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Weed Management in Sorghum[1]

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Sorghum can tolerate short-term drought and is often planted towards mid-summer (in June). A late-summer sorghum may follow an early-season corn. Because sorghum is grown during a short season, weed control is essential to achieve high yields and efficient harvest. However, it is often difficult to achieve good weed control in sorghum production. This publication provides information on weed control options to the growers, pesticide applicators, and Extension personnel who must select appropriate weed control options in sorghum.

Sorghum is a small-seeded grass and is relatively slow growing in the first few weeks after emergence. In addition, sorghum is susceptible to many of the herbicides that can be effectively used on corn. Slow seedling growth combined with a limited number of labeled herbicides and low use rates create a challenge for weed control. Another problem is that many of the herbicides normally used on sorghum in other states either cannot be used or must be used at low rates due to the coarse texture of many Florida soils.

For these reasons, it is essential that practices such as choice of hybrid, soil fertility, soil pH, moisture, and row spacing be optimized to give sorghum the best possible growing conditions in order to compete with weeds. Sorghum seeds are often treated with safener that enables the use of a specific herbicide product. Therefore, producers need to be aware of the types of safener and the herbicide product that can be applied without injuring the crop.

The most important consideration is control of grass weeds during sorghum emergence and seedling development. If grasses are not controlled at this stage and are as large as the sorghum, then cultivation will not control the grasses without killing the sorghum. Sorghum should not be planted in fields that are heavily infested with johnsongrass. If grasses can be controlled until the sorghum gets taller than the grasses, then cultivation can be effective. If sorghum is taller than the grass weeds, post-directed herbicide sprays may be applied to provide effective weed control. Broadleaf weeds are a less serious problem because several herbicides can be effectively used for their control.

Use Table 1 to determine which herbicides are most effective for anticipated weeds. Use Table 2 to determine rates and application recommendations. Proper sprayer equipment calibration and application (https://edis.ifas.ufl.edu/publication/wg013) are essential because low rates will result in poor control and high rates may result in crop injury.

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Table 1. Estimated effectiveness of herbicides on common weeds in Florida sorghum.[1]

WEEDS	Herbicide									
	Dual or Outlook	Basagran	Prowl	Atrazine	Dicamba or 2,4-D	Paraquat	Sandea	Aim	Peak	Buctril
Time of Application	PRE	POT	Culti-spray	POT	POT/PDS	PDS	POT	POT	POT	POT
BROADLEAF										
Bristly starbur	P	G	P	E	G	G–E	G	-	-	F
Cocklebur	P	E	P	E	E	E	E	F	G	E
Florida beggarweed	F–G	F	F–G	G	G	G–E	P	-	-	F
Florida pusley	G–E	P	G–E	E	F	F	-	-	-	G
Morning glories	P	F	P	E	E	G	P	G	F	G
Pigweed	E	P	G	E	E	G–E	G	F	G–E	F
Ragweed	F	F–G	F	E	E	G–E	G	F	G	F
Sicklepod	P	P	P	E	E	F	P	P	F–G	P
GRASS										
Crabgrass	E	P	E	F	P	E	P	P	P	P
Goosegrass	E	P	E	F	P	E	P	P	P	P
Johnsongrass (from seed)	F	P	F	P	P	F	P	P	P	P
Sandbur	E	P	E	G	P	E	P	P	P	P
Texas panicum	P	P	E	F–G	P	E	P	P	P	P
SEDGE										
Purple nutsedge	P	P	P	P	P	F–G	G–E	P	P	P
Yellow nutsedge	F	G	F	P	P	F–G	G	P	P	P

[1] Estimated effectiveness based on herbicide rates recommended in this report. Effectiveness may vary depending on factors such as herbicide, size of weeds, time of application, soil type, and weather conditions.

Time of Application
PRE = Preemergence
POT = Postemergence broadcast
PDS = Directed postemergence

Weed Control Symbols
E = 90–100% control
G = 80–90% control
F = 60–80% control
P = Less than 60% control

Table 2. Weed management in sorghum. Contact: UF/IFAS Extension weed specialist (pdevkota@ufl.edu). This table lists registered pesticides that should be integrated with other weed management methods. Contact your local UF/IFAS Extension office for additional information (https://ifas.ufl.edu/maps/).

Herbicide Active Ingredient (Trade/ Product Names)	Mode of Action Group (MoA)	Application Rate per Acre	Reentry Interval (REI)	Specific Comments/Remarks
PREEMERGENCE				
S-metolachlor[1] (Dual Magnum, Dual II Magnum)	15	1.0–1.33 pt	24 hrs	Use on seed that has been treated with a chemical safener such as Concep. If seed is not properly treated, severe injury will occur. S-metolachlor provides good control of many grasses and certain small-seeded broadleaf weeds. Apply after planting but before weeds and sorghum emerge. It can also be applied with liquid fertilizer.[2]
Metolachlor (Stalwart, Parallel, others)	15	1–1.3 pt	24 hrs	See above. Note that metolachlor products will commonly provide less soil residual control than those containing S-metolachlor.
Dimethenamid-p (Outlook, others)	15	13 oz	12 hrs	Similar to S-metolachlor. Less effective on tropical spiderwort.
POSTEMERGENCE				
Atrazine (AAtrex or Atrazine[3]) (several formulations)	5	1–2 lb ai/A	12 hrs	Apply after sorghum reaches the 3-leaf stage and before broadleaf weeds are 4 inches tall. For ground applications, add emulsifiable oil concentrate at 1 qt/A. Do not apply more than 2 lb per application and do not apply more than 2.5 lb/A/season or year. Do not graze or feed forage for 21 days following application. A restricted-use pesticide.
Carfentrazone (Aim 2EC)	14	0.5–1 fl oz	12 hrs	Can be applied to sorghum beginning 30 days prior to planting until the 6-leaf collar growth stage. Controls many broadleaf weeds, but good coverage is essential. Addition of nonionic surfactant (0.25% v/v) is required. Crop oil is not recommended due to increased crop injury. Directed applications are recommended if rates higher than 0.5 oz are used. Expect moderate leaf burning from over-the-top applications. Do not apply to sweet sorghum.
2,4-D amine or ester[2,4] (several brands)	4	0.5–1 pt	48 hrs	Controls broadleaf weeds. Sorghum is not as tolerant to 2,4-D as corn. Broadcast after sorghum is 6–8 inches tall. If sorghum is 10–15 inches, use drop nozzles to direct spray toward base of plant. Over-the-top applications are most likely to result in herbicide injury. Do not treat sorghum in boot, tassel, or soft dough stage. Avoid drift to other sensitive crops at nearby location.
Dicamba (Banvel, Clarity, Sterling[4])	4	0.5 pt	24 hrs	Broadleaf weeds controlled. Apply from the 3-leaf stage until plant reaches 8 inches tall. Apply only as a directed spray on plants that are between 8 and 15 inches. Do not graze or feed treated sorghum, forage, or silage prior to mature grain stage. Avoid drift to other sensitive crops.
Bentazon (Basagran)	6	1.5–2.0 pt	48 hrs	Apply over the top before weeds exceed 4–6 inches in height. Grain sorghum should be fully emerged. Sorghum is very tolerant to bentazon, but do not apply to sorghum that is heading or blooming. Apply with a crop oil adjuvant at a rate of 1 qt/A.
Bromoxynil (Buctril 2EC)	6	1–1.5 pt	24 hrs	Apply to sorghum between the 3-leaf stage to 12-inch height or pre-boot stage to control most broadleaf weeds in the 2- to 4-leaf stage of growth. Use 10 or more gallons of water per acre.

Herbicide Active Ingredient (Trade/ Product Names)	Mode of Action Group (MoA)	Application Rate per Acre	Reentry Interval (REI)	Specific Comments/Remarks
Linuron (Lorox 4L)	7	1–2 pt	24 hrs	Apply as a directed spray after sorghum is 12 inches tall. Use low rate when sorghum is 12–15 inches tall, and a sprayer equipped with skids, shoes, or shields. Use the high rate when sorghum is taller than 15 inches and weeds are up to 4 inches in height. Make only one application per season. Add nonionic surfactant (1 pt/25 gal spray). DO NOT graze or feed plant parts to livestock within 3 months after application.
Paraquat (Gramoxone SL) Or (Firestorm, Parazone, others)	22	1–2 pt Or 0.7–1.3 pt	12 hrs	Paraquat controls grass and broadleaf weeds. Apply as a directed spray when sorghum is a minimum of 12 inches tall and weeds are under 3 inches tall. Use precision directed-spray application equipment adjusted so that no more than the lower 3 inches of the sorghum stalk are contacted by the herbicide spray. Add nonionic surfactant at 1 qt per 100 gal of spray.
Prosulfuron (Peak 57DF)	2	0.75–1.0 oz	12 hrs	Provides postemergence and residual control of many annual broadleaf weeds. Apply after sorghum reaches 5 inches in height and before it reaches 30 inches. Refer to the label for specific weed sizes; as a general rule, apply before weeds exceed 4–6 inches in height. The use of a nonionic surfactant or crop oil is recommended. May be tank-mixed with Banvel, 2,4-D, or atrazine. Do not apply Peak within 15 days to sorghum treated with foliar-applied organophosphate insecticides. Do not graze within 30 days of application or harvest silage within 40 days of application. Do not apply to sweet sorghum. Rotational restrictions include the following: wheat, barley, rye, oats—0 months; field corn—1 month; peanuts, tobacco, cotton—10 months.
Halosulfuron (Sandea)	2	2/3–1 oz	12 hrs	May be applied from the 2-leaf stage through layby (before head emergence) to control nutsedge and other broadleaf weeds. Do not apply more than 1 oz/A/yr. Applications to a stressed crop will increase injury for 7–10 days.
Pendimethalin (Prowl H_20) (culti-spray)	3	1.5 pt	24 hrs	For extended control of late-season grasses, cultivate so that brace roots and stems are covered and protected when sorghum is 4 inches tall or in the 2-leaf stage. Immediately spray with Prowl. If rainfall (0.5 inches) is not received within 7 days after application, incorporate with a sweep-type or rolling cultivator. Can be tank-mixed with atrazine.

Herbicide Active Ingredient (Trade/ Product Names)	Mode of Action Group (MoA)	Application Rate per Acre	Reentry Interval (REI)	Specific Comments/Remarks
Nicosulfuron Zest WDG	2	0.67–1.33 oz	4 hrs	Useonly on GRAIN SORGHUM VARIETIES containing The Dupont (Corteva) INZEN HERBICIDE TOLERANT TRAIT. Can be broadcast applied from emergence up to 20 inches tall. Optimum crop tolerance when applied to 4- to 20-inch grain sorghum. Do not apply to grain sorghum taller than 20 inches. Maximum of 1.8 oz/A of ZEST can be applied per season or year. Add surfactant (a nonionic surfactant at 1 qt; or crop oil concentrate at 1 gal per 100 gal of spray solution). Use 2 qt/A of 28% N or 32% N urea ammonium nitrate (UAN), or 2 lb/A of ammonium sulfate (AMS). Read and follow the label for tank-mix options. Zest WDG has a long Rotational Interval for some crops; refer to Rotational Crop Guideline on the label before applying this herbicide.

[1] Concep III, manufactured by Syngenta Corp., is a seed protectant applied to sorghum seed to minimize injury when the herbicides Dual Magnum or Dual II Magnum are used on sorghum for weed control. Screen, manufactured by Monsanto Company, is a seed protectant applied to sorghum seed to minimize injury when the herbicides Dual Magnum or Dual II Magnum are used on sorghum for weed control.

[2] Observations in wheat fields indicate crop damage when 2,4-D is tank-mixed with liquid nitrogen. This also may be evident with other herbicide-nitrogen mixtures. To avoid possible damage and obtain better weed control, herbicides and nitrogen should be applied separately.

[3] WARNING: THE FOLLOWING STATEMENT HAS BEEN ADDED TO THE ATRAZINE LABEL. THIS STATEMENT SHOULD BE HEEDED BY ALL PROSPECTIVE USERS AND STEPS SHOULD BE TAKEN TO COMPLY WITH THIS LABEL CHANGE.
ATRAZINE IS A CHEMICAL WHICH CAN TRAVEL (SEEP OR LEACH) THROUGH SOIL AND CAN CONTAMINATE GROUNDWATER AS A RESULT OF AGRICULTURAL USE. ATRAZINE HAS BEEN FOUND IN GROUNDWATER AS A RESULT OF AGRICULTURAL USE. USERS ARE ADVISED NOT TO APPLY ATRAZINE WHERE THE WATER TABLE (GROUNDWATER) IS CLOSE TO THE SURFACE AND WHERE THE SOILS ARE VERY PERMEABLE, i.e., WELL-DRAINED SOILS SUCH AS LOAMY SANDS. YOUR LOCAL AGRICULTURAL AGENCIES CAN PROVIDE FURTHER INFORMATION ON THE TYPE OF SOIL IN YOUR AREA AND THE LOCATION OF GROUNDWATER. IN ADDITION, SOME PRODUCT LABEL STATEMENTS INCLUDE AS A FURTHER QUALIFICATION OF RISKY SOILS, SOILS CONTAINING SINKHOLES OVER LIMESTONE BEDROCK, SEVERELY FRACTURED SURFACES, AND SUBSTRATES WHICH WOULD ALLOW DIRECT INTRODUCTION INTO AN AQUIFER.

[4] See fact sheet SS-AGR-12, *Florida's Organo-Auxin Herbicide Rule,* for state rules pertaining to application of organo-auxin herbicides in Florida.
Herbicide recommendations in this report are contingent upon their registration by the Environmental Protection Agency. If a registration is canceled, the herbicide would no longer be recommended.