

ESTIMATED LEVELS OF WEED CONTROL NORMALLY EXPECTED¹

Herbicides²	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Goosegrass	Fall panicum	Johnsongrass-seedling	Johnsongrass-rhizome	Bermudagrass	Nutsedge - purple	Nutsedge - yellow	Annual sedge	Cocklebur	Hemp Sesbania	Honeyvine milkweed	Annual morningglory	Pigweed	Prickly sida	Purslane	Smartweed	Nodding spurge	Spurred amoda	Velvetleaf	Sicklepod	Crop tolerance
Preplant																								
Pendimethalin	9	9	9	9	9	9	5	0	0	0	0	0	0	0	3	9	0	9	2	1	0	0	1	G
Trifluralin	9	9	9	9	9	9	6	0	0	0	0	0	0	0	3	9	0	9	2	1	0	0	1	G
Overlay (PPI + PRE) Treatment will control a broader spectrum of weeds but effectiveness on any given species will be no better than the highest rating for the best herbicide in the specific combination selected.																								
Preemergence																								
Command	9	9	9	9	8	9	3	-	-	-	-	6	4	-	5	7	9	9	8	8	9	10	0	F
Fluometuron	8	8	9	8	7	6	0	0	0	0	9	6	6	0	7	9	9	9	7	3	3	3	8	G
Cotoran + Dual	9	9	9	9	9	7	0	0	0	7	9	6	6	0	7	9	9	9	7	7	3	3	8	G
Diuron	7	8	8	8	7	6	0	0	0	0	9	4	4	0	7	9	6	9	7	6	2	7	5	G
Reflex	4	3	4	4	-	4	0	0	3	7	7	7	3	0	4	8	7	7	-	2	1	1	4	G
Staple LX	-	-	-	-	-	-	-	-	-	-	-	4	4	-	5	9	9	-	-	9	-	-	6	G
Solicam DF	8	8	9	8	7	7	2	2	4	4	9	3	3	0	5	7	9	9	6	7	8	7	4	G
Postemergence directed																								
Aim	0	0	0	0	0	0	0	0	0	0	0	7	6	0	8	8	6	-	-	6	-	10	0	G
DSMA or MSMA	7	8	8	4	7	8	5	0	6	6	6	9	2	1	3	3	2	3	1	0	0	0	3	G
Cobra	3	3	3	3	3	3	2	0	-	2	2	8	-	5	6	9	8	8	7	8	7	8	-	G
+ MSMA	8	8	8	8	7	9	5	0	6	6	6	9	7	5	9	9	8	9	7	8	7	8	5	F
Prometryn	7	7	7	7	7	7	-	-	1	1	-	6	6	-	8	8	7	-	-	-	-	-	-	G
+ MSMA	8	9	9	8	8	9	5	0	6	6	8	9	6	2	8	9	8	8	4	5	5	7	8	F
Fluometuron	6	6	6	6	6	6	-	-	1	1	-	5	4	-	7	6	5	-	-	-	-	-	-	G
+ MSMA	8	9	9	8	8	8	5	0	6	6	8	9	5	2	8	9	7	6	4	4	3	6	8	F
Goal	4	4	4	4	4	4	2	0	2	2	2	8	-	2	9	9	8	9	9	7	-	8	-	G
+ MSMA	8	8	8	8	7	9	5	0	6	6	6	9	7	2	9	9	8	9	9	7	5	8	8	F
Diuron	5	5	6	5	5	5	2	0	0	0	4	4	4	1	7	7	4	5	3	4	3	3	8	G
+ MSMA	8	9	9	8	8	9	5	0	6	6	8	9	5	2	8	9	7	7	4	4	4	4	8	F
Lorox/Linex	5	5	5	5	5	5	2	0	0	0	4	7	8	2	8	8	7	8	4	6	5	6	8	G
+ MSMA	8	9	9	8	8	9	5	0	6	6	8	9	7	2	9	9	9	8	4	6	5	7	8	G
Suprend	7	7	7	7	7	7	-	-	1	1	-	9	9	-	9	8	7	-	-	-	-	-	9	G
Postemergence over-the-top																								
Assure II	8	9	8	8	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
Dual Magnum	8	8	8	8	-	8	0	0	5	7	7	2	0	-	0	8	2	-	-	6	0	0	2	-
Envoke	2	2	2	2	-	7	5	0	7	7	-	9	9	-	9	7	2	-	-	-	-	-	9	F
Fusilade/Fusion	9	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
Poast Plus	9	9	9	9	9	9	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
Glyphosate/Roundup Ready	8	9	9	8	9	9	7	5	7	6	9	8	6	3	6	9	8	6	9	-	8	7	7	G
Ignite 280SL	8	8	8	8	-	8	2	-	4	4	-	8	9	-	9	7	8	-	-	-	9	-	9	E
Clethodim	9	9	9	9	8	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
Sequence	9	9	9	8	9	9	8	6	8	7	10	8	6	4	8	9	7	9	7	9	9	7	8	G
Staple	0	0	0	0	0	6	3	0	5	5	-	7	9	-	9	10	7	6	9	7	9	9	5	G
Layby - preemergence activity																								
Command	9	9	9	9	8	9	3	-	-	-	-	6	4	-	5	7	9	9	8	8	9	10	0	F
Layby Pro	6	6	6	6	6	6	1	0	0	0	0	5	5	0	7	7	6	7	5	5	4	5	8	G
Lorox/Linex	6	6	6	6	6	5	1	0	0	0	0	4	4	0	6	7	6	8	6	6	2	5	4	G
Valor	8	9	9	9	9	9	6	0	4	4	4	9	-	-	8	8	10	8	8	8	8	8	9	F

¹Rating scale: 0-3, none to slight; 4-6, fair; 7-8, good; 9-10, excellent; Ratings assume the herbicides are applied in the manner suggested in the guidelines and according to the label under optimum growing conditions. Crop tolerance rating scale: E - excellent; G - good; F - fair.
²See Glossary for trade names.

ROTATIONAL CROP RESTRICTIONS

Many herbicides used in cotton have planting restriction intervals for crops other than cotton. If a rotational crop is being considered for the year following cotton, the following table could assist in choosing the proper cotton herbicide for the current year. If a rotational crop is planted within the interval stated, or before the interval has expired, unacceptable injury to the rotational crop can occur.

Cotton herbicides	Rotation interval ¹					
	CORN	GRAIN SORGHUM	RICE	SOYBEANS	WHEAT	OTHER GRAINS
Assure II	120 d	120 d	120 d	none	120 d	120 d
Clethodim	6 d	30 d	30 d	none	30 d	30 d
Cobra	none	none	none	none	none	none
Command	9 m	9 m	9 m	none	12 m ²	12 m ²
Diuron (Direx, Karmex) band PRE or POE	4 m	4 m	4 m	4 m	4 m	4 m
band PRE + POE	spring	spring	1 y	spring	1 y	1 y
broadcast PRE	spring	spring	1 y	spring	1 y	1 y
broadcast PRE + band POE	spring	spring	1 y	spring	1 y	1 y
broadcast POE	spring	spring	1 y	1 y	1 y	1 y
DSMA	none	none	none	none	none	none
Dual Magnum	none	none	spring	none	4.5 m	4.5 m
Envoke	7 m	7 m	7 m	7 m	3 m	18 m
Firstshot	14	14	0	7	none	none ³
Fluometuron (Cotoran, Meturon, etc.)	6 m	6 m	6 m	6 m	6 m	6 m
Fusilade DX	60 d	60 d	60 d	none	60 d	60 d
Glyphosate	none	none	none	none	none	none
Goal	10 m	10 m	10 m	60 d	10 m	10 m
Gramoxone Inteon	none	none	none	none	none	none
Ignite 280SL	none	70 d	none	none	70	70
Lorox/Linex	none	none	4 m	none	4 m	1 y ⁴
MSMA	none	none	none	none	none	none
Poast Plus	none	none	none	none	none	none
Prowl H ₂ O	none	none	none	none	4 m	NS ⁵
Prometryn (Caparol, Cotton-Pro, etc.)	next y	next y	next y	next y	next y ⁶	next y ⁶
Soilcam DF	24 m	24 m	24 m	45 d	24 m	24 m
Staple LX	10 m ⁷	2 y	9 m	10 m	4 m	10 m ⁸
Trifluralin (Treflan, Trilin, Tri-4, etc.)	none	none	none	none	none	none
Valor	30 d ⁹	30 d ⁹	30 d ⁹	0 d	30 d ⁹	4–12 m

¹d, m, y, spring, fall, and ns indicate days after application, months after application, years after application, spring following application, fall following application, and next season, respectively. PRE and POE indicate preemergence and postemergence applications, respectively.

²Wheat may be planted for a cover crop at any time but cannot be harvested for food or feed or grazed if planted less than 9 months after treatment.

³Barley, triticale, and oats can be replanted immediately. Other grains require 45 days before planting.

⁴Barley, oats, and rye may be replanted after 4 months.

⁵Do not plant wheat or barley until next season if rhizome johnsongrass or red rice control or itchgrass suppression rates are applied.

⁶Wheat or small-grain crops may be planted for a cover crop the fall following prometryn application, but may not be harvested for feed or food.

⁷Corn may be planted 10 months after Staple LX application was made in cotton providing that the total amount of Staple LX from all applications does not exceed 3.8 fluid ounces per acre. No additional soil mixing is required beyond that normally performed for a production system.

⁸In addition to the 10-month interval, a successful field bioassay must be conducted. This requires a test strip of the rotational crop be grown to maturity.

⁹This applies to applications of 2 ounces per acre or less; additionally, 1 inch of rainfall or irrigation must occur between application and planting.

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
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Postharvest/Fallowbed/Preplant Foliar

Postharvest/fallowbed or preplant foliar herbicide applications are designed to provide residual control of winter annuals or burndown of existing vegetation. **Applications can be made during or after fall tillage, up to various time intervals prior to planting, depending on which herbicide is used.** Fall application of residual herbicides can reduce the need for spring tillage or spring burndown herbicides. However, exceeding maximum use rates in any 1 year is possible with certain herbicides. Also, fall application of most herbicides eliminates the possibility of fall cover crops becoming properly established. See pages 15 and 16 for expected levels of control for various weeds.

dicamba 0.188 to 0.25 lb/A	Clarity 4AS — 6 to 8 fl oz	Preplant for vegetation knockdown.	Cutleaf eveningprimrose, buttercup species, clovers, Pennsylvania smartweed, and other winter annual weeds.	Consult the label to determine rates for weeds and growth stages. Include nonionic surfactant at 0.25% v/v. If applied in the spring following a fall application the total amount applied cannot exceed 2 pounds of active ingredient per acre. The field must receive at least 1 inch of rainfall or overhead irrigation, and 15 days must pass before planting cotton after an application of Clarity. Consult the label for added restrictions following a fall application.
flumioxazin at 0.064 lb/A	Valor SX at 2 oz/A.	14 to 30 days depending on application rate and tillage system.	Provides some post-emergence activity on emerged weeds. Provides excellent residual control of most broadleaf weeds and suppression of annual grass weeds.	A spray-grade nitrogen (2 to 2.5 pounds per acre of AMS or 1 to 2 quarts per acre of 28 or 32% UAN) source can be added to spray mixture along with COC, methylated seed oil, or nonionic surfactant. Nitrogen addition should not replace spray adjuvant. When applying with a glyphosate formulation preformulated with a spray adjuvant, an additional spray adjuvant is not required.
glyphosate at 0.37 to 0.75 lb/A	See glyphosate table on pages 5-6 for rates.	After weed emergence up to 3 to 7 days before planting. Touchdown must be applied at least 35 days before planting.	Consult label for complete list of weeds controlled.	Refer to glyphosate formulation table on page 5 for surfactant/adjuvant recommendation for specific glyphosate formulation. Use the higher rate for larger weeds or heavy infestations. Use of flood-jet nozzles is not suggested. If tillage is intended after treatment, wait at least 3 days (7 days for rhizome johnsongrass). Cultivation before johnsongrass emergence will result in better control after glyphosate application. Avoid drift to nearby crops or areas not intended to be treated. Do not use with galvanized (zinc-coated) spray equipment.
MSMA at 2 lb/A	MSMA — 2.7 pt of a 6 lb per gal formulation in 10 to 20 gal water. Add 1 qt nonionic surfactant to each 100 gal of spray mix unless formulation contains surfactant.	After weeds emerge but before planting cotton.	Most annual grasses and cocklebur. Weak on most other broadleaf weeds. Top kill of johnsongrass.	This treatment is useful where planting was delayed and weeds have emerged. Control decreases in cool weather. Cotton may be planted immediately after spraying.
norflurazon at 1 to 2 lb/A	Solicam DF — 1.25 to 2.5 lb/A	Surface applied in fall after final disking or bed formation.	Annual bluegrass, chickweed, bittercress. Poor control of henbit and Carolina geranium.	Do not exceed broadcast rates of 1.25 pounds per acre for light soils, 1.9 pounds per acre on medium soils, or 2.5 pounds per acre on heavy soils in any 1 year.
paraquat at 0.625 to 1 lb/A	Gramoxone Inteon (2 lb/gal) — 2.5 to 4 pt/A. Add 1 qt surfactant per 100 gal water or 1% v/v COC. Minimum application volume of 10 gal/A by ground and 5 gal/A by air.	For burndown of existing vegetation before planting, but before weeds are 6 inches tall.	Top kill of most annual and perennial weeds and grasses. Perennials will regrow.	Paraquat is nonselective, so avoid spray drift onto desirable vegetation. Use the low rate on weeds under 2 inches tall.

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
pendimethalin at 0.75 to 1 to 1.5 lb/A	Prowl H ₂ O — 1.5 to 2 to 3 pt/A	After Oct. 18 up to 140 days prior to planting.	Most winter annuals and other small-seeded annuals.	Incorporate within 7 days of application if rainfall does not occur. Do not apply to wet soils or soils subject to prolonged flooding.
prometryn at 0.75 to 1 lb/A	4 lb/gal formulation — 1.5 to 2 pt/A with crop oil concentrate at 1 pt/A	Nov. 1 up to 30 days prior to planting.	Residual control of most winter annuals and postemergence control of small (less than 2 inches) existing vegetation.	Use the high rate for early applications and the low rate for applications nearer to planting. Use crop oil concentrate if vegetation is present at time of application. If weeds are larger than 2 inches, addition of Gramoxone or Roundup may improve control. Do not make multiple applications to exceed seasonal maximum rate for cotton.
oxyfluorfen at 0.25 to 0.5 lb/A	Goal 2XL — 1 to 2 pt/A in a minimum of 20 gal water by ground	Early fall up to 7 days prior to planting.	Residual control of most winter annuals, especially henbit. Postemergence control of henbit, common groundsel, and shepherdspurse up to 4-leaf stage with the addition of suitable surfactant. Fair control of chickweed.	Use the lower rate for short residual (late winter, early spring) application. Use the higher rate for long residual (fall, early winter) applications. Soil must be tilled to depth of 2 inches before planting unless treatment is 30 days or more prior to planting and unless at least three rainfalls of 0.25 inch or more have fallen since the application. For best pre-emergence activity, rainfall or irrigation should occur within 3 to 4 weeks after application, and soil should be left undisturbed during the period of desired weed control.
thifensulfuron + tribenuron at 0.25 to 0.4 oz/A	FirstShot — 0.5 to 0.8 oz/A with NIS at 1 qt per 100 gal water or 1% v/v COC	After weed emergence but 45 days prior to planting.	Postemergence control of broadleaf winter weeds such as curlydock, chickweed, henbit, and buttercup.	Apply to young, actively growing weeds. Allow 1 to 3 weeks after application for full control. May be mixed with other preplant herbicides to broaden weed spectrum.
trifloxysulfuron at 0.075 oz/A	Envoke 75 DF — 0.1 oz/A with 1 qt NIS per 100 gal of water	Minimum of 90 days before planting.	Excellent control of many broadleaf weed species, including henbit and horseweed.	If weeds are emerged at the time of application, tank mix with Envoke with Gramoxone Inteon or glyphosate. Do not exceed a total of 0.4 ounce per acre of Envoke from all applications in one season.
trifluralin at 1 to 1.25 lb/A	4 lb/gal formulation — 2 to 2.5 pt/A	Apply and incorporate any time between Oct. 15 and Dec. 31. May be left flat or bedded.	Annual bluegrass, chickweed, henbit, and other winter annuals.	Do not apply to wet soils or soils subject to prolonged flooding.

Preplant Incorporated

norflurazon at 1 to 2 lb/A	Solicam DF — 1.25 to 2.5 lb/A depending on soil texture.	Within 30 days of planting.	Most annual grasses and small-seeded broadleaf weeds. Good to excellent control of prickly sida and good control of spurred anoda.	Incorporate no deeper than 2 to 3 inches after beds have been reduced for planting. Do not use where johnsongrass or morningglory is a major problem. Incorporation offers potential advantages over surface application: (1) better control under early-season dry conditions; (2) better suppression of deep germinating weeds such as cocklebur and morningglory; and (3) better suppression of perennials such as nutsedge and bermudagrass. The application also may be split with half the rate preplant incorporated and the other half applied on the surface after planting.
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Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
pendimethalin at 0.48 to 1.9 lb/A	Prowl H ₂ O — 1 to 4 pt/A depending on soil texture and tillage system	Preplant incorporated — up to 60 days before planting; Preplant surface — up to 15 days before planting.	Residual control of most annual grasses and small-seeded broadleaf weeds, such as purslane and pigweed.	Use 1 to 2 pints per acre on coarse-textured soils (conventional or reduced tillage systems) and 2 pints per acre on coarse-textured soils under no-till systems. Use 2 pints per acre on medium-textured soils for conventional or reduced tillage and 3 pints per acre in no-till. Use 3 pints per acre on fine-textured soils in conventional or reduced tillage and 4 pints per acre in no-till. Incorporate 1 to 2 inches deep immediately after application for best results. When making band applications, avoid removal of treated soil from the seedbed during incorporation and planting.
trifluralin at 0.5 to 0.75 to 1 lb/A	4 lb/gal formulation — 1 to 1.5 to 2 pt or 5 lb/gal formulation— 0.8 to 1.2 to 1.6 pt in 5 gal water by air or 10 gal water by ground	Any time after Jan. 1 to immediately before planting.	Most annual grasses and some small-seeded broadleaf weeds, such as pigweed and purslane.	Incorporate 1 to 2 inches deep immediately after application for best results. A 30% loss can occur if incorporation is delayed 24 hours. When making band applications, avoid removal of treated soil from the seedbed during incorporation and planting.

Preemergence

Preemergence herbicide applications should be made after planting but before weed or crop emergence. Avoid planting cotton seed less than 0.5 inch deep to avoid excessive injury during periods of heavy rainfall. Substituted-urea herbicides such as fluometuron or diuron may interact when used in combination with organophosphate insecticides at planting, resulting in cotton injury. **Use of an organophosphate insecticide, in-furrow, is mandatory when applying clomazone preemergence.**

clomazone at 0.5 to 1 lb/A	Command 3 ME at 1.33 to 2.67 pt/A	At planting.	Excellent control of annual grasses and many small-seeded broadleaf weeds, except pigweed. Use low rate when only velvetleaf control is desired. Addition of fluometuron at recommended rates improves morning-glory and cocklebur control.	Use an organophosphate insecticide, in-furrow, to prevent cotton injury! Failure to do so will result in severe cotton injury and stand loss. These insecticides may, however, cause injury when used with fluometuron or diuron. Clomazone has a high potential for off-site movement by drift and/or volatility. Do not apply within 1,200 feet of residential areas, unsafened cotton, horticultural crops, and other sensitive species. Do not apply during periods of high winds in excess of 10 mph and/or expected heavy rainfall. Apply to dry soil when potential for drift is low. Use low pressure and drift control agents where possible.
diuron at 0.5 to 1.0 to 1.6 lb/A	4 lb/gal liquid formulation — 1 to 2 to 3.2 pt in 10 to 20 gal water	At planting.	Most annual grasses and small-seeded broadleaf weeds. Fair to good control of prickly sida and morningglory.	If stand failure occurs, cotton may be replanted through the treated band with minimum disturbance of the treated soil. In a single season, do not exceed 0.8 pound of active ingredient on loamy sand, 1.2 pounds on sandy loam, 1.6 pounds on clay loam, or 2.2 pounds on clay. Injury may occur if used with soil-applied organophosphate pesticides. Rebed only after thorough tillage.
fluometuron at 0.75 to 1.5 to 2 lb/A	4 lb/gal formulation — 0.75 to 1.5 to 2 qt	At planting.	Most annual grasses and small-seeded broadleaf weeds. Good to excellent control of prickly sida and morningglory.	If stand failure occurs, cotton may be replanted through the treated band with minimum disturbance of the treated soil. Injury may occur if used with soil-applied organophosphate pesticides. Rebed only after thorough tillage.

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
fluometuron at 1 to 1.5 to 2 lb/A + metolachlor at 0.75 to 1 to 1.33 lb/A or S-metolachlor at 0.48 to 1.27 lb/A	Cotoran 4L — 2 to 3 to 4 pt + Parrlay — 0.75 to 1 to 1.33 pt/A or Dual Magnum — 0.5 to 1.33 pt/A	At planting.	Most annual grasses and small-seeded broadleaf weeds. Good to excellent control of prickly sida and morning-glory. Addition of Parrlay or Dual improves control of annual grasses, spurge, and yellow nutsedge.	Plant seed at least 1 inch deep to reduce possibility of injury. Use the high rate of Dual or Parrlay on fine-textured soils containing appreciable clay. If stand failure occurs, cotton may be replanted through the treated band with minimum disturbance of the treated soil or the area may be reworked in several ways before replanting. Rebed only after thorough tillage.
fomesafen at 0.25 to 0.375 lb ai/A	Reflex at 1 to 1.5 pt/A	At planting on coarse textured soils only (sandy loam, loamy sand, sandy clay loam).	Control or suppression of broadleaf, grass, and sedge weeds. Good to excellent control of morningglory, prickly sida, pigweed, and yellow nutsedge.	Use a minimum of 10 gallons per acre spray volume. Rainfall within 7 days of application is necessary for activation. Some cotton injury can occur if rain falls during or soon after cotton emergence. Do not apply more than 1.5 pints per acre during the growing season.
norflurazon at 1 to 1.5 to 2 lb/A	Solicam DF — 1.25 to 1.9 to 2.5 lb in 10 to 20 gal water	At planting.	Most annual grasses and small-seeded broadleaf weeds. Good to excellent control of prickly sida, and good control of spurred anoda. Inadequate control of morningglory.	If stand failure occurs, cotton, soybeans, or peanuts may be replanted through the treated band with minimum disturbance of the treated soil, or the area may be reworked. Rebed only after thorough tillage. Norflurazon also may be applied preplant incorporated or as a split application with half preplant incorporated and the other half preemergence. See the preplant incorporated section.
pendimethalin at 0.5 to 0.75 to 1 lb	Prowl H ₂ O 3.8L — 1 to 1.5 to 2 pt/A	Within 2 days after planting	Most grasses from seed and some small-seeded broadleaf weeds, such as pigweed and purslane.	Rainfall or overhead irrigation is needed within 7 days for activity. Seedling diseases, cold weather, excessive moisture, shallow or deep planting, low or high soil pH, high soil salt concentration, or drought can weaken seedlings and increase the possibility of crop damage.
pyrithiobac at 0.0325 to 0.0525 lb ai/A	Staple LX at 1.3 to 2.1 oz/A.	At planting.	Spurge, pigweed, and prickly sida.	Do not use on coarse soils such as sands or loamy sands.

Postemergence — directed

Many of the suggested postemergence treatments include MSMA with another herbicide for broader spectrum weed control. Costs can be reduced by omitting the MSMA where nutsedge, cocklebur, or grasses are not a problem. When omitting MSMA in the spray mixture, be sure to add surfactant.

Use of the arsenical herbicides (DSMA and MSMA) is limited to two applications whether used alone or in combination with other herbicides. Timely directed applications are preferable to over-the-top applications because of better weed control and less cotton injury. **DO NOT APPLY DSMA OR MSMA AFTER FIRST BLOOM.** A number of instances of MSMA/DSMA resistance in common cocklebur have been documented throughout Mississippi. See page 3 for more information.

3-inch cotton or larger

DSMA at 3.6 lb/A or MSMA at 2 lb/A	DSMA — 8 pt of a formulation containing 3.6 lb/gal DSMA hexahydrate equivalent in 20 gal water or MSMA — 2.7 pt of a 6 lb/gal formulation in 20 gal water	Apply once or twice after the smallest cotton reaches a height of 3 inches.	Most annual grasses, susceptible cocklebur, and some other annual broadleaf weeds. Nutsedge and small johnsongrass plants will be topkilled. Combinations with other herbicides more effective on goosegrass than when used alone.	DSMA is preferred for the first application when cotton is small or stressed from adverse weather, disease, thrips, etc. Do not apply after first bloom. Addition of fluometuron or prometryn will broaden spectrum of weeds controlled. This treatment is more effective during hot, dry periods than in cool, wet periods. For both DSMA and MSMA, add 1 quart of surfactant per 100 gallons of spray mix unless the formulation contains surfactant.
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Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
fluometuron at 0.8 lb/A (or plus DSMA or MSMA, see above)	4 lb/gal formulation — 0.8 qt in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix.	Apply once or twice when cotton is 3 to 6 inches tall.	Annual grasses and most seedling broadleaf weeds.	This treatment is relatively safe on young cotton and also provides residual preemergence weed control.
prometryn at 0.5 lb/A (or plus DSMA or MSMA)	4 lb/gal formulation — 1 pt in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix.	Apply once or twice after cotton is 3 inches tall.	Most seedling broadleaf weeds including prickly sida if sprayed before 2 inches tall. Addition of MSMA or DSMA improves grass control.	Do not apply at the 3-inch stage if cotton is stressed. Provides some residual preemergence control in addition to killing emerged weeds.
6-inch cotton or larger (in addition to herbicides listed for smaller cotton)				
carfentrazone 0.012 - 0.024 lb/A	Aim — 0.8 to 1.6 oz 2EC	Cotton should be at least 6 inches tall with 5 to 6 nodes.	Morningglories, pigweed, and velvetleaf.	Applications to shorter than 6 inches must be made with cotton hooded or shielded sprayer equipment to completely avoid contact with cotton plants. Directed spray equipment should position nozzles a minimum of 3 to 4 inches above the soil, with nozzles directed underneath the crop canopy. Do not allow spray solution to contact cotton foliage or green stem tissue. Coverage is essential for good control. For control of additional broadleaf weeds and grasses, Aim herbicide may be tank mixed with other herbicides registered for use in cotton. Aim may be tank mixed with glyphosate, Staple LX, Caparol, Cotoran (or other products containing Fluometuron), Karmex, MSMA, or other herbicides registered for cotton postdirected and/or layby applications. Do not apply more than 3.2 ounces of 2EC total per season by postdirected and layby applications. Use a crop oil concentrate at 1% v/v (1 gallon per 100 gallons of spray solution).
diuron at 0.2 to 0.5 lb/A (or plus DSMA or MSMA, see page 21)	80% formulation — 0.25 to 0.62 lb or 4L formulation 0.4 to 1 pt in 20 gal water. Add 1 qt surfactant to each 100 gal of spray mix.	Apply once or twice after cotton is 6 inches tall.	Most seedling broadleaf weeds. Addition of MSMA or DSMA improves grass control.	Apply as directed spray. Diuron plus MSMA provides better weed control under a wide range of growing conditions than either herbicide alone. Use the higher rate of diuron as cotton and weeds become larger. The higher rate provides some residual preemergence control in addition to killing emerged weeds.
fomesafen at 0.25 to 0.375 lb ai/A	Reflex at 1 to 1.5 pt/A in a minimum of 10 gal water. Add 1% v/v crop oil concentrate or 1 qt surfactant for each 100 gal of spray mix.	Apply to emerged cotton.	Control or suppression of broadleaf, grass, and sedge weeds. Good to excellent control of morningglory, pigweed, common ragweed, hemp sesbania, and Pennsylvania smartweed.	Apply as a directed spray to cotton at least 6 inches tall. Use shielded or hooded applications on 6- to 12-inch cotton. Contact with cotton foliage can cause significant injury. Adjust nozzles to provide complete coverage of weeds. Do not apply with liquid nitrogen. Do not apply within 70 days of cotton harvest. Do not apply more than 1.5 pints per acre per season.
lactofen at 0.2 lb/A (or plus DSMA or MSMA, see page 21)	Cobra 2E — 0.8 pt in 20 gal water. Add 0.5 to 1 pt/A crop oil concentrate for cotton 6 to 8 inches tall or 1 to 2 pt/A for cotton taller than 12 inches.	Apply once or twice after cotton is 6 inches tall.	Most small broadleaf weeds. Addition of MSMA or DSMA improves grass control.	For best results, spray weeds before 3-inch height. Use as a well directed basal spray to minimize cotton injury. Height differential between cotton and weeds is important since good spray coverage on the weeds is necessary for control.

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
linuron 0.5 to 0.75 lb/A	1 to 1.5 pt of Linex 4L	When cotton is at least 8 inches tall and weeds are not over 2 inches tall.	Annual grass and broadleaf species.	Linex 4L or Lorox 50DF should be applied as a directed spray with nozzles adjusted to minimize contact to cotton. One pint of surfactant may be added for each 25 gallons of spray mixture if emerged weeds are present. If a second application is needed, use the same rate and apply 1 week or more after first treatment. Do not use this treatment on Pima varieties. Do not feed forage or gin trash from treated areas to livestock. Do not graze treated fields.
linuron + diuron 0.25 + 0.25 to 0.375 + 0.375 lb/A	LaybyPro 4L 1 to 1.5 pt/A	When cotton is 6 to 8 inches tall.	Annual grass and broadleaf weeds.	Apply as a directed spray. Use the lower rate on 6-inch cotton and the higher rate on 8-inch cotton or taller. For control of emerged weeds, add a nonionic surfactant at 0.5% v/v or a crop oil concentrate at 1% v/v. Do not use a crop oil concentrate on cotton that is less than 12 inches in height.
oxyfluorfen at 0.25 or 0.5 lb/A (or plus DSMA or MSMA, see page 21)	Goal 2XL — 1 or 2 pt in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix.	After cotton is 6 inches tall and before weeds have more than 4 true leaves.	Most seedling broadleaf weeds including prickly sida, morning-glory, and hemp sesbania. Addition of MSMA or DSMA improves grass control.	Good spray coverage on the weeds is essential for control. Oxyfluorfen is most effective under optimum growing conditions. Use the higher rate on larger weeds or under drought conditions.
prometryn + trifloxysulfuron 0.8 to 1.2 lb/A + 0.007 to 0.0105 oz/A	Suprend 80DF 1 to 1.5 lb/A	When cotton is at least 6 inches tall.	Controls morningglories, velvetleaf, smooth pigweed, tall waterhemp, sicklepod, cocklebur, and hemp sesbania while providing suppression of various other broadleaf and grass species.	For best results, apply to weeds less than 6 inches in height. Do not apply within 60 days of harvest. Use postdirected application methods to provide coverage of weed foliage while adjusting nozzles to minimize contact of cotton foliage with spray or drift. Do not exceed a total of 2.7 pounds per acre of Suprend per season. Do not exceed a total of 0.0188 pound of active ingredient of trifloxysulfuron per acre per season in all applications of Suprend or Envoke. Application of Suprend to soils with pH higher than 7.5 may increase the potential for rotational crop injury. Unacceptable cotton injury may occur if you tank-mix Suprend with malathion, profenofos (Curacron) or emamectin-benzoate-containing insecticides (Denim), acephate, Bidrin, Capture, or Karate. A nonionic surfactant at 0.25% v/v or 1% v/v of COC should be used with Suprend.

Postemergence — Over-the-top

clethodim at 0.0625 to 0.125 lb/A	Select Max — 12 to 16 oz/A when applied alone or 9 to 16 oz/A when applied with glyphosate (see table below) in 10 to 30 gal/A by ground or 3 gal/A by air. Add 1 qt/A crop oil concentrate.	Apply to actively growing grasses up to 60 days before harvest. See table below.	Annual and perennial grasses.	Apply over the top or semi-directed to cover grasses. Adjust spray volume and pressure to ensure thorough coverage of grass. Do not apply more than 32 ounces per acre per season. Do not apply within 1 hour of anticipated rainfall. Do not apply to stressed grasses. Do not cultivate within 7 days of application.
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Kind of grass	Weed height (in)	Rate (fl oz/A)
Seedling johnsongrass	4-10	12
Volunteer corn	4-18	12
Red rice	1-3	12
Most annual grasses	2-6	12
Rhizome johnsongrass	12-24	16
2nd application	6-10	12
Bermudagrass	3	16
2nd application	3	16

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks				
DSMA at 1.2 to 3.2 lb/A or MSMA at 0.75 to 1 lb/A	1 to 1.3 pt of a 6 lb/gal MSMA formulation or 1.6 to 4.3 pt of a 3.6 lb/gal DSMA formulation in 10 to 20 gal water. Add 1 qt non-ionic surfactant to each 100 gal of spray mix unless formulation contains surfactant.	Apply when cotton is 3 to 6 inches tall. Do not apply after first square or when cotton is more than 6 inches tall.	Excellent control of susceptible cocklebur and small annual grasses. Poor control of hemp sesbania and prickly sida.	Use as a salvage treatment only. Possible burning and reddish color of foliage may appear. May delay cotton maturity. Do not tank mix with other herbicides. Apply only to healthy cotton under favorable growing conditions.				
fluometuron at 0.5 to 1 lb/A	4 lb/gal formulation — 1 to 2 pt. Add 1 qt surfactant for each 100 gal of spray mix.	Apply after cotton reaches 3 inches and weeds are as small as possible.	A wide spectrum of annual weed seedlings controlled or suppressed to allow more effective directed sprays later.	Use as a salvage treatment only. Crop injury may occur. Apply only to healthy cotton under favorable growing conditions. Use the higher rate on vigorously growing cotton and bigger weeds.				
fluazifop at 0.094 to 0.188 lb/A	Fusilade DX — 0.375 to 0.75 pt in a minimum of 5 gal water by air or ground equipment. Add either a crop oil concentrate at 1% or a surfactant at 0.25%.	Apply to actively growing grasses. See table below.	Most annual grasses, rhizome johnsongrass, and bermudagrass. See table below.	Apply over the top of cotton or as a semi-directed spray to the grass at rates given in the table below. Adjust spray volume and pressure to ensure thorough coverage of grass foliage. For annual grasses, re-treat if needed for late emerging grasses. If regrowth of johnsongrass or bermudagrass occurs following the first application, a second application can be made as indicated in the table. Do not apply more than 48 ounces per acre per season. Do not apply after boll set or within 90 days of harvest.				
					Kind of grass	Size (in)	Rate lb ai/A	Rate oz/A
					Seedling johnsongrass	2-8 tall	0.094	6
					Goosegrass	2-4 tall	0.125	8
					Barnyard and crabgrass	1-2 tall	0.188	12
					Broadleaf signalgrass	2-4 tall	0.188	12
					Rhizome johnsongrass	8-18 tall	0.188	12
					2nd application	6-12 tall	0.125	8
					Bermudagrass	4-8 runners	0.188	12
					2nd application	4-8 runners	0.125	8
metolachlor at 0.75 to 1.33 lb/A or s-metolachlor at 0.48 to 1.27 lb/A	Parrlay — 0.75 to 1.33 pt/A or Dual Magnum — 0.5 to 1.33 pt/A	Apply when cotton is 3 to 12 inches tall.	Preemergence control of annual grasses and small-seeded broadleaf weeds.	This treatment will not provide postemergence control of emerged species. Do not apply within 100 days of harvest.				
pendimethalin at 0.26 to 0.53 lb/A	Prowl H ₂ O — 1 to 2 pt/A	Before weed emergence.	Preemergence control of annual grasses and small-seeded broadleaf weeds.	This treatment will not provide postemergence control of emerged species. When tank-mixed with Roundup PowerMax or Roundup WeatherMax, AMS is required.				

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks																																				
pyrithiobac at 0.065 to 0.095 lb ai/A	Staple LX at 2.6 to 3.8 oz/A. Add nonionic surfactant at 1 qt per 100 gal of spray mix.	From 1-true-leaf cotton up to 60 days before harvest; after weed emergence up to 1- to 4-inch weeds, except sicklepod and prickly sida.	Excellent postemergence control of most broadleaf weeds. Poor grass control.	Optimum control depends upon proper timing, thorough coverage of weed foliage, and a well-designed preemergence program. Do not tank mix with insecticides containing malathion. Staple antagonizes grass control with postemergence grass herbicides. Adequate control can be achieved by treating grass 3 to 5 days before or 5 to 7 days after Staple application. Apply as a “sloppy” post-directed spray when applying Staple with MSMA or DSMA. Do not tank mix with Dual as a postemergence treatment. Do not exceed 3.8 ounces per acre in a single application or 5.1 ounces per acre per season. Do not apply within 60 days of harvest. If the rate does not exceed 3.8 ounces per acre, corn may be planted 10 months after the last application. Apply to prickly sida up to 1 inch tall for adequate control. See label for sicklepod program.																																				
pyrithiobac + glyphosate 0.0325 to 0.095 lb ai/A + 0.77 lb ae/A	Staple LX at 1.3 to 3.8 oz/A plus glyphosate formulation as shown in table on page 5	May be applied over the top of Roundup Ready through the 4-true-leaf stage and over the top of Roundup Ready Flex until 60 days before harvest.	Excellent postemergence control of most broadleaf, grass, and sedge weeds.	See the previous instructions for pyrithiobac. For over-the-top application to Roundup-Ready Flex cotton, use only glyphosate formulations approved for Roundup Ready Flex varieties.																																				
quizalofop at 0.0313 to 0.0625 lb/A	Assure II — 5 to 10 oz/A in a minimum of 10 gal/A by ground or 2 gal/A by air. Add crop oil concentrate at 1% v/v or nonionic surfactant at 0.25% v/v. Use crop oil at 0.5% v/v for aerial application. Use only petroleum-based crop oils.	Apply to actively growing grasses any time prior to 80 days before harvest. See table below.	Annual and perennial grasses; excellent control of johnsongrass.	Apply over the top or semi-directed to cover grasses. Adjust pressure and spray volume to ensure thorough coverage of grass. Do not apply using crop-origin (vegetable) oils as an adjuvant or carrier. Do not apply more than 18 fluid ounces per season. Do not apply within 24 hours of a postemergence broadleaf herbicide. Do not cultivate within 7 days of application.																																				
			<table border="1"> <thead> <tr> <th>Kind of grass</th> <th>Weed height (in)</th> <th>Rate (fl oz/A)</th> </tr> </thead> <tbody> <tr> <td>Seedling johnsongrass</td> <td>2-8</td> <td>5</td> </tr> <tr> <td>Volunteer corn</td> <td>8-18</td> <td>5</td> </tr> <tr> <td>Most annual grasses</td> <td>2-6</td> <td>7</td> </tr> <tr> <td>Barnyard grass</td> <td>2-6</td> <td>8</td> </tr> <tr> <td>Broadleaf signalgrass</td> <td>2-6</td> <td>8</td> </tr> <tr> <td>Crabgrass</td> <td>2-6</td> <td>8</td> </tr> <tr> <td>Red rice</td> <td>1-4</td> <td>9</td> </tr> <tr> <td>Rhizome johnsongrass</td> <td>10-24</td> <td>10</td> </tr> <tr> <td>2nd application</td> <td>6-10</td> <td>7</td> </tr> <tr> <td>Bermudgrass</td> <td>3</td> <td>10</td> </tr> <tr> <td>2nd application</td> <td>3</td> <td>7</td> </tr> </tbody> </table>	Kind of grass	Weed height (in)	Rate (fl oz/A)	Seedling johnsongrass	2-8	5	Volunteer corn	8-18	5	Most annual grasses	2-6	7	Barnyard grass	2-6	8	Broadleaf signalgrass	2-6	8	Crabgrass	2-6	8	Red rice	1-4	9	Rhizome johnsongrass	10-24	10	2nd application	6-10	7	Bermudgrass	3	10	2nd application	3	7	
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Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks				
sethoxydim at 0.19 to 0.28 lb/A	Poast Plus — 1.5 to 2.25 pt in a minimum of 5 gal water by air or ground equipment. Add a crop oil concentrate at 1 qt/A with aerial and ground applications.	Apply to actively growing grasses. See table below.	Most annual grasses, seedling and rhizome johnsongrass, and bermudagrass.	Apply over the top of cotton or as a semi-directed spray to the grass. Adjust spray volume and pressure to ensure thorough coverage of grass foliage. Apply at rates and growth stages given in the table below. If more annual grasses emerge after the first application, then additional applications can be made. A second application can be made to control regrowth of johnsongrass and bermudagrass. Do not apply within 40 days of harvest.				
					Kind of grass	Size (in)	Rate ai/A	Rate pt/A
					Crabgrass and goosegrass	up to 6 tall	0.19	1.5
					Other annual grasses including seedling johnsongrass	up to 8 tall	0.19	1.5
					Rhizome johnsongrass*	15-20 tall	0.19	1.5
					2nd application	6-10 tall	0.19	1.5
					Bermudagrass	plant diameter 6 or less	0.28	2.25
2nd application	regrowth 1-4 long	0.19	1.5					
*If spray volume is more than 10 gallons per acre, increase the rate on johnsongrass at first application to 2.25 pt/A.								
trifloxysulfuron 0.08 - 0.11 oz	Envoke 75 DG 0.1 - 0.15 oz	When cotton has reached a minimum of 5 true leaves.	Morningglories, sicklepod, pigweed, and nutsedge.	Envoke may cause temporary yellowing or stunting of cotton plants, but they usually recover quickly. A nonionic surfactant should be added to the spray solution at 0.25% v/v. Do not apply in combination with any other herbicide when applied over-the-top. Envoke may be tank mixed with other products when applied as a post-directed spray (See label for specifics). Do not tank mix with insecticides containing malathion, profenofos, or emamectin-benzoate or unacceptable injury may occur. Envoke antagonizes grass control with post-emergence grass herbicides. Do not apply these products within 7 days of Envoke application.				
Cultivation —use so that the soil moved by it will not interfere with subsequent use of postemergence herbicides. Cultivation will not normally detract from the control obtained from previously applied herbicides, but frequently will offer an economical means of extending or completing control established by herbicides. Deep cultivation (more than 2 inches) usually is not necessary and may damage the crop.								
Liberty Link Varieties Only								
glufosinate at 0.4 to 0.78 lb ai/A	Ignite 280SL at 22 to 29 oz/A. Single application rate can be as high as 43 oz/A.	Apply to tolerant cotton from emergence to early-bloom. Weeds should not exceed 3 to 6 inches.	Excellent control of cocklebur, hemp sesbania, and morning-glory species. Good control of sicklepod and some pigweed species.	For use only in Liberty Link cotton. Ground application should be applied in a minimum of 15 gallons of spray mix. Do not apply more than 72 to 87 fluid ounces per acre in a single growing season. The maximum total application rate is dependant upon whether Ignite was applied at burndown, as well as the application rate at that time. Do not apply within 70 days of harvest.				

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
Roundup-Ready Varieties Only				
glyphosate at 0.375 to 0.75 lb ae/A	See glyphosate table on pages 5-6 for rates.	After weed emergence but before cotton reaches 4-leaf stage.	Postemergence control of most annual broadleaf and grass weeds, including johnsongrass. A well-designed preemergence program is recommended for optimum control.	For use only on Roundup-ready cotton. Do not apply over the top beyond 4-leaf stage. Allow two nodes of growth and 10 days between sequential applications. Do not mix with surfactants. Topical applications beyond the 4th leaf stage reduces early season fruit retention. Apply as a postdirected spray after 4-leaf stage. Postdirecting does not ensure tolerance. Use precision with postdirect applications, and minimize cotton contact with spray solution. Multiple applications without allowing sufficient growth between treatments and/or improper application causes abnormal fruiting patterns and yield losses.
s-metolachlor + glyphosate acid at 0.94 to 1.33 lb/A + 0.70 to 0.98 lb/A	Sequence 2.5 to 3.5 pt/A	Make postemergence applications from 3-inch cotton up to the 4-leaf stage.	Postemergence control of most annual broadleaf and grass weeds. Preemergence control of annual grasses and small-seeded broadleaf weeds.	For use only in Roundup-Ready Cotton. Do not apply beyond the 4-leaf stage of cotton development as severe injury, including yield loss, could occur. Do not exceed 2.5 pints per acre of Sequence in a single application, and do not exceed 3.5 pints per acre in a season. Do not apply within 100 days of harvest.

Roundup-Ready Flex Varieties

glyphosate at 0.375 to 1.12 lb ae/A	See glyphosate table on pages 5-6 for rates.	After weed emergence. May be applied to Roundup Ready Flex Cotton until 7 days prior to harvest.	Postemergence control of most annual broadleaf and grass weeds, including johnsongrass. A well-designed residual herbicide program is recommended for optimum control and resistance management.	For use only on Roundup-Ready Flex Cotton. Drift of this product from applications made to Roundup Ready Flex Cotton onto adjacent fields of post-4-leaf (node) Roundup-Ready cotton may cause extensive injury including boll loss, delayed maturity, and/or yield loss. Do not apply at rates above 32 fluid ounces per acre. In-crop application rates above 22 fluid ounces per acre made alone or with the addition of other crop chemical products containing surfactant may cause a crop response including leaf speckling or leaf necrosis. From cracking until 60% open bolls, up to 4 quarts may be applied. The maximum allowed from 60% open bolls until 7 days prior to harvest is 44 fluid ounces per acre. The maximum allowed per year, including preplant burndown applications, is not to exceed 5.3 quarts per acre.
s-metolachlor + glyphosate acid at 0.94 to 1.33 lb/A + 0.70 to 0.98 lb/A	Sequence — 2.5 to 3.5 pt/A	Make postemergence applications from 3-inch to 12-inch cotton.	Postemergence control of most annual broadleaf and grass weeds. Preemergence control of annual grasses and small-seeded broadleaf weeds.	This treatment is for use only on Roundup-Ready Flex Cotton. Do not exceed 2.5 pints of Sequence per acre in a single application. Do not exceed 3.5 pints per acre in a season. Do not apply within 100 days of harvest.

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks																
Spot Treatment																				
clethodim	Select Max — 12 to 16 oz/A when applied alone or 9 to 16 oz/A when applied with glyphosate. Include 1% COC when applying Select Max alone.	Apply to actively growing grasses up to 60 days before harvest.	Annual and perennial grasses.	Spray to wet foliage but not to point of runoff.																
fluazifop	Fusilade DX — 1% + 0.25% surfactant or 1% crop oil concentrate. See table below.	Apply to all actively growing grasses.	Johnsongrass and bermudagrass.	Apply to 8- to 18-inch johnsongrass or bermudagrass up to 3 inches tall before runners are 8 inches long. Spray grass to wet all foliage but not to the point of runoff. Do not apply more than 48 ounces per acre per season. Do not apply after boll set or within 90 days of harvest.																
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glyphosate spray	glyphosate — 1% solution in water for most weeds, including johnsongrass. Increase to 2% solution for harder-to-control perennials, such as bermudagrass.	Spray to wet foliage of weeds before cotton bolls open.	Johnsongrass, bermudagrass, trumpetcreeper, and most other emerged annual and perennial weeds.	Treatment is most effective on large, actively growing weeds. Conventional cotton sprayed with herbicide solution will be severely injured or killed. Avoid windy conditions and high pressure to minimize cotton injury. Repeat treatments may be necessary to control weeds regenerating from underground parts or seed. See the label for details.																
glyphosate rope wick	glyphosate — 1 gal + 2 gal water. Quantity used per acre will vary depending on density of weeds. Do not add surfactant to the herbicide solution.	Apply when johnsongrass is at least 18 inches tall and 8 inches taller than crop plants.	Johnsongrass.	Use rope wick made of polyester over acrylic. Position wick bar 2 to 4 inches above crop plants to avoid contact with herbicide-laden rope. Repeat application as needed to control johnsongrass that later grows above crop canopy. Treatments may be applied in conjunction with tillage of crop. Crop will be injured if the herbicide comes in contact with the foliage by dripping or rubbing. Keep ground speed under 5 mph, and reduce speed as weed density increases.																
quizalofop	Assure II — 0.375% + 1% v/v crop oil concentrate or 0.25% v/v non-ionic surfactant	Apply to actively growing grasses up to 80 days before harvest.	Annual and perennial grasses.	Treat plants on a spray-to-wet basis insuring good coverage.																
sethoxydim	Poast Plus — 1.5% + 1% crop oil concentrate. See table below.	See table below.	Bermudagrass and johnsongrass.	Mix as shown in table below. Spray grass to wet all foliage but not to the point of runoff. Spray actively growing foliage when johnsongrass is 15 to 20 inches tall and bermudagrass plants do not exceed 6 inches in diameter. Do not apply within 40 days of harvest.																
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Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
Layby				
carfentrazone 0.012 - 0.024 lb/A	Aim — 0.8 to 1.6 oz 2EC	Layby applications of Aim or Aim tank mixtures at later growth stages may be made when cotton is at least 12 inches tall with sufficient bark development and height differential between bottom leaves and soil.	Morningglories, pigweed, and velvetleaf.	Spray solution should be directed at the base of cotton plants for minimal contact with green stem tissue or foliage while maintaining maximum contact with broadleaf weeds that are at appropriate treatment size. Do not allow spray solution to contact cotton foliage or green stem tissue. Coverage is essential for good control. For control of additional broadleaf weeds and grasses, Aim herbicide may be tank mixed with other herbicides registered for use in cotton. Aim may be tank mixed with glyphosate, Staple LX, Caparol, Cotoran (or other products containing Fluometuron), Karmex, MSMA, or other herbicides registered for cotton postdirected and/or layby applications. Do not apply more than 3.2 ounces of 2EC total per season by postdirected and layby applications. Use a crop oil concentrate at 1% v/v (1 gallon per 100 gallons of spray solution).
clomazone 0.75 - 1 lb/A	2 to 2.67 pt/A	Command 3ME may be applied as a postemergence directed spray at layby when cotton has at least 8 nodes.	Annual grasses and several broadleaf weeds. Command provides only pre-emergence control of key grasses and broadleaf weeds. If weeds have already emerged, either cultivation or an appropriate tank mixture will be required to achieve the desired layby weed control.	Command may be applied alone, or as a tank-mix combination, with ground equipment such as postdirected sprayers, layby sprayers, or hooded sprayers. Adjust spray equipment to minimize spray contact with cotton leaves and to insure that spray is applied to the soil in a uniform manner. Severe bleaching will occur to those cotton leaves sprayed with Command. Do not spray Command over the top of cotton. The use of an organophosphate insecticide is not required when Command is applied as a layby treatment after cotton plants have at least eight nodes. Do not apply Command within 65 days of harvest. Do not apply Command 3ME herbicide as a layby treatment if the product has already been applied as a planting time application. Do not apply more than 1 pound of active ingredient per acre. Offsite movement of spray drift or vapors of Command 3ME can cause foliar whitening or yellowing of some plants. Do not allow livestock to graze on treated cotton forage or trash. Do not feed treated cotton forage or trash to livestock.
dimethipin 0.23 to 0.55	Harvade 5F — 6 to 14 oz/A	Apply the tank mix combinations from early postemergence through layby.	Sicklepod and morningglories.	Apply when the young weeds are less than 4 inches tall and the cotton is at least 10 inches tall. If the cotton is less than 10 inches tall , apply the tank mix combination with a hooded sprayer. Direct contact of the spray mixture with cotton leaves and tenders stems will result in crop injury. Do not use more than a total of 14 fluid ounces of Harvade 5F per acre per year on your cotton crop for combined postdirected and defoliation applications. A petroleum-based crop oil concentrate (83-17) must be added to the spray mixture at 1 to 2 pints per acre.

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
diuron at 0.5 to 1 to 1.2 lb/A	4 lb/gal formulation — 1 to 2 to 2.4 pt in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix.	Apply when cotton is at least 12 inches tall.	Most late-emerging annual grasses and small-seeded broad-leaf weeds will be controlled if rain occurs within 10 days after treatment. Also, young, actively growing weeds less than 3 inches tall will be controlled.	Apply broadcast spray as indicated. Omit surfactant if no emerged weeds are present at time of treatment. Where the weed problem is light, apply a half rate after the cotton is 12 inches tall and re-treat only if necessary.
flumioxazin 1.02 oz/A	Valor 2 oz/A	When cotton is at least 16 inches tall. Apply to 2- to 4-inch emerged weeds.	Provides contact control of cocklebur and morningglories. Provides residual control of morningglories, tall waterhemp, hemp sesbania, and various annual grass species.	Severe crop injury may result if application is made to green or unbarked stem. Do not apply more than 2 ounces of Valor per acre per application, and do not exceed 4 ounces of Valor during a single growing season. Wait at least 30 days between sequential applications, and do not apply within 60 days of harvest. Do not allow spray to come in contact with crop foliage. Use a nonionic surfactant at 0.25% v/v. Do not use a COC, methylated seed oils, organo-silicant surfactants, or products containing these ingredients as severe crop injury may occur. Layby application may be made once cotton is at least 16 inches tall. Valor application should be directed to the bottom of the stem in order to avoid cotton injury.
fomesafen at 0.25 to 0.375 lb ai/A	Reflex at 1 to 1.5 pt/A in a minimum of 10 gal water. Add 1% v/v crop oil concentrate or 1 qt surfactant for each 100 gal spray mix.	When plants have at least 4 inches of brown bark.	Control or suppression of broadleaf, grass, and sedge weeds. Good to excellent control of morningglory, pigweed, common ragweed, hemp sesbania, and Pennsylvania smartweed.	Apply directed to the base of cotton plants with at least 4 inches of brown bark, avoiding contact with any nonbarked portions. Adjust nozzles to provide complete coverage of weeds. Do not apply with liquid nitrogen. Do not apply within 70 days of cotton harvest. Do not apply more than 1.5 pints per acre per season.
linuron 1 to 1.5 lb/A	Linex 4L — 2 to 3 pt/A	Apply when cotton is at least 20 inches tall and weeds are not over 2 inches tall.	Most late-emerging annual grasses and small-seeded broad-leaf weeds will be controlled if rain occurs within 10 days after treatment. Also, young, actively growing weeds less than 3 inches tall will be controlled.	Apply as a directed spray with nozzles adjusted to minimize contact to cotton. Omit surfactant if no emerged weeds are present at time of treatment. Where the weed problem is light, apply a half rate after the cotton is 12 inches tall and re-treat only if necessary.
linuron + diuron 0.8 + 0.8 to 1.2 + 1.2 lb/A	LaybyPro 4L 1.6 to 2.4 pt/A	Apply layby to cotton at least 15 inches tall and weeds no more than 4 inches tall.	Annual grass and broadleaf weeds.	For control of emerged weeds, add a nonionic surfactant at 0.5% v/v or a crop oil concentrate at 1% v/v.

Cotton, Continued

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast (See table on page 3 for band rates)	Time of application	Weeds controlled	Special instructions and remarks
pendimethalin at 0.5 to 1.5 lb ai/A	Prowl H ₂ O 3.8L — 1 to 3 pt/A depending on soil texture	After last normal cultivation (layby).	Most annual grasses and small-seeded broadleaf weeds such as pigweed and purslane.	Apply to the soil between rows as a directed spray following the last normal cultivation. Destroy existing weeds prior to application. Avoid spray contact to nonwoody portion of cotton stems and foliage or serious crop injury may occur. Apply at least 60 days before harvest.

Alternative weed management techniques

Hooded sprayers — Use of nonselective herbicides applied with hooded sprayers to avoid contact with the crop may be desirable for weed control in row middles, especially in no-till or conservation tillage systems. Addition of a residual-type herbicide will extend weed control and may negate the need for a layby application made to 12-inch tall or greater cotton.

flumioxazin at 0.064 lb/A	Valor SX at 2 oz/A	Valor may be applied with a hooded or shielded sprayer after cotton is at least 6 inches tall.	Provides some post-emergence activity on emerged weeds. Provides excellent residual control of most broadleaf weeds and suppression of annual grass weeds.	Use only hooded sprayer equipment designed to minimize exposure of the spray to cotton foliage. Hoods must be operated on the ground or skidding along the ground to minimize spray contact with desirable vegetation. Refer to flumioxazin under the <i>Preplant Foliar</i> subsection previously in the cotton section for information on spray adjuvant requirements. Do not apply more than 4 ounces per acre in any growing season. Do not make sequential applications within 30 days. Do not apply within 60 days of harvest.
glufosinate at 0.4 to 0.78 lb ai/A	Ignite 280SL at 22 to 43 oz/A	Ignite 280 SL may be applied from emergence through early bloom using a hooded sprayer.	Annual grasses and broadleaf weeds, especially morning-glory.	Use only hooded sprayer equipment designed to minimize exposure of the spray to cotton foliage when applying to cotton varieties not tolerant to Ignite 280SL . Hoods must be operated on the ground or skidding along the ground to minimize spray contact with desirable vegetation. Make up to three applications per season. A single application up to 43 ounces per acre can be made. Total seasonal application must not exceed 72 to 87 ounces per acre. Do not harvest cotton within 70 days of the last application of Ignite 280SL.
glyphosate at 0.75 to 1.5 lb ae/A	See glyphosate table on pages 5-6 for rates.	Apply to 6-inch tall cotton.	Annual and perennial grasses and broadleaf weeds.	Use a hooded sprayer ONLY. Keep the bottom edge of the hood in contact with the soil surface. Avoid crop contact with spray solution. Allow 7 days between application and harvest. Do not exceed 8 quarts per acre per season. Tank mixing with triazine or urea herbicides may antagonize grass control.
paraquat at 0.312 to 0.625 lb/A	Gramoxone Inteon at 1.25 to 2.5 pt/A with 0.25% (v/v) nonionic surfactant or 1% (v/v) crop oil concentrate	Apply to 6-inch tall cotton.	Annual grasses and broadleaf weeds less than 6 inches tall.	Use a hooded sprayer ONLY. Keep the bottom edge of the hood in contact with the soil surface. Avoid crop contact with spray solution. Avoid use of spray tips that produce fine spray droplets. (State Label).