Grain Sorghum

Insect Control Recommendations for 2008

INSECT CONTROL

Insect pests can be a major limiting factor in grain sorghum productions in Alabama. Growers must be prepared to scout and prevent injury from insects in sorghum. The following publication provides information on the biology and management of sorghum pests in Georgia. Please refer to this publication "Sorghum Insects and Their Management" (http://pubs.caes.uga.edu/caespubs/pubs/pdf/B1283.pdf) by David Buntin, University of Georgia.

For specific insecticides that can be used on grain sorghum, refer to the Grain Sorghum Insect Control section (http://www.etn.uga.edu/pmh/Corn_Grain_Sorghum.pdf) of the University of Georgia **Pest Management Handbook** (http://www.ent.uga.edu/pmh).

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WEED CONTROL

Table 1. Grain Sorghum Weed Control

Herbicide Trade Name (Rate/Acre Broadcast)	Herbicide Common Name (Active Herbicide/Acre)	Comments
	Preemergence	
DUAL II MAGNUM DUAL MAGNUM 7.62EC CINCH 7.64EC (1-1.67 pt.)	metolachlor (0.96-1.6 lb.)	Apply preplant incorporated or preemergence. Grain sorghum seed should have been treated with Concep or Screen to prevent injury. If sorghum seed have not been properly treated, Dual will severely injure the crop. Several commercial companies have treated seed for sale in Alabama. Dual will provide effective control of many annual grasses and small-seeded broadleaf weeds.
INTRRO MICRO-TECH (2-3 qt.) [4 lb./gal.]	alachlor (2-3 lb.)	Apply preplant incorporated or preemergence. Grain sorghum seed should have been treated Concep seed safener. If sorghum seed have not been properly treated, alachlor will severely injure the crop. Several commercial companies have treated seed for sale in Alabama. Alachlor will provide effective control of many annual grasses and small-seeded broadleaf weeds such as pigweed. Use low rate for coarse- and medium-textured soils. See label for use rate on fine-textured soils. Alachlor is a **RESTRICTED USE** pesticide.
	Postemergence	
2,4-D AMINE (0.5-1 pt.)	2,4-D (0.25-0.5 lb.)	May be applied broadcast over-the-top when weeds are small and when crop plants are 4 to 8 inches tall. Use drop nozzles to direct spray as soon as possible to keep spray out of whorls. **DO NOT** spray over-the-top when crop plants are over 8 inches tall. **DO NOT** apply when sorghum is in bloom or early-dough stage.
AATREX/ATRAZINE 4L (4 pt.) or AATREX 90WDG (2.2 lb.)	atrazine (2 lb.)	Apply after sorghum completely emerges and weeds are no taller than 1.5 inches. Controls most annual broadleaf weeds and grasses. **DO NOT** use on coarse-textured soils. **DO NOT** use on any soil with less than 1-percent organic matter. **DO NOT** apply with liquid fertilizers or nitrogen solutions. Atrazine is a **RESTRICTED USE** pesticide.
AATREX/ATRAZINE 4L (2.4 pt.) or AATREX 90WDG (1.3 lb.) + Crop Oil Concentrate (1 qt.)	atrazine (1.2 lb.) + crop oil concentrate	Controls broadleaf weeds 2 to 4 inches tall and newly emerged annual grasses (one-leaf). To control broadleaf weeds less than 4 inches tall, apply as an over-the-top spray to sorghum that is at least in the three-leaf stage but before reaching 12 inches in height. **DO NOT** use oil if sorghum is in a stressed condition of any kind. **DO NOT** apply with liquid fertilizers or nitrogen solutions. Atrazine is a **RESTRICTED USE** pesticide.
BANVEL 4 CLARITY (0.5 pt.)	dicamba (0.25 lb.)	Banvel/Clarity may be applied over-the-top of sorghum from the three-leaf stage until sorghum is 8 inches tall. If sorghum is 8 to 15 inches tall, herbicide should be applied as a directed spray. An application made later than 25 days after emergence and up through flowering will reduce yield. Make **ONLY** one application per season.

Herbicide Trade Name (Rate/Acre Broadcast)	Herbicide Common Name (Active Herbicide/Acre)	Comments
	Postemergence (cont.)	
BASAGRAN 4 (1.5-2 pt.)	bentazon (0.75-1 lb.)	Apply early postemergence when sorghum has one to five leaves to control certain broadleaf weeds. Sorghum is tolerant to Basagran up to the early boot stage. Weeds generally should be small and actively growing at time of treatment. **DO NOT** apply more than 2 pints of Basagran per acre per year on sorghum. Add a crop oil concentrate (2 pints per acre.) according to label directions for specific weeds.
PEAK 57WDG (0.75-1 oz.) + Non-ionic Surfactant or Crop Oil Concentrate	prosulfuron (0.027-0.036 lb.) + non-ionic surfactant or crop oil concentrate	Controls many annual broadleaf weeds. Apply over-the-top of grain sorghum when it is between 5 and 20 inches tall. Apply as a directed spray when crop is 20 to 30 inches tall. Add a non-ionic surfactant at a rate of 2 quarts per 100 gallons of spray mix or a crop oil concentrate at a rate of 1 quart per acre. Rate to use depends on the weed problem and size at treatment. **DO NOT** use on forage sorghum. See label for recropping restrictions.
PERMIT 75WDG (0.67-1 oz.) + Non-ionic Surfactant or Crop Oil Concentrate	halosulfuron (0.03-0.047 lb.) + non-ionic surfactant or crop oil concentrate	Controls many annual broadleaf weeds and suppresses nutsedge. Apply when weeds are small after the two-leaf stage of sorghum growth but before grain head emergence. Add a non-ionic surfactant or crop oil concentrate. Add 2 quarts of surfactant or 1 gallon of crop oil concentrate per 100 gallons of spray mix. Rate to use depends on the weed problem and size at treatment. **DO NOT** apply more than 1 ounce of Permit per acre per year.
PENDIMAX 3.3E (1.2-3.6 pt.)	pendimethalin (0.5-1.5 lb.)	Cultivate with sweep or rolling cultivators to throw at least 1 inch of soil over the base of the sorghum plants prior to application. Apply as a directed spray after grain sorghum is 6 inches tall. Must be incorporated using cultivators or irrigation water. Set cultivators to provide maximum soil mixing, and move treated soil into the crop rows. Effective on late-emerging problem grasses such as fall panicum and Texas panicum. See label for specific instructions.
	Postemergence (Post Directed)	
GRAMOXONE INTEON 2 (16 fl.oz.) or FIRESTORM 3 (11 fl.oz.) + Non-ionic Surfactant	paraquat (0.25 lb.) + non-ionic surfactant	For use as a **POSTEMERGENCE DIRECTED SPRAY** when sorghum is at least 15 inches tall. Spray no higher than the lower 3 inches of the sorghum stalk. Paraquat will control many broadleaf weeds and grasses less than 3 inches tall. Add a non-ionic surfactant at the rate of 1 quart per 100 gallons of spray mixture. **DO NOT** spray on windy days. **DO NOT** breathe spray mist. Gramoxone and Firestorm are **RESTRICTED USE** pesticides.
LOROX 50DF (1-2 lb.) + Non-ionic Surfactant	linuron (0.5-1 lb.) + non-ionic surfactant	For use as a **POSTEMERGENCE DIRECTED SPRAY** when grain sorghum is at least 15 inches tall and weeds are 2 to 4 inches tall. Spray no higher than the lower 3 inches of the sorghum stalk. Add non-ionic surfactant at the rate of 2 quarts per 100 gallons of spray mixture. **DO NOT** graze or feed treated plants to livestock within 3 months of application.

Herbicide Trade Name (Rate/Acre Broadcast)	Herbicide Common Name (Active Herbicide/Acre)	Comments
	Harvest Aid	
Sodium Chlorate (3 lb./gal.) (2 gal.) or Sodium Chlorate (6 lb./gal.) (1 gal.)	sodium chlorate (6 lb.) or sodium chlorate (6 lb.)	Apply from 7 to 10 days before harvest. Apply in 15 to 20 gallons of water with ground equipment or 5 to 10 gallons of water by air. Apply on a bright, sunny day when temperature is above 85°F and relative humidity is below 65 percent. Grasses will be desiccated, but broadleaf weeds may only be defoliated (little desiccation).

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:

$$\frac{\text{Band Width}}{\text{Row Width}} \times \text{Broadcast Rate} = \text{Band Rate.}$$

For example, the amount of AATrex 4L needed for a broadcast application to a light sandy soil is 2 quarts. The amount needed to treat a 20-inch band on a 40-inch row would be:

$$\frac{20}{40} \times 2 \text{ qt.} = 1 \text{ qt.}$$

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Table 2. Estimated Effectiveness of Herbicides Recommended for Grain Sorghum on Common Weeds in Alabama and Properties That May Affect Water Quality[1]

WEEDS	HERBICIDES				
	Cinch Dual (PRE)	Micro-Tech Intrro (PRE)	2,4-D amine (POST)	AAtrex/ Atrazine (POST)	Banvel Clarity (POST)
GRASSES					
Broadleaf Signalgrass	8	8	0	2	0
Crabgrass	9	9	0	6	0
Crowfootgrass	9	9	0	6	0
Fall Panicum	9	9	0	3	0
Goosegrass	9	9	0	5	0
Johnsongrass (rhizomes)	0	0	0	0	0
Johnsongrass (seedlings)	5	5	0	2	0
Texas Panicum	4	4	0	0	0
SEDGES					
Purple Nutsedge	1	1	0	0	0
Yellow Nutsedge	7	5	0	0	0
BROADLEAF WEEDS					
Bristly Starbur	0	0	7	7	7
Cocklebur	0	0	9	8	9
Florida Beggarweed	5	5	7	8	8
Florida Pusley	9	9	8	8	6
Morningglory	0	0	9	8	9
Pigweed	9	9	9	8	9
Prickly Sida	4	4	7	7	7
Sicklepod	5	5	8	7	9
Surface-Loss Potential[2]	M	M	M	M	S
Leaching Potential[3]	M	M	M	M	L

continued

[1] Effectiveness ratings are based on observations of research plots and field use under average weather conditions for several years by weed control workers in Alabama. Leaching and surface-loss potential ratings are based in part on herbicide chemical characteristics and pesticide behavior models developed by USDA scientists as well as on field experience.

[2] The surface-loss potential indicates the tendency of the pesticide to move with sediment in runoff.

[3] The leaching potential indicates the tendency of the pesticide to move in solution with water and to leach below the root zone.

KEY TO CONTROL RATINGS AND ABBREVIATIONS

Ratings on a scale of 0 to 10: 0 = No control; 10 = 100% control.

PRE = Preemergence; POST = Postemergence.

S = Small; M = Medium; L = Large.

Table 2. Estimated Effectiveness of Herbicides Recommended for Grain Sorghum on Common Weeds in Alabama and Properties That May Affect Water Quality[1] (cont.)

WEEDS	HERBICIDES				
	Basagran (POST)	Peak (POST)	Permit (POST)	Gramoxone/ Firestorm (PDS)	Lorox (PDS)
GRASSES					
Broadleaf Signalgrass	0	0	0	8	7
Crabgrass	0	0	0	5	8
Crowfootgrass	0	0	0	8	7
Fall Panicum	0	0	0	8	8
Goosegrass	0	0	0	8	8
Johnsongrass (rhizomes)	0	0	0	3	4
Johnsongrass (seedlings)	0	0	0	8	7
Texas Panicum	0	0	0	8	7
SEDGES					
Purple Nutsedge	3	0	7-8	4	4
Yellow Nutsedge	7	0	7-8	4	4
BROADLEAF WEEDS					
Bristly Starbur	6	0	8	5	7
Cocklebur	9-10	8-9	9	4	7
Florida Beggarweed	0	4	4	8-9	8
Florida Pusley	0	8	0	5	8
Morningglory	4	8	6	6-8	8
Pigweed	4	8-9	7-8	8-9	9
Prickly Sida	7	8	6	5	9
Sicklepod	0	7	4	8-9	8
Surface-Loss Potential[2]	M	--	--	S	L
Leaching Potential[3]	S	--	--	S	M

[1] Effectiveness ratings are based on observations of research plots and field use under average weather conditions for several years by weed control workers in Alabama. Leaching and surface-loss potential ratings are based in part on herbicide chemical characteristics and pesticide behavior models developed by USDA scientists as well as on field experience.

[2] The surface-loss potential indicates the tendency of the pesticide to move with sediment in runoff.

[3] The leaching potential indicates the tendency of the pesticide to move in solution with water and to leach below the root zone.

KEY TO CONTROL RATINGS AND ABBREVIATIONS

Ratings on a scale of 0 to 10: 0 = No control; 10 = 100% control.

POST = Postemergence; PDS = Postemergence Directed Spray.

S = Small; M = Medium; L = Large; -- = Information not available

GRAIN SORGHUM MANAGEMENT CHECKLIST

The grain sorghum producers who get maximum returns from their investments pay special attention to certain key management practices. This grain sorghum checklist will improve your sorghum management system. If you cannot mark off each of these points for your own farm, you may be missing out on potential income.

☐ **Soil test for fertility and follow recommendations.** Sample each field in the fall for fertility and lime needs. Liming soils to a pH above 6.0 helps produce healthy, uniform crop stands and high yields. Apply phosphorus and potassium according to recommendations. Generally, apply about 80 pounds of nitrogen per acre either at planting or as a split application with the second application applied before sorghum is 8 inches tall.

☐ **Use a preemergence herbicide to control grass weeds.** In fields with a history of grass weed problems, use a preemergence herbicide at the labeled rate for the soil type. This is the best opportunity to control grass weeds in this crop. You must use seed treated with herbicide "safeners" in areas where a preemergence herbicide is applied.

☐ **Plant early when soil temperature is correct for optimum yields.** Planting as early as possible usually gives best yields. As a general rule, plant grain sorghum as soon as the soil temperature at 2 inches warms to 65°F. Early planting usually allows for better growing conditions and good moisture, and the crop usually escapes most insect pressure and can be harvested sooner.

☐ **Plant adapted varieties.** Plant varieties that have characteristics for suitable growth and development in southern environments. Important factors to consider when selecting a hybrid are: yielding ability; susceptibility to lodging; maturity; head exsertion; head compactness; and damage from birds, insects, and diseases.

☐ **Avoid high-density stands.** Many problems are associated with excessive plant populations, such as increased disease problems, reduced drought tolerance, and lower yields. A plant population of approximately 60,000 to 80,000 plants per acre is most desirable. This will usually require about 5 pounds of seed per acre, but the weight of seed planted is not a good measure of plant population because seed size varies considerably with various hybrids. Carefully calibrate your planter to deliver the correct number of seeds per foot of row. For 30-inch rows, four to six seeds per foot of row will be adequate.

☐ **Use residual postemergence herbicides to control problem broadleaf weeds.** Apply postemergence residual herbicides over-the-top of grain sorghum when it is at least 3 inches tall and weeds are small. Weeds such as sicklepod, cocklebur, and morningglory can be controlled by the timely application of a herbicide such as atrazine. Follow label directions for the proper use rate based on soil type.

☐ **Use post-directed herbicide if needed.** The herbicides available for post-directed spray application are more effective on a wide range of weeds and are relatively inexpensive. Grain sorghum must be at least 12 inches tall at time of treatment, and only the lower 3 inches of the sorghum stem should be contacted by the spray. Directed sprays can give good burndown of small weeds and some grasses.

☐ **Base insect management decisions on thorough field scouting.** Scout fields and treat only where an economically damaging level of insects has been reached. General guides to economic treatment levels have been established for insects such as sorghum midge, corn earworms, and armyworms. Remember, good scouting is required in order to match the recommended insecticide to damaging insect(s).

☐ **Apply insecticides, herbicides, and fungicides only as labeled and recommended.** Calibrate sprayers and follow recommended methods. Misapplication is costly; it results in waste of expensive chemicals and/or damage to the crop.

☐ **Maintain a field-by-field record or map of weed problems.** In the late summer before harvest, prepare a field record or map of each field. Include a list of weeds present with their general location in the field, and estimate the size or magnitude of the different problem weeds present. Use these maps or records to plan for the next year's weed control program.

☐ **Harvest when crop is ready.** Start harvesting grain sorghum when the heads are mature and seed approach an average of 20- to 22-percent moisture. Drying sorghum seed will be necessary to reach a moisture percentage of 12 to 14 percent. Field drying of grain sorghum often results in significant harvesting losses, crop shattering, and increased disease problems.

☐ **Develop marketing strategies.** Consider contracts or other marketing methods for handling your crop well ahead of harvesttime. Don't get caught by the low cash prices available at harvesttime.

2008IPM-429

For more information, call your county Extension office. It is listed in your telephone directory under your county's name.

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 cancelled, 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.

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