Repeat on a 5–7 day interval. Apply up to 4 times. Do not apply within 30 days of harvest for forage. Do not apply within 21 days for grain or stover.
	prothioconazole Proline	3	5–5.7 fl oz	12 H	Apply as preventative foliar spray when the earliest disease symptoms appear on leaves or stems. One application per year. A maximum of 5.7 fl oz may be applied per acre per year. Do not apply within 30 days of harvest.
	pyraclostrobin Headline	11	6–12 oz	12 H	Apply no later than 25% flowering. Do not make more than one application per season.

This information is provided only as a guide. By law, it is the responsibility of the pesticide applicator to read and follow all current label directions. No endorsement is intended for any products listed, nor is criticism meant for products not listed. Always check the label before application for the most current rates and application restrictions.