



Suggestions for
Weed Control
in Cotton

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The suggestions contained herein are based primarily on herbicide labels and research conducted by Texas Cooperative Extension and the Texas Agricultural Experiment Station. 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 effective. Product names are included solely to aid readers in locating and identifying the herbicides suggested.

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 Texas Cooperative Extension 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 cotton. Labeled rates and restrictions change constantly; therefore, consult the product label before use.

Weed control in cropland can be accomplished through the use of cultural, mechanical and chemical means. Used judiciously, these individual methods or a combination of them can effectively manage weeds without causing economic loss or adverse environmental effects.

Deciding which practices to employ will depend largely on the infestation level and the weed(s) being controlled. Also, the planting date, crop being planted and other crop management practices will play a major role in determining the timeliness of measures taken.

Considerations for cultural and mechanical weed control should include:

- Remove light or spotty infestations of weeds by hand hoeing or spot cultivation to prevent spreading weed seed, rhizomes or roots. This is of particular importance with perennial weeds because of the way they propagate (by seed and root tissue). Be careful when plowing perennial weeds so that you don't spread plant parts to other areas of the field.
- Use weed-free planting seed to protect against weed infestations in the row and the introduction of new weed species.
- Thoroughly clean harvesting equipment before moving from one field to the next, or require it of the custom harvesters before they enter your fields.
- Use mechanical tillage to remove initial weed flushes before planting, thereby eliminating or at least reducing the potential for continued infestation.
- Consider the economics of using mechanical cultivation alone for weed control in the crop, especially where only light infestations of annual weeds are present.
- Practice rotation to crops which physically out-compete certain weeds, resulting in their gradual decline.
- Consider using herbicides with different sites of action during the growing season to help prevent the development of weed resistance populations (refer to page 21).



Table 1. Winter Weed Control Treatments

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Henbit, seedling dock	Caparol® 4L 1.2–1.6 pt (prometryn) Syngenta	20–40 gal water. Add a surfactant at 1.0 qt per 50 gal spray solution if weeds have emerged.	Fall or winter either pre-emergence or postemergence to weeds.	Use in Gulf Coast and Blacklands only. For best results, apply before weed emergence. If henbit has emerged but is less than 4–6 in tall, add a surfactant or emulsifiable oil. This is for winter weed control only. Additional herbicides will be needed for spring and summer weed control.
Horseweed, henbit, shepherd's purse	Envoke® 0.10 oz Syngenta	Minimum 10 gal water. Apply with 0.25 percent v/v nonionic surfactant.	Early preplant.	Currently labeled in Texas east of I-35. Apply alone or in tank mixture for residual control suppression with a minimum of 90 days before planting cotton. Refer to label for tank mix options.
Henbit, sunflower Refer to label.	Roundup WeatherMax® 1 pt–1 qt (glyphosate + surfactant) Monsanto	3–40 gal water.	Postemergence to weeds before planting.	Allow at least 2 weeks after application before tillage.
Selected broadleaf weeds Refer to label.	Goal® 2XL 1–2 pt Goal® 1.6E 1.25–2.5 pt (oxyfluorfen) Dow AgroSciences	20 gal water by ground or 10 gal water aerially.	Preemergence or postemergence to weeds.	Some residual weed control may be expected. Apply to weed seedlings not exceeding four true leaves. Fallow beds should be worked thoroughly to a minimum depth of at least 2.5 in before planting. Failure to achieve thorough and complete incorporation may result in stand reduction and/or vigor reduction. Do not apply within 7 days before planting.
Selected weeds Refer to label.	Valor® SX 2–4 oz (fall burndown and residual with labeled burn-down herbicide) 1–2 oz (flumioxazin) Valent or with labeled burn-down herbicide	7–10 gal water with a crop oil concentrate or methylated seed oil.	Preemergence or postemergence to weeds before planting. Spring/pre-plant. Postemergence with residual control.	Minimum of 30 days must pass and 1 in rainfall/irrigation must occur between application and planting. Refer to label for specific weeds, rates and treatment intervals.
Refer to label for list of weeds controlled or suppressed.	Ignite® 280 SL 23–29 oz (glufosinate-ammonium) Bayer CropScience	15–40 gal water by ground or minimum of 10 gal aerially.	Application may be made in fallow fields, postharvest, before planting or emergence of cotton.	Refer to label for specific rates, weeds controlled and tank mix options.
Annual and perennial grasses, broadleaves and sedges Refer to label.	Glyphosate products 16–32 oz Various	3–40 gal water by ground or 3–15 gal aerially. Add a nonionic surfactant at 2 qt/100 gal water or ammonium sulfate at 8.5–17 lb/100 gal water.	Postemergence to weeds. Before emergence of crops.	

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<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Annual and perennial grasses, broadleaves and sedges Refer to label.	Touchdown Total™ 12–48 oz Syngenta	3–40 gal water by ground. Use ammonium sulfate at 8.5–17 lb/100 gal spray solution for improved control.	Postemergence to annual weeds. Before emergence of crops.	Refer to label for tank mix options for perennial weed control.
Annual and perennial grasses, broadleaves and sedges Refer to label.	Touchdown Hi-Tech™ 12–48 oz Syngenta	3–40 gal water by ground. Use ammonium sulfate at 8.5–17 lb/100 gal spray solution for improved control.	Postemergence to annual weeds. Before emergence of crops.	Refer to label for tank mix options for perennial weed control.
Annual and perennial grasses, broadleaves, and sedges Refer to label.	Sequence 2.5–3.5 pt Syngenta	10–40 gal water by ground. 3–15 gal water by air.	Postemergence to weeds, before emergence of crop.	Do not use on sand or loamy soils. Maximum of 2.5 pt on sandy loams and 3.5 pt on medium and fine soils.

Table 2. Preplant

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Johnsongrass, nutsedge, cocklebur	MSMA® 1.33 qt of 6.6 lb/gal product (monosodium acid methanearsonate) Helena and others	30–40 gal water with surfactant. 5–10 gal aerial.	Before planting.	Apply once to emerged weeds and grass before planting. Cotton may be planted immediately.
Emerged annual broadleaf weeds and grasses and topkill suppression of perennials	Gramoxone Inteon™ 2.5–4.0 pt (paraquat dichloride) Syngenta	Minimum of 10 gal water by ground plus 1 qt non-ionic surfactant per 100 gal spray solution or 1 gal crop oil concentrate per 100 gal spray solution. 5 gal by air plus 1 qt/100 gal spray solution or 1 pt/acre crop oil concentrate.	Before planting, by ground application to weeds and grasses 1–6 in tall.	Before planting, prepare land to permit maximum weed and grass emergence before treatment. Seeding should be done with minimum soil disturbance. Weeds and grasses emerging after application will not be controlled. This is a restricted-use herbicide. When applied to less than 10 gal spray volume, a drift control or spray desposition additive should be used. Check label for tank mix options.
Numerous annual broadleaf weeds Refer to label.	Harmony® Extra 0.3–0.6 oz (thifensulfuron-methyl (50%) plus tribenuron-methyl (25%)) DuPont	Use sufficient carrier to ensure good weed coverage.	Postemergence at least 45 days before planting and to weeds less than 4 in tall or wide.	Add nonionic surfactant to spray mixture. Tank mixes with Roundup® will hasten weed burndown. Do not use less than 0.3 oz per acre. Consult label for additional information.

Table 2. Preplant

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Many annual broadleaf and grass weeds Refer to label for weed-specific rates.	Roundup WeatherMax[®] 11–32 oz (glyphosate) Monsanto	3–40 gal water for ground and 3–5 gal for aerial applications. Add 1–2% dry ammonium sulfate by weight, 8.5–17 lb/100 gal water.	Before emergence of cotton.	Apply when weeds are vigorously growing and are 6 in or less tall. Consult label for specific rate and weed heights. Do not apply by ground when winds are gusty or more than 10 mph. For aerial applications, do not apply during inversion conditions when winds are gusty or under other conditions that will allow drift. Do not store, mix or spray in galvanized or unlined steel tanks (except stainless steel). Do not mix with any residual pesticide. Allow 3 days before tillage. Roundup WeatherMax [®] has no soil activity. For burndown of johnsongrass, apply 11 oz/A before johnsongrass is 12 in tall. For best results, apply when johnsongrass is in the boot-to-head growth stage. Wait 3 days before tillage.
Perennials: Many perennial weeds, such as bahiagrass, bermudagrass, bindweed, curly dock, dallisgrass, fescues, hemp dogbane, johnsongrass, milkweed, silverleaf nightshade, swamp smartweed, torpedograss, vaseygrass, wirestem muhly, Texas blueweed, clover (red and white), nutsedge (yellow and purple), perennial ryegrass, Canada thistle, horsenettle, woollyleaf bursage	Roundup WeatherMax[®] 11–32 oz (glyphosate) Monsanto See label for rate of specific weeds.	3–40 gal water by ground and 3–15 gal aerial.	Before planting or after harvest.	Apply when actively growing and when weeds have reached early head or early bud growth stage. See label for exact growth stage and rate and water carrier volume per acre. If weeds have been mowed or tilled, do not treat until regrowth has reached recommended stage. Allow 7 days or more after application before tillage. Do not graze treated cotton fields or feed forage to livestock within 8 weeks of application.

Table 3. Preplant Incorporated

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Many annual grasses and small-seeded broadleaf weeds Refer to label for weed-specific rates.	Prowl[®] 3.3EC 1.2–4.8 pt (pendimethalin) BASF	10 gal water or more by ground. 5 gal or more by air. May also be applied impregnated on dry bulk fertilizer and with liquid fertilizer.	Immediately before planting or up to 140 days before planting.	Within 7 days after application, incorporate 1–2 in deep with a disk harrow, bed conditioner, PTO-driven tiller, cultivator, hoe or rolling cultivator. If loss of crop occurs, cotton or soybeans may be replanted. Other crops can be rotated with cotton the following year. Do not feed forage or graze livestock in treated cotton fields. Winter wheat or barley can be planted in the fall 4 months after application. Prowl [®] may be applied at 2.4–4.8 pt/A and incorporated up to 60 days before planting for rhizome johnsongrass suppression.

Table 3. Preplant Incorporated

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Refer to label for list of grasses and broadleaf species controlled or suppressed.	Prowl® H₂O 1–4 pt (pendimethalin) BASF	10 gal water or more by ground. 5 gal or more by air.	Up to 60 days before planting and incorporate.	Apply up to 60 days before planting and incorporate uniformly in 1–2 in of soil surface. Do not feed forage or graze livestock in treated fields. Not recommended for soils with more than 3% organic matter. See label for more information.
Many annual grasses and small-seeded broadleaf weeds. Refer to label for weed-specific rates.	Treflan® 4L 1.0–2.5 pt (trifluralin) UAP Treflan® HFP 1.0–2.5 pt (trifluralin) Dow AgroSciences Several other trifluralins are available. Consult individual product labels for recommendations and precautions.	5–40 gal water or fertilizer solution. Check compatibility with fertilizer solution. May also be applied impregnated on dry bulk fertilizer. Do not apply aerially if winds exceed 10 mph.	October 15–December 31. Anytime after January 1 replant or pre-emergence.	Best results are obtained by incorporating with a disk or power incorporator within 24 hours after application. Ground may be left flat or bedded over winter. If land is left flat, take care during spring bedding operations to prevent turning up untreated soil. Do not apply in fall to soils that are wet or in poor condition or to soils subject to flooding. Do not plant sorghum or oats for 12 months after application unless 25 in or more of irrigation and/or rainfall was used to produce the crop. If less than 20 in of irrigation and/or rainfall was used, do not plant either crop for 18 months. On the High Plains, do not plant sorghum until May 15. Cotton, guar, peanuts, southern peas, soybeans, sunflowers and some vegetables may be replanted after Treflan® in the same or the following year. Incorporate with double disk, power incorporator, field cultivator, rolling cultivator or bed conditioner. The first incorporation should occur within 24 hours after application. Make a second pass with ground-driven equipment. Rolling cultivators and bed conditioners should be used only on coarse- to medium-textured soils. In Brazoria, Calhoun, Chambers, Fort Bend, Galveston, Harris, Jackson, Jefferson, Liberty, Matagorda, Orange, Victoria, Waller and Wharton counties, rates of 1.5–3.0 pt (4L) can be used.
Many annual grasses and small-seeded broadleaf weeds Refer to label for weed-specific rates.	Treflan® 4L 1–2.5 pt (trifluralin) UAP Treflan® HFP 1.0–2.5 pt (trifluralin) Dow AgroSciences	5–40 gal water or fertilizer solution. Check compatibility with fertilizer solution. May also be applied impregnated on dry bulk fertilizer. Do not apply aerially if wind speed exceeds 10 mph.	Any time after January 1 preplant or preemergence.	Incorporate with double disk, power incorporator, field cultivator, rolling cultivator or bed conditioner. The first incorporation should occur within 24 hours after application. A second pass should be made with ground-driven equipment. Rolling cultivators and bed conditioners should be used only on coarse- to medium-textured soils. In Brazoria, Calhoun, Chambers, Fort Bend, Galveston, Harris, Jackson, Jefferson, Liberty, Matagorda, Orange, Victoria, Waller, and Wharton counties, rates of 1.5–3.0 pt (4L) can be used.

Table 4. Preplant Incorporated/Preemergence

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Many annual grasses and broadleaf weeds Refer to label for weed-specific rates.	Treflan® TR-10 5–20 lb (trifluralin) Dow AgroSciences	Band or broadcast with properly calibrated granular applicator.	Refer to supplemental label for remarks concerning preplant and preemergence applications.	For use in conservation tillage cotton. Refer to supplemental label. May be applied in fall, in spring before or at planting, after planting, but before crop emergence. Do not use on any crop grown in Pecos or Reeves counties.

Table 5. Preemergence

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Many annual broadleaf weeds and a few annual grasses Refer to label for weed-specific rates.	Caparol® 4L 1.6–4.8 pt (prometryn) Syngenta Several other prometryn products are available. Consult individual product labels for recommendations and precautions.	20–40 gal water.	Preemergence.	Do not use on sand or loamy sand. Rainfall or irrigation is needed after application to obtain good weed control. Avoid broadcast applications to cotton planted in furrows more than 2 in deep. Band applications should be no wider than the bottom of furrows. Cotton may be replanted through treated soil. Do not retreat. If Caparol® is applied only as a single preemergence treatment during the season, several vegetables and oats, winter barley, wheat or rye may be planted. However, the small grains cannot be used for food or feed. Do not use on glandless cotton varieties, as the crop will be injured.
Many annual grasses and some small-seeded broadleaf weeds	Dual® Magnum or Dual II® Magnum 1.0–1.33 pt (metolachlor) Syngenta	Minimum of 10 gal water or liquid fertilizer.	Preplant incorporated or preemergence.	Do not apply on sand or loamy sand soils. Do not apply to furrow-planted cotton. Apply preemergence or incorporate no more than 1 in deep before, at or after planting. Plant cotton at least 1 in deep on fine soils and 1.5 in deep on medium or coarse soils. For best control of yellow nutsedge, apply preplant incorporated.
Many annual grasses and broadleaf weeds Refer to label for weed-specific rates.	Dual® Magnum or Dual II® Magnum 1.25–2.0 pt (metolachlor) + Caparol® 4L 1.6–4.8 pt (prometryn) Caparol® Accu Pak 1.0–3.0 lb Syngenta	Minimum of 10 gal water.	Preplant incorporated or preemergence.	Apply either preplant incorporated or preemergence using procedures suggested for Dual® alone. Choose rate according to soil type. Do not apply to sand or loamy sand soil. Do not use with glandless cotton varieties. Observe label precautions when applying over furrow-planted cotton. Test compatibility of Dual® and Caparol® in a jar before mixing them in the tank.
Many annual grasses and broadleaf weeds Refer to label for weed-specific rates.	Dual® Magnum 0.8–1.33 pt (metolachlor) + Cotoran® DF 1.2–2.4 lb or Cotoran® 4L 2.0–4.0 lb (fluometuron) Griffin	Minimum of 10 gal water.	Preemergence.	Use in Gulf Coast, Rio Grande Valley and eastern Texas only. Do not apply on sand or loamy sand soils. Observe label precautions when applying to furrow-planted cotton. Test compatibility of Cotoran® and Dual® in a jar before mixing in tank. Injury may occur on high-pH or low-organic-matter soils.

Table 5. Preemergence

Weeds controlled	Product Product rate/A broadcast Herbicide common name	Spray volume per acre broadcast	Time to apply	Remarks
Many annual grasses and broadleaf weeds Refer to label for weed-specific rates.	Cotoran® 4L 2.0–4.0 pt or Cotoran® DF 1.2–2.4 lb (fluometuron) Griffin Other fluometuron products available include Meturon® 4L or DF and Riverside® Fluometuron 4L or 80DF. Consult these product labels for recommendations and precautions.	25–40 gal water or liquid nitrogen solution. A suspendibility agent may be necessary. Minimum 10 gal water for preplant incorporated or preemergence. Minimum 20 gal water for postemergence.	Preemergence or at planting after a preplant incorporated application of Prowl® or Treflan®.	Where dry weather conditions prevail, the herbicidal activity of fluometuron may be delayed or reduced. Do not plant crops other than cotton within 6 months of the last application. West Texas: Do not use on sand, loamy sand or fine sandy loam soils nor on cotton planted in furrows. Do not feed foliage from treated fields or gin trash to livestock.
Many annual grasses and broadleaf weeds Refer to label for weed-specific rates.	Karmex® 80DF 1.0–2.75 lb (diuron) Griffin or Direx® 4L 0.8–2.2 qt (diuron) DuPont, Griffin Other diuron products available include Drexel® Diuron® 4L or 80W and Riverside® Diuron® 80DF. Consult these product labels for recommendations and precautions.	20–40 gal water by ground. 5–10 gal aerially.	Preemergence.	Use on sandy loam or heavier soils. Do not use with furrow-planted cotton. Cotton may be replanted through treated band or rework beds before planting. Do not re-treat if banded preemergence; any crop can be planted after 4 months. If broadcast preemergence or if banded preemergence followed by postemergence, only cotton, soybeans, corn or grain sorghum can be planted the next spring. Do not apply to sand or loamy-sand soils. Do not replant areas to crops other than corn or cotton within 4 months following band treatment or within 6 months after broadcast treatment, as injury to subsequent crops may result. Do not replant to any other crop within 1 year after application. Direx® or Karmex® may be applied at 0.25–0.75 lb preemergence after a preplant application of Treflan® on heavy soils. See label for application specific instructions. Do not use on soils containing less than 1.0% organic matter. Do not use in preplant or preemergence where soil-applied organophosphate insecticides are used because of the potential for severe cotton injury and possible stand loss. Do not allow livestock to graze treated land.
Selected broadleaf weeds such as pigweed spp., lanceleaf sage, Venice mallow and others Refer to label for weed-specific rates.	Staple® LX 1.3–2.1 fl oz (pyrithiobac) DuPont	Use a minimum of 10 gal water for ground applications Do not apply preemergence aerially.	Preemergence.	Refer to label for weed-specific application rates. Staple® LX can be combined with diuron, flumeturon or prometryn products for expanded weed control. Refer to the Staple® LX label for more information. Observe crop rotation restrictions. Do not apply more than 2.1 fl oz preemergence.

Table 6. Postemergence or Post-Directed

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
<p>Selected annual broad-leaf weeds</p> <p>Refer to label for weed-specific rates.</p>	<p>Caparol® 4L 1.0 pt early 1.0–1.3 pt late (prometryn) Syngenta</p>	<p>20–40 gal water. When applied to emerged weeds, add 2 qt surfactant per 100 gal spray mix.</p>	<p>Early postemergence: 3- to 6-in cotton. Late post-emergence cotton at least 6 in tall.</p>	<p>Apply as a directed spray, being careful to avoid contact with cotton leaves. If applied when cotton is 3–6 in tall, precision equipment with fenders should be used to avoid cotton damage. Do not apply to furrow-planted cotton until furrows are leveled (plowed in). Applications to cotton less than 10 in tall should be made only when planted on a bed or flat (not in a furrow). If only a single postemergence application is made, small grains and certain vegetables can be planted in the fall, but small grains cannot be grazed. If applied preemergence and postemergence or if multiple postemergence treatments were made, do not plant fall crops. Caparol® may be combined with MSMA or DSMA for enhanced weed control. Refer to the label for more information.</p>
<p>Selected annual broad-leaf weeds</p> <p>Refer to label for weed-specific rates.</p>	<p>Cotoran® 4L 2.0–4.0 pt or Cotoran® 85DF 1.25–2.5 lb (fluometuron) Griffin</p>	<p>20–40 gal water. When applied to emerged weeds, add 1 qt of surfactant per 50 gal of spray mix.</p>	<p>Postemergence when cotton is at least 3 in tall and weeds less than 2 in.</p>	<p>Apply as directed, semi-directed or over-the-top spray. Use higher rate after weeds have emerged. Do not plant crops other than cotton within 6 months of last application. Do not feed foliage or gin trash to livestock. Cotoran® may be combined with MSMA or DSMA for enhanced weed control to cotton from 3 in high to first bloom. Refer to the label for more information.</p> <p>West Texas: Do not use on sand, loamy-sand or fine-sandy-loam soils.</p>
<p>Most seedling broadleaf weeds and some annual grasses</p> <p>Refer to label for weed-specific rates</p>	<p>Direx® 4L 0.4–0.6 qt Griffin or Direx® 80 DF 1–2.75 lb Griffin or Karmex® 80DF 0.25–0.5 lb (diuron) Griffin</p>	<p>25 gal water + 1 pt surfactant.</p>	<p>Postemergence directed spray after cotton is 6–12 in high, as needed, up to two applications.</p>	<p>Spray young, actively growing weeds less than 2 in tall. Apply laterally, not over the top of cotton. Avoid contact with cotton leaves. Any crop may be planted 4 months after the last application. If multiple applications are made, see label for rotational crops. Direx® or Karmex® may be combined with MSMA or DSMA for enhanced weed control. Refer to label for more information.</p> <p>Consult label for weed and rate specifics.</p>
<p>Many grasses and broad-leaf weeds</p>	<p>Ignite® 280 SL 22–29 oz (glufosinate-ammonium) Bayer CropScience</p>	<p>20–40 gal water. Minimum of 15 gal. Minimum of 10 gal water aerial.</p>	<p>Apply over the top of Liberty Link® (glufosinate tolerant) cotton only. May be applied through hoods to non-Ignite®-tolerant cotton, being careful to avoid contact with cotton plants.</p>	<p>Consult label for specific weeds and weed heights and tank mix combinations. Refer to 24 C State label for Texas.</p>

Table 6. Postemergence or Post-Directed

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Selective control of grasses, sedges and broadleaf weeds	Envoke® 0.10–0.15 oz over-the-top 0.10–0.25 oz post-directed (trifloxysulfuron sodium) Syngenta	Minimum 10 gal by ground. Do not apply Envoke® aerially. For over-the-top applications add 0.25% nonionic surfactant. For post-directed applications, add 0.25% nonionic surfactant or 0.5–1.0% crop oil concentrate.	Postemergence over-the-top when cotton has reached a minimum of 5 true leaves.	See label for tank mix combinations. Can be applied either over-the-top or post-directed. Envoke® can be tank mixed with MSMA, Cotoran® or glyphosate for hooded treatments. Do not exceed 0.4 oz Envoke® per acre per season. Envoke® is currently labeled for use in Texas cotton grown east of I-35. Consult label for rotational crop information. For use in Roundup-Ready Flex® cotton: apply with approved Roundup® formulations from the 5–12 leaf stage up to 60 days before harvest. Applications can be over-the-top or post-directed to ensure adequate coverage.
Broad spectrum of annual and perennial weeds	Sequence® 2.5–4.0 pt (glyphosate) + (S-metolachlor) Syngenta	10–40 gal by ground. 3–5 gal by air.	Preplant, preemergence, postemergence.	Apply preplant, preemergence or postemergence over-the-top in Roundup Ready® cotton. Apply in 10–20 gal water and do not exceed 30 psi. Do not harvest cotton within 80 days of a post-directed application. See label for more information.
Selected grass and broadleaf weeds	Suprend® 1.0–1.5 lb (prometryn + trifloxysulfuron sodium) Syngenta		Post-directed.	Use only in picker and Pima cotton varieties. Apply post-directed to cotton. Do not spray cotton over-the-top. Cotton may be replanted 30 or more days after Suprend® application if not more than 1.0 lb of Suprend® has been applied or 14 or more days after the first significant rainfall (0.5 in) after Suprend® application. Suprend® is labeled only for Texas cotton grown east of I-35. Do not exceed 2.7 lb/A of Suprend® per season. Do not apply Suprend® within 60 days of harvest. See the label for more specific information.
Many annual broadleaf weeds Refer to label for weed-specific rates.	Cobra® 2E 12.5 oz (lactofen) Valent	10–30 gal water. Use surfactant (2 pt per 100 gal water) or crop oil concentrate (0.5–1 pt/A). Keep spraying pressure at 20–30 PSI to reduce potential for spray mist getting on cotton foliage.	Postemergence directed only. Cotton must be 6–8 in tall, or apply at layby. See label for layby tank-mixes.	Use as a directed spray only; use equipment designed to keep spray off cotton foliage while maintaining weed coverage. Susceptibility of individual weeds varies; therefore, consult label for specific application recommendations regarding stage of growth. Cobra® may be used in combination with MSMA, Bladex® and Karmex® to help control certain weeds. Consult specific product labels for recommendations and precautions.

Table 6. Postemergence or Post-Directed

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Cocklebur, johnsongrass, nutsedge, puncturevine, ragweed, sandbur and some annual grasses	DSMA Plus 3.0–4.0 pt of 3.6 lb/gal product or MSMA 1.0–1.25 pt of 6 lb/gal product	40 gal water + 1–2 pt surfactant per 50 gal if not contained in the product.	Postemergence after cotton is 3 in high and before first bloom.	Do not apply over the top or by plane. Apply as directed spray. Make a second application if necessary. Do not apply after first bloom. Apply to small broadleaves and grasses. Most effective at temperatures of between 80 °F and 90 °F. Do not graze treated fields or feed foliage. Phytotoxic properties are quickly inactivated on contact with the soil. DSMA Plus second application should be timed 1–3 weeks after first application.
Many annual broadleaf weeds Refer to label for weed-specific rates.	Staple® LX 1.3–3.8 fl oz (pyrithiobac sodium) DuPont or Staple® LX 1.3–1.7 fl oz + Glyphosate (4 lb a.i./gal) 24–32 oz	Minimum of 10 gal water.	Postemergence to most weeds when they are 1–4 in tall. Consult label for specific weed, timing and application rates. Add nonionic surfactant or crop oil concentrate.	Primarily a broadleaf weed herbicide but can be tank-mixed with MSMA, DSMA or Assure® II for grass control. Staple® LX has soil residual activity for preemergence control of some weeds. Do not exceed 3.8 fl oz in any single postemergence application. Do not apply more than 3.2 fl oz per acre per year of Staple® LX in areas west of Highway 83 in Texas, or more than 5.1 fl oz per acre per year in areas west of Highway 83 where continuous cotton is grown. Do not apply more than 5.1 fl oz per acre per year in all other areas. Staple® LX may be applied postemergence over-the-top with to Roundup-Ready Flex® cotton until 60 days before harvest.
Many annual and perennial grass weeds only Refer to label for regional specifics on rates and weed treatment stages. Rhizome johnsongrass should be 8 to 12 inches at first application. If regrowth occurs, make a second application at 4 to 6 inches.	Fusilade® DX 2E 0.5–1.5 pt (fluazifop-p-butyl) Syngenta	5–40 gal water + crop oil concentrate (1 qt/25 gal final spray volume) or nonionic surfactant (0.5 pt/25 gal final spray volume). Spray pressure of 30–60 psi is suggested.	Postemergence over the top of cotton when grasses are actively growing. Apply when annual grasses are small (see label for size). Bermudagrass should be treated when no more than 3 in tall or when runners are 6–12 in. Rhizome johnsongrass should be 12–18 in tall and before the boot stage.	Do not apply a total of more than 3.0 pt/A per season. Bermudagrass and rhizome johnsongrass may require two applications (see label). Higher rates or repeat applications are needed in West Texas on some grasses (see label). Where rainfall is adequate, soil residual may occur, which will suppress new flushes of annual grasses. Do not plant rotational crops other than cotton or soybeans within 60 days after application. Avoid drift to grass-type crops. Do not apply if rainfall is expected within 1 hour. Cultivation from 7 days before until 7 days after application may reduce control. Cultivation after 7 days will often help grass control. When grasses are drought stressed, control will be reduced. Do not use whirl chamber or flood-type nozzle tips that produce large droplets. Fusilade® DX may be applied as a spot treatment, using a 0.5% solution (0.5 qt per 25 gal water). Add ½ pt of nonionic surfactant to this 25-gal mixture. Do not apply more than 48 oz per acre per season. See label for more information on use regions.

Table 6. Postemergence or Post-Directed

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
<p>Many annual and perennial grass weeds only</p> <p>Refer to label for regional specifics on rates and weed treatment stages.</p>	<p>Fusion® 6–12 oz (Fluazifop-p-butyl + fenoxa-prop-p-ethyl) Syngenta</p>	<p>Same as above.</p>	<p>Postemergence over the top of cotton to actively growing grasses. Avoid application to stressed weeds. Fusion® may be applied as a spot treatment; refer to label for specific recommendations.</p>	<p>Do not apply more than 24 oz per acre of Fusion® to the same crop per year. Do not plant grass crops such as corn, sorghum or wheat within 60 days of last Fusion® application. Fusion® may be applied as a spot treatment using a 0.5 percent solution (1 pt in 25 gal water). Add 8 oz of a nonionic surfactant to this mixture.</p>
<p>Many annual and perennial grasses only</p> <p>Refer to label for weed-specific rates.</p>	<p>Select® 2EC Annual grasses 6–8 oz Perennial grasses (clethodim) Valent</p>	<p>Minimum of 5 gal/A ground and 3 gal/A by air. Always add 1% v/v (4 qt/100 gal spray solution) crop oil concentrate. Do not use less than 1 pt/A of finished spray volume.</p>	<p>Postemergence over the top of actively growing grasses. Do not apply to plants under environmental stress or those exceeding recommended growth stage on label. Treat rhizome johnsongrass from 12–18 in tall. Treat bermudagrass up to 3 in tall or up to 6-in runners.</p>	<p>Do not cultivate treated grasses 7 days before or after herbicide application. Perennial grasses may require sequential applications. Consult label for recommendations specific to East and West Texas.</p> <p>Select® may be applied as a spot treatment by mixing 8 oz into 25 gal water for a 0.25 percent solution.</p>

Table 6. Postemergence or Post-Directed

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Many annual and perennial grasses only Weeds controlled may be area specific and rate specific; consult product label.	Assure® II 0.88EC 5–12 oz (quizalofop) DuPont	Minimum of 10 gal in non-arid regions; 15 gal in arid regions; consult label. Always add 1% v/v (4 qt per 100 gal spray solution) crop oil concentrate or 0.25% v/v (1 qt per 100 gal spray solution) of a nonionic surfactant. Aerial: Minimum of 3 gal/A in arid regions. Minimum of 5 gal/A in non-arid regions.	Postemergence over the top of actively growing grasses. Do not apply to plants under environmental stress or those exceeding recommended growth stage on label.	Do not cultivate treated grasses 7 days before or 7 days after herbicide application. Perennial grasses may require sequential applications. Consult label for recommendations specific to East and West Texas. Assure® II may be applied as a spot treatment by mixing 12 oz of product into 25 gal water or as a 0.375% solution. Refer to label for more instructions. Do not apply within 80 days of harvest. Do not apply more than 18 oz of product per acre per season.
Many annual and perennial grasses only Refer to label for weed-specific rates.	Poast Plus® 1E 12–48 oz (sethoxydim) MicroFlo	5–20 gal water at a minimum pressure of 40 psi + 2 pt nonphytotoxic oil concentrate by ground. By air use a minimum of 5 gal water.	Postemergence over the top of actively growing grasses. See label for stages of various grasses.	Do not apply more than 7.5 pt/A in one season. Bermudagrass and rhizome johnsongrass may require two applications (see label). Do not apply to grasses under stress such as lack of moisture or herbicide injury, or unsatisfactory control will result. Cultivation no sooner than 7 days after application may aid season-long control. See label for rates for various grasses and growth stages. Poast Plus® may be applied as a spot or small area treatment using a 1–1.5% solution. Refer to the label for more information. Do not cultivate within 5 days before or 7 days after treatment.
Many annual and perennial grasses only Refer to label for weed-specific rates.	Goal® 2 XL 1–2 pt (oxyfluorfen) Dow AgroSciences Goal® 1.6 E 1.25–2.5 pt (oxyfluorfen) Dow AgroSciences	20–40 gal at 20–25 psi pressure. Add 2–4 pt nonionic surfactant per 100 gal spray solution. Two flat fan nozzles on each side of the row are suggested.	Postemergence as a directed spray to weeds not exceeding 4 true leaves. Succulent weeds in 2- to 3-leaf stage can usually be controlled at the low rate. Apply to cotton 6–8 in tall.	Application in cotton less than 6 in tall may result in severe crop injury. Precision ground spray equipment with fenders or shields should be used to avoid contact with foliage even in 6- to 8-in cotton. Branch lifters may be necessary on cotton more than 8 inches tall. May be tank-mixed with MSMA or Karmex®.

Table 6. Postemergence or Post-Directed

<i>Weeds controlled</i>	<i>Product</i> <i>Product rate/A broadcast</i> <i>Herbicide common name</i>	<i>Spray volume</i> <i>per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Numerous grasses and broadleaf weeds Suppression of some perennial weeds may be expected.	Roundup WeatherMax® 0.5–5 qt/A (glyphosate + surfactant) Monsanto	5–20 gal water by ground. 3–15 gal water by air.	Postemergence to actively growing weeds using shielded application equipment.	Use specifically designed equipment to allow for coverage of target weeds but prevent application or drift of herbicide onto non-Roundup Ready® crop. Follow other label precautions.
Numerous grasses and broadleaf weeds Suppression of some perennial weeds may be expected.	Roundup WeatherMax® 0.5–1 qt/A (glyphosate + surfactant) Monsanto	Same as above.	Postemergence over the top of cotton, no larger than four-true-leaf stage of growth; then apply the product post-directed.	Use only on Roundup Ready® cotton varieties. No more than two over-the-top or two post-directed applications may be made in a growing season. Application for these timings may not exceed 22 oz of product per application. Roundup WeatherMax® may be applied as a broadcast treatment to Roundup Ready® cotton after 20% boll crack. Refer to label for more specific information.
Numerous grasses and broadleaf weeds Suppression of some perennial weeds may be expected.	Roundup WeatherMax® Up to 1 qt/A (glyphosate + surfactant) Monsanto	3–40 gal water by ground. 3–15 gal water by air. Up to 22 oz/A by air.	Postemergence over-the-top of cotton from ground cracking to 7 days before harvest.	Use only in Roundup Ready® Flex cotton varieties. Do not apply Roundup WeatherMax® over the top beyond first bloom cotton grown for seed. No not exceed 32 oz/A for ground application. Maximum in-crop applications of Roundup WeatherMax®, from ground cracking to 60% open bolls, cannot exceed 4.0 qt/A. Total Roundup WeatherMax® applied from 60% open bolls to 7 days, before to harvest may not exceed 44 fl oz per acre.
Numerous grasses and broadleaf weeds Suppression of some perennial weeds may be expected	Touchdown Total™ 12–24 fl oz	3–40 gal by ground; 3–15 gal by air	Postemergence over-the-top of cotton to actively growing weeds.	Use only on cotton tolerant to glyphosate. Make postemergence applications from ground cracking until the four-leaf stage of cotton at a maximum of 48 fl oz/A per season with no more than 24 fl oz/A in any single application. Apply no more than 48 fl oz/season by precision, post-directed or hooded application methods between the five-leaf stage and layby. Apply no more than 24 fl oz per single application. Refer to label for tankmix options.
Numerous grasses and broadleaf weeds Suppression of some perennial weeds may be expected	Touchdown Hi-Tech™ 10–20 fl oz	3–40 gal by ground; 3–15 gal by air	Postemergence over-the-top of cotton to actively growing weeds.	Use only on cotton tolerant to glyphosate. Apply a maximum of 40 fl oz from ground cracking to four-leaf stage (quarter-sized fifth) with no more than 20 fl oz in any single application. Apply no more than 40 fl oz/season by precision, post-directed or hooded application methods between the five-leaf stage and layby, with no more than 20 fl oz for any single application by these methods. Refer to label for tankmix options.

Table 6. Postemergence or Post-Directed

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Numerous broadleaf weeds No grass or sedge control	Buctril® 4EC 0.75–1.0 pt (bromoxynil) Bayer CropSciences	Apply in 10–20 gal water by ground. Apply a minimum of 5 gal water by air.	Postemergence over the top of cotton.	Use only on cotton that has been genetically modified for tolerance to Buctril® (BXN cottons) . Do not exceed 1 pt/A per application or 3 pt/A total per season. Do not apply within 75 days of harvest. To control grasses, Buctril® may be applied 7 days before application of Assure® II, Fusilade® DX, Poast Plus®, or Select®. If the grass herbicides are applied first, wait 3 days to apply Buctril® to avoid problems with reduced control.
Selected broadleaf weeds and some annual grasses Refer to label.	Valor® SX 1–2oz/A + Glyphosate 1 lb a.i./A + NIS 0.25% v/v or Valor® 2 oz + MSMA 2.0 lb a.i./A + NIS 0.25% v/v	10 gal water minimum. Use only on NIS. Do not use a crop oil concentrate.	Postemergence to actively growing weeds using hooded or shielded application equipment.	Cotton must be at least 6 in tall. Spray solution must not come into contact with cotton or severe crop injury may occur. Maximum of 2 oz/A of Valor® in any single application and 4 oz/A applied during a single growing season. Do not make a sequential application of Valor® SX within 30 days of first Valor® application. Do not apply within 60 days of harvest. Refer to label for further instructions.

Table 7. Layby

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Annual grasses and broadleaves such as cocklebur, pigweed, gumweed, morning-glory, common lambs-quarters, devilsclaw, pie melon	Caparol® 4L 1.6–3.2 pt/A (prometryn) Syngenta	25 gal water + 1 pt of surfactant.	Postemergence as a directed spray when cotton is at least 12 in tall and weeds are less than 2 in tall.	Omit surfactant if no weeds are present at treatment time. In the High Plains, 1.6–2.4 pt/A of Caparol® 4L is sufficient. Do not use in the Rio Grande Valley. See Caparol® preemergence for rotational crop suggestions. Do not apply when cotton is under stress.
Many annual grasses and small-seeded broadleaf weeds Refer to label for weed-specific rates.	Treflan® HFP 1.0–2.0 pt Dow AgroSciences or Treflan® 4EC 1.0–2.0 pt (trifluralin) UAP	5–40 gal water by ground.	From four-true-leaf stage until layby but not less than 90 days before harvest.	Apply as a directed spray. Drop nozzles are suggested if cotton foliage prevents uniform coverage of soil surface. Final beds should be established and free of clods and trash before application. Incorporate within 24 hours with one pass of a sweep-type or rolling cultivator. Treated soil should be thrown into the row. Maximum must not exceed 4 pt/A within the same crop year (fall, spring and layby applications).

Table 7. Layby

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Many annual grasses and small-seeded broad-leaf weeds Refer to label for weed-specific rates.	Prowl H₂O [®] 1.0–4.0 pts (pendimethalin) BASF	Minimum 10 gal water. Minimum of 20 gal fertilizer.		1–3 pt on conventional or minimum till, 2–4 pt on no-till. Check label for maximum labeled rates for given soil types. Do not apply over the top of cotton or crop injury may result. Apply only as directed spray.
Selected broadleaf weeds and some annual grasses Refer to label.	Valor [®] SX 1–2 oz/A + Glyphosate 1 lb a.i./A + NIS 0.25% v/v or Valor [®] 2 oz + MSMA 2.0 lb a.i./A + NIS 0.25% v/v	10 gal water minimum. Use only on NIS. Do not use a crop oil concentrate.	Postemergence to actively growing weeds using hooded or shielded application equipment.	Application should be made only to cotton that has reached a minimum height of 18 in and should have a minimum of 4 in of bark. Valor [®] SX application must be directed toward the lower 2 in of bark to avoid crop injury. Do not make a sequential application of Valor [®] SX within 30 days of first Valor [®] application. Do not apply within 60 days of harvest. Refer to the label for further instructions.

Table 8. Preharvest

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Many annual and perennial grasses and broad-leaf weeds.	Roundup [®] WeatherMax Refer to label for weed control rates. (glyphosate + surfactant) Monsanto	10–20 gal water by ground or 3–15 gal water by air.	Apply after sufficient bolls have developed to produce the desired yield of cotton. Applications before this time could affect maximum yield potential.	Applications of up to 44 oz product may be made over-the-top after 20% boll crack. Allow a minimum 7 days between application and harvest.

Table 9. Wick or Wiper Applications

<i>Weeds controlled</i>	<i>Product Product rate/A broadcast Herbicide common name</i>	<i>Spray volume per acre broadcast</i>	<i>Time to apply</i>	<i>Remarks</i>
Numerous annual and perennial grasses and broadleaf weeds.	Roundup® WeatherMax (glyphosate + surfactant) Monsanto	Mix 1.0 gal product in 2.0 gal water to prepare a 33% solution. Some wick applicators may require a less-concentrated solution.	When weeds are a minimum of 6 in above the crop. Better results are obtained when more of the weed is exposed. Do not wipe any closer than 2 in above desirable vegetation as injury may result.	Keep wiper surface clean. Weeds not contacted by the herbicide will not be affected. Do not operate at speeds greater than 5 mph. As weed density increases, reduce speed. Wiping a second time in opposite directions may improve control. Do not use wiper when weeds are wet. Repeat treatment may be necessary. Oversaturation of wiper may cause dripping which will injure crop. Mix only enough solution for one day's operation. Drain and flush with water after use of applicators.

For more information on weed management in cotton, consult these publications:

SCS-2004-02, *Liberty Link Cotton System*

SCS-1999-02, *Weed Resistance to Herbicides*

B-6081, *Herbicides: How they Work and the Symptoms they Cause*

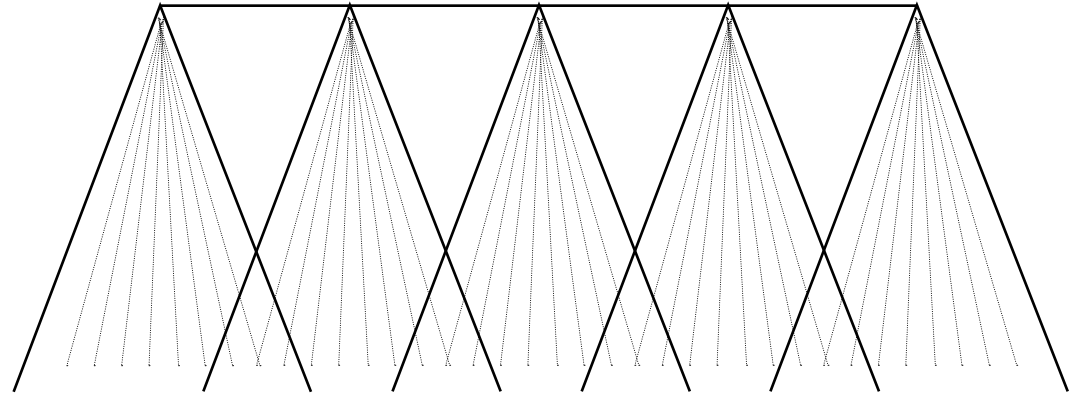


Table 10. Herbicides, Formulations and Manufacturers

<i>Trade name</i>	<i>Common name</i>	<i>Mode of action</i>	<i>Formulation</i>	<i>Manufacturer</i>
Assure II®	quizalofop	Acetyl CoA carboxylase inhibitor	4 lb/gal	DuPont
Caparol® 4L	prometryn	Photosynthesis inhibitor	2 lb/gal	Syngenta
Cobra®	lactofen	Protox inhibitor	4 lb/gal	Valent
Cotoran® 4L	fluometuron	Photosynthesis inhibitor	85 percent	Syngenta
Cotoran® Accu-Pak	fluometuron	Photosynthesis inhibitor	0.88 lb/gal	Syngenta
Cotton Pro® 4L	prometryn	Photosynthesis inhibitor	4 lb/gal	Makhteshim-Agan
Direx® 4L	diuron	Photosynthesis inhibitor	4 lb/gal	Griffin
Dual® Magnum	metolachlor	Long chain fatty acid inhibitor	8 lb/gal	Syngenta
Dual® II Magnum	metolachlor	Long chain fatty acid inhibitor	7.8 lb/gal	Syngenta
DSMA	DSMA	Unknown	3.6 lb/gal	UAP
Envoke®	trifloxysulfuron	Acetolactate synthase (ALS, AHAS) inhibitor	75 WG	Syngenta
Fusilade® DX	fluazifop	Acetyl CoA carboxylase inhibitor	2 lb/gal	Syngenta
Goal® 2 XL	oxyfluoren	Protox inhibitor	1.6 lb/gal	Dow AgroSciences
Gramoxone® Max	paraquat	Photosystem I electron diverter	3.0 lb/gal	Syngenta
Harmony Extra®	thifensulfuron-methyl tribenuron- methyl	Acetolactate synthase (ALS, AHAS) inhibitor	50 percent 25 percent	DuPont DuPont
Ignite® 280 SL	glufosinate-ammonium	Glutamine synthetase inhibitor	2.34 lb/gal	BayerCropScience
Karmex® DF	diuron	Photosynthesis inhibitor	80 percent	Griffin
Fluometuron	fluometuron	Photosynthesis inhibitor	4 lb/gal	Agrilience
MSMA	MSMA	Unknown	6 lb/gal	Several
Poast Plus®	sethoxydim	Acetyl CoA carboxylase inhibitor	1.0 lb/gal	Micro Flo
Prowl® 3.3 EC	pendimethalin	Microtubule assembly inhibitor	3.3 lb/gal	BASF
Prowl H ₂ O	pendimethalin	Microtubule assembly inhibitor	3.8 lb/gal	BASF
Roundup WeatherMax®	glyphosate	EPSP synthase inhibitor	5.5 lb a.i./gal	Monsanto
Select® 2 EC	Clethodim	Acetyl CoA carboxylase inhibitor	2 lb/gal	Valent
Sequence®	glyphosate	EPSP synthase inhibitor + long chain fatty acid inhibitor	2.25 lb/gal	Syngenta
	S-metolachlor	Acetolactate synthase (ALS, AHAS) inhibitor	3 lb/gal	Syngenta
Staple® LX	pyrithiobac	Photosynthesis inhibitor + acetolactate synthase (ALS, AHAS) inhibitor	3.2 lb/gal	DuPont
Suprend®	prometryn + trifloxysulfuron	Microtubule assembly inhibitor	80 WG	Syngenta
Treflan® 4L	trifluralin	Protox inhibitor	4 lb/gal	UAP
Valor® SX	flumioxazin		51 percent	Valent

Boom Sprayer Calibration

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



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 = $\frac{1}{128}$ of an acre).

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



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