

SUGGESTIONS FOR WEED CONTROL IN SORGHUM

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Suggestions for Weed Control in Grain Sorghum

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The suggestions contained herein are based primarily on herbicide labels, research by the Texas Agricultural Experiment Station and demonstrations by the Texas Agricultural Extension Service. The use of product names is not intended as an endorsement of the product or of a specific manufacturer, nor is there any implication that other formulations containing the same active chemical are not equally as effective. Product names are included solely to aid readers in locating and identifying the herbicides suggested.

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

This publication is no substitute for the herbicide product labels! It is intended to serve only as a guide for controlling weeds in sorghum. Labeled rates and restrictions change constantly, therefore, consult the product label prior to use.

Weed can be controlled in cropland through cultural, mechanical and chemical means. Wise use of these individual methods or a combination of them can manage weeds effectively without causing economic loss or harming the environment. Deciding which practice to use will depend largely on the weed(s) being controlled and the infestation level. Also, the crop being planted will play a major role in determining the timeliness of mechanical measures.

Considerations for cultural and mechanical weed control include:

1. Remove light or spotty weed infestations by hand hoeing or spot cultivation to prevent spreading weed seed, rhizomes or roots. Exercise caution when plowing perennial weeds, being careful to prevent plant parts from spreading to other areas of the field.
2. Use weed-free planting seed to protect against weed infestations in the row and the introduction of new weed species.
3. Thoroughly clean harvesting equipment before moving from one field to the next, or require it of custom harvesters before they enter your fields.
4. Use mechanical tillage to remove initial weed flushes before planting, thereby eliminating or at least reducing the potential for continued infestation.
5. Consider the economics of using mechanical cultivation alone for weed control in the crop, especially where annual weed infestations are light.
6. Practice rotation to crops that physically out-compete certain weeds, resulting in their gradual decline.

Table 1. Winter weed control

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual broadleaf weeds such as thistles, henbit and seedling dock (refer to label for specific weeds controlled)	AAtrex® 4L or atrazine 4L AAtrex® Nine-O 0.9 to 1.1 lbs. (atrazine) Novartis and several others	0.8 to 1.0 qt. 0.9 to 1.1 lbs.	Postemergence to small weeds.	A surfactant or crop oil concentrate will enhance postemergence control. Additional herbicides will be needed for spring and summer weed control.
Numerous annual broadleaf weeds (refer to label for specific weeds controlled)	Harmony® Extra 75DF (thifensulfuron-methyl (50%) plus tribenuron-methyl (25%)) DuPont	0.5 to 0.6 oz.	Apply postemergence at least 45 days before planting, to weeds less than 4 inches tall or wide.	Add nonionic surfactant or crop oil concentrate to spray mixture. A total rate of Harmony Extra® cannot exceed 1 oz. product per acre applied during one fallow cropland season.

Table 2. Preplant herbicides for postemergence weed control

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Emerged annual broadleaf weeds and grasses, and suppression of perennials	Gramoxone® Extra (paraquat dichloride) Zeneca	1.0 to 3.0 pts.	Apply postemergence to weeds.	Add nonionic surfactant or crop oil concentrate to spray mixture. Avoid drift to emerged crops. Beds should be preformed to permit maximum weed and grass emergence. This herbicide is useful in minimum tillage systems. <i>Note: Gramoxone® (1.5 to 2.5 pts./A) may be combined with atrazine or Bladex® if applied to sorghum planted directly into cover crop or previous crop residues. See label. Tank mixtures with Lasso® and atrazine, Dual® and atrazine and Bladex® are on the label.</i>
Numerous annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Roundup Ultra® (glyphosate) Monsanto	0.5 to 1.0 qt.	Apply postemergence before planting or after harvest.	Apply when weeds are growing vigorously and are 6 inches or less in height. Consult label for specific rate for weeds.

Table 2 (continued). Preplant herbicides for postemergence weed control

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Bermudagrass	Roundup Ultra ® (glyphosate) Monsanto	5.0 qts. (control) 3.0 qts. (partial control)	Before planting or after harvest.	Apply when bermudagrass is actively growing and seedheads are present. Allow at least 7 days before tillage.
Field bindweed	Roundup Ultra ® (glyphosate) Monsanto Roundup Ultra ® + Banvel ® (dicamba) BASF Roundup Ultra ® + 2,4-D ® (2,4-D) Several Manufacturers	4.0 to 5.0 qts. 2 qts. + 1 pt. (0.5 lb. a.i.) 2 qts. + 1 qt. (1 lb. a.i.)	Before planting or after harvest.	Apply when bindweed is actively growing and at or beyond full bloom. For best results, apply in late summer or fall. Wait at least 7 days to till. Apply with ground equipment only. Refer to Banvel® label for crop rotation restriction and cautionary statements. (See Roundup Ultra® label for this use).
Johnsongrass	Roundup Ultra ® (glyphosate) Monsanto	1.0 to 3.0 qts.	Before planting or after harvest.	Apply when actively growing and in boot stage for best results. Do not apply after johnsongrass turns brown in fall. Allow 7 days before tillage. Do not tank-mix with residual herbicides when using the 1 qt./A rate.

Table 3. Preplant incorporated and preemergence herbicides for residual weed control

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual broadleaf weeds and some annual grasses (refer to label for specific weeds controlled)	AAtrex ® 4L AAtrex ® Nine-O Atrazine ® 4L Atrazine ® 90DF (atrazine) Novartis and others	3.2 - 4 pts. 1.8 to 2.2 lbs. 3.2 - 4 pts. 1.8 to 2.2 lbs.	Preemergence.	May be used in Texas Gulf Coast and Blacklands; however, injury may occur on some soils. Application rate will depend on the NRCS soil erodability classification. On highly erodable soils, apply 3.2 - 4 pts. depending on residue cover. On non-highly erodible soils, apply 4 pts./A. Refer to label for additional precautions, recommendations and restrictions.

Table 4. Preemergence sorghum herbicides requiring seed protectants (safeners)

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Dual® 8E or Dual II® 7.8E Dual II® Magnum (metolachlor) (s-metolachlor) Novartis	1.5 to 2.5 pts. 1 to 1.67 pts.	Early preplant (30 to 45 days before planting), preplant incorporated or preemergence.	Concep® treated seed are required. Under high soil moisture conditions before to sorghum emergence, injury may occur. Small grains may be planted 4½ months following treatment. Dual® may be tank-mixed with atrazine in Gulf Coast areas only. See label for instructions.
Annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Bicep® or Bicep II® Bicep II® Magnum (metolachlor + atrazine) Novartis	1.8 to 2.4 qts. 1.6 to 2.1 qts.	Same as above.	Do not use in Texas except in Texas Panhandle, Gulf Coast and Blacklands areas. Do not use on sand, loamy sand, or sandy loam soils or on soils with less than 1.0% organic matter. If sorghum seed is not properly pretreated with Concep® (a seed safener) severe crop injury can result. Under high soil moisture conditions before crop emergence, injury may occur. Dry weather following preemergence application may reduce effectiveness. This tank mixture can be mixed with Gramoxone® Extra or Roundup Ultra® for use in minimum tillage systems. Early preplant applications may require additional Dual® at planting, refer to label. This product provides expanded broadleaf weed control over Dual® alone.
Annual grasses and broadleaf weeds Weeds partially controlled: lambquarters, prickly sida (teaweed), ragweed, sandbur, seedling johnsongrass, shattercane	Lasso® (alachlor) Monsanto	2.0 to 3.0 qts. (preplant incorporated) 1.5 to 2.5 qts. (preemergence)	Preplant incorporated (shallowly) within 7 days before planting or preemergence.	Incorporation is not suggested on coarse soils. May be applied after planting, before crop and weed emergence and within 5 days after last preplant tillage operation. Most effective when a to ¼ inch rainfall or irrigation occurs within 7 days. If weeds emerge due to insufficient moisture, use a rotary hoe or cultivate shallowly to improve performance. Use only "protected" sorghum seed.
Annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Lariat® (alachlor + atrazine) Monsanto	2.5 to 3.25 qts.	Same as above.	As above and apply rates according to soil type. Plant only corn, peanuts, soybean or sorghum the year after application. Use only "protected" sorghum seed. Use only on fine-textured soils of the Texas Gulf Coast and Blacklands. Use only preemergence in the Texas Panhandle. Applications to calcareous or alkaline soils may injure crop.

Table 4 (continued). Preemergence sorghum herbicides requiring seed protectants (safeners)

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Partner® 65 WDG (alachlor) Monsanto	3.0 to 4.5 lbs. (preplant incorporated) 2.3 to 3.8 lbs. (preemergence)	Preplant incorporated (shallowly) up to 7 days before planting or preemergence.	Partner® is a dry micro-encapsulated formulation of alachlor. "Protected" sorghum seed must be used. Additional weed control may be obtained by tank-mixing with atrazine. However, only preemergence applications are labeled for this combination. Refer to label for restrictions or use areas and rotational crops.
Annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Micro-Tech® 4EC (alachlor) Monsanto	2 to 3 qts. (preplant incorporated) 1.5 to 2.5 qts. (preemergence)	Preplant incorporated (shallowly) 7 days or less before planting, or preemergence.	MicroTech® is an encapsulated formulation of alachlor. Use only in Texas Panhandle and fine-textured soils of the Gulf Coast and Blacklands. In Texas Panhandle, apply only preemergence. Refer to label for additional restrictions and use precautions. Use only "protected" sorghum seed.
Annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Bullet® (alachlor + atrazine) Monsanto	2.5 to 3 qts.	Same as above.	Bullet® contains the micro-encapsulated formulation of alachlor and with the atrazine provides expanded broadleaf weed control over Micro-Tech®. Use only in Texas Panhandle and fine-textured soils of the Gulf Coast and Blacklands. In Texas Panhandle, apply only preemergence. Refer to label for additional restrictions and use precautions. Use only "protected" sorghum seed.
Annual grasses and broadleaf weeds	Frontier® 6.0 (dimethenamid) BASF	16 to 28 oz. Rate dependent on soil texture, C.E.C. and organic matter content	Preplant surface applied, preplant incorporated or preemergence.	For use only on "safened" seed that has been treated. For use with chloracetamide herbicides. Not for use on sweet or forage sorghums.
Annual grasses and broadleaf weeds	Guardsman® (dimethenamid + atrazine) BASF	3 to 4.5 pts. (medium and fine 8021 types). Rate dependent on soil texture, organic matter content and C.E.C.	Preplant surface applied, preplant incorporated or preemergence.	Not recommended for use on coarse textured soils. Use only on "safened" sorghum seed. Guardsman® will provide expanded broadleaf weed control over that provided by Frontier®.

Table 5. Postemergence herbicides

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Several annual broadleaf weeds, yellow and purple nutsedge (refer to label for specific weeds controlled)	Permit® 75 WSG (halosulfuron) Monsanto	0.67 oz.	Postemergence from 2- leaf stage through layby but before grain head emergence.	Only one application of Permit® is allowed per season. Weeds vary in susceptibility, so refer to label for application timings. Slight injury may occur if Permit® is applied to sorghum under stress. Permit® may be combined with Banvel®, 2,4-D®, Buctril®, or atrazine for expanded broadleaf weed control. Refer to label for additional precautions and rotational crop restrictions. Add surfactant to improve control.
Several annual broadleaf weeds	Peak® (prosulfuron) Novartis	0.75 to 1.0 oz.	Postemergence when weeds are 1 to 12 inches tall, and sorghum is 5 to 30 inches tall and before head emergence.	Application timing is very weed-specific so CONSULT THE LABEL for weed size limitations per application rate. Use drop nozzles for applications in sorghum over 20 inches tall. Always add a crop oil concentrate to spray mixture for optimum performance. Do not apply Peak® when sorghum is under growth stress because of drought, cold weather, water-logged soils, etc. Consult the Peak® label for further precautions and restrictions.
Annual broadleaf weed control and some grasses (refer to label for specific weeds controlled)	atrazine 4L AAtrex® Nine-O (atrazine) Novartis and others	2.4 pts. 1.3 lbs.	Postemergence before weeds are 1½ inches high, and sorghum is 6 to 12 inches tall.	Do not graze or feed forage for 21 days after application. Plant only corn or sorghum the year after application. Do not apply on sand or loamy sand soils. Add surfactant to improve control.
Numerous annual broadleaf weeds (refer to label for specific weeds controlled)	Banvel® 4 (dicamba) BASF	0.5 pt.	Postemergence to sorghum from spike to 15 inches tall.	To minimize potential for injury, treat when sorghum is 3 to 5 inches tall. Use drop nozzles on sorghum over 8 inches tall to keep spray out of whorl. Use with care near cotton and soybeans. May be tank-mixed with atrazine for expanded broadleaf control. Refer to label for additional recommendations and precautions. Add surfactant to improve control.
Numerous annual broadleaf weeds (refer to label for specific weeds controlled)	Basagran® 4EC (bentazon) BASF	1.5 to 2.0 pts.	Postemergence. Growth stage of weed determines rate (see label).	Sorghum is tolerant at all growth stages. Slight speckling may occur but sorghum generally outgrows this condition. Can be applied as a band or broadcast. Do not apply more than 4 pts./A per season. Basagran® may be mixed with atrazine to expand broadleaf weed control. Refer to label for additional recommendations and precautions.

Table 5 (continued). Postemergence herbicides

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Numerous annual broadleaf weeds (refer to label for specific weeds controlled)	Buctril ® (bromoxynil) Rhone-Poulenc	1.0 to 2.0 pts. (rate depends on weed size)	Postemergence when sorghum is at least 5-leaf stage of growth.	Application when weeds are small is important. Do not add surfactant or mix with liquid fertilizer. Temporary leaf scorch to sorghum may occur under cool, cloudy conditions but will soon disappear. Do not plant rotational crops until the following season. Useful for broadleaf weed control near crops where volatile herbicides might cause injury. Buctril® may be applied with other herbicides to broaden spectrum of weed control. Refer to label for recommendations and rotational crop restrictions.
Numerous annual broadleaf weeds (refer to label for specific weeds controlled)	2,4-D ® amine (2,4-D) Several manufacturers	0.5 to 2 pts. (4 lbs./gal. product)	Postemergence after crop is 6 inches tall but before boot stage, preferably before 12 to 15 inches tall.	Do not use near susceptible crops. Use low rate after high rainfall or root damage may result. When crop is more than 8 to 10 inches tall, use drop nozzles to avoid contact with sorghum leaves. Sorghum hybrids vary in tolerance to this herbicide. Addition of a surfactant will increase the likelihood of sorghum injury. See label for details.
Annual broadleaf weeds (refer to label for specific weeds controlled)	Direx ® 4L (diuron) Griffin Karmex ® 80DF (diuron) DuPont	0.2 to 0.4 qt. 0.25 to 0.50 lb.	Postemergence as directed spray only. Use when weeds are 2 to 4 inches tall and after crop is 15 inches tall.	Always use surfactant for improved postemergence control. Do not replant to any crop within 4 months of last application.
Selected broadleaf weeds (refer to label for specific weeds controlled)	MCPA ® Several manufacturers	3.0 pts.	Postemergence when crop is 6 to 12 inches tall but before boot stage. Apply before weeds are 5 inches tall.	Avoid cultivation after treatment while sorghum is brittle. Hybrids vary in tolerance to MCPA®. Do not graze dairy or meat animals until 7 days after treatment. Addition of a surfactant will increase the likelihood of sorghum injury.
Numerous annual grass and broadleaf weeds	Roundup Ultra ® (glyphosate) Monsanto	1 qt. maximum (refer to label for specific rates)	Postemergence applications only through a hooded sprayer when sorghum is at least 12 inches tall.	This application is approved only when using hooded sprayers approved for use by Monsanto. A hooded sprayer is a type of shielded applicator, where the spray pattern is enclosed on the top and all four sides by a "hood," thereby shielding the crop from the spray solution. Consult the supplemental label for additional precautions.

Table 6. Postemergence incorporated

Weeds controlled	Product (Herbicide common name) Company	Application rate per acre	Time to apply	Remarks
Annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Prowl® 3.3 EC (pendimethalin) American Cyanamid	1.2 to 3.6 pts.	Postemergence when sorghum is from 4 inches tall to layby.	Germinated or emerged weeds must be destroyed by cultivation before application. Cultivate with sweep or rolling cultivators at a speed sufficient to throw at least 1 inch of soil over the bases of the sorghum plants. This covers small weed seedlings in the row and prevents direct contact of the herbicide with the zone of brace root formation during application. Use drop nozzles if foliage prevents uniform coverage of the soil surface. Thorough and uniform incorporation into the soil to a depth of 1 to 2 inches with sweep or rolling cultivators should be accomplished soon after application. Incorporation should move some treated soil over the bases of the sorghum plants to improve control of weeds germinating in the rows. Do not use on sands, loamy sands or sandy loam soils. <i>Note: Prowl® can be tank-mixed with atrazine for a broader spectrum of broadleaf weed control. Apply before sorghum reaches 12 inches.</i>
Annual grasses and broadleaf weeds (refer to label for specific weeds controlled)	Treflan® 5 Treflan® 4EC (trifluralin) Dow Agrosciences	0.6 to 1.6 pts. 0.75 to 2.0 pts	Postemergence when sorghum is 8 inches tall or more.	Incorporation as described above. Use drop nozzles if foliage prevents uniform coverage of the soil surface. Do not apply as a preplant or preemergence treatment.

Boom Sprayer Calibration

1. Determine nozzle spacing.
2. Refer to the table below for length of calibration course.
3. Mark off the calibration course on the actual area to be sprayed.
4. Record the time required to drive calibration course at desired field gear and rpm to be used while spraying.
5. Park tractor, maintain rpm used to drive course, turn on the sprayer and set it at proper pressure for desired nozzle tips.
6. Catch water from one nozzle for the time equal to that required to drive calibration course.
7. Ounces of water caught = gallons per acre.
8. Divide gallons per acre into the number of gallons in spray tank to determine how many acres will be sprayed. Add appropriate amount of herbicide for number of acres to be sprayed.

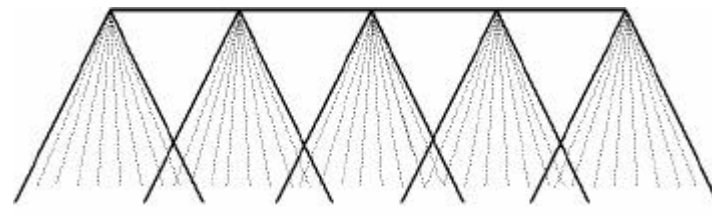


Chart for Nozzle Spacing and Length of Calibration Course

Nozzle Spacing (inches)	18	20	30	40
Length of Calibration Course* (linear feet)	227	204	136	102

**To determine the calibration course for a nozzle spacing not listed, divide the spacing expressed in feet into 340 (340 sq. ft. = 1/128 of an acre).*

Example: *Calibration distance for 19-inch nozzle spacing = $340 \div 19/12 = 215$ feet).*

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