

WEED CONTROL IN COTTON

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Preplant Burndown Herbicides for Weed Management in Cotton

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Aim 2EC (<i>carfentrazone</i>)	1.0-2.0 fl oz	0.016-0.032 lb	14	3 days	12 hours
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Aim 1.9EW

Comments : Apply any time prior to planting. For best results, apply to weeds that are less than 4 inches tall (less than 3 inch rosettes). Use higher rate for treating larger weeds. Add a COC (1-2 gal per 100 gals spray solution, NIS (1 qt per 100 gals spray solution, or MSO (1-2 gal per 100 gals of spray solution). Add 2,4-D LVE to improve control of cutleaf eveningprimrose and wild radish. Tank mix partners include GLYPHOSATE, LIBERTY, GRAMOXONE, 2,4-D LVE, or CLARITY. **Rainfast interval = 6-8 hours.**

Brake 1.2 SC (<i>fluridone</i>)	16-32 fl oz	0.15-0.30 lb	12	None	24 hours
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Comments: Apply BRAKE up to 14 days before planting cotton. Very effective on Palmer amaranth (*glyphosate-resistant and ALS-resistant biotypes*). Do not apply more than 32 fl oz per acre per season. A residual herbicide tank mix partner with BRAKE is required if rate is below 21 fl oz/A. Tank mix partners include VALOR and DIURON Do not apply by air or through an irrigation system. Dry weather following application of BRAKE will reduce its effectiveness on Palmer amaranth. Tank mix Brake with glyphosate and 2,4-D for control of existing weeds prior to planting. Follow up BRAKE application with a residual herbicide at planting.

Clarity 4S (<i>dicamba</i>)	8.0 fl oz	0.25 lb	4	7 days	24 hours
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Comments: Excellent control of most winter annual broadleaf weeds. Following application of CLARITY and at least 1 inch rainfall, a waiting period of at least 21 days is required before cotton planting. In general, CLARITY is less effective than 2,4-D LVE on cutleaf eveningprimrose control. **Rainfast interval = 4 hours.**

Direx 4L (<i>diuron</i>)	1.5-2.0 pt	0.75-1.0 lb	7	7 days	12 hours
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Comments: Apply in a minimum of 10 GPA of water per acre. Controls winter annual weeds (up to 2" in size) and provides some residual control into the early growing season. Must be applied 15 to 150 days prior to cotton planting. Add a compatibility agent to the spray tank when tank mixing with GLYPHOSATE. Do not apply where soil-applied organophosphate insecticide was used as severe crop injury will occur. Do not apply to sandy or sandy loam soils with organic matter less than 1.0%. **Rainfast interval = heavy rainfall soon after application may wash product off the foliage and a repeat application may be needed to ensure adequate weed control (suggest 1 hour).**

ET 0.208 EC (<i>pyraflufen ethyl</i>)	0.5-2.0 fl oz	0.0008-0.003 lb	14	---	12 hours
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ET X 0.338 EC	0.3-0.6 fl oz				
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Comments: Cotton may be planted any time after ET application. For best result, apply ET to broadleaf weeds less than 4 inches tall or rosettes less than 3 inches in diameter. Do not apply more than 2.0 oz/A for burndown. Add a suitable adjuvant like NIS at 1.0% v/v (1 gal per 100 gal of spray solution) will optimize weed control. Ground application requires minimum of 10 gallons/A. Do not allow livestock to graze in treated areas. **Rainfast interval = 1 hour.**

Preplant Burndown Herbicides for Weed Management in Cotton (cont.)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Flexstar GT 3.5 2.82EC (fomesafen + glyphosate)	3.5-5.3 pt	0.25-0.37 lb + 0.99-1.50 lb ae	14 9	70 days	24 hours
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Comments: Apply FLEXSTAR GT 7-14 days before planting. Very effective on Palmer amaranth (*glyphosate-resistant and ALS-resistant biotypes*) that has not emerged from the soil. Apply only to coarse textured soils (sandy loam, loamy sand, sandy clay loam). Adequate rainfall or irrigation (around 0.25”) within 7 days of application is required for activation. Some crinkling or spotting of cotton foliage or stunting may occur, especially if heavy rainfall occurs during or soon after emergence, but plants outgrow these effects and develop normally. Tank mix with COTORAN, DIREX, PROWL, or STAPLE to broaden the spectrum of weed control. **Rainfast interval = heavy rainfall shortly after application may reduce product effectiveness.**

Resistance Management: Make only one application of a group 14 containing herbicide per growing season.

FirstShot 50 SG (thifensulfuron + tribenuron)	0.5-0.8 oz	0.125-0.20 lb + 0.125 + 0.20 lb	2 2	---	12 hours
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Comments: Apply 14 days before planting cotton. If applying to light-textured soils, such as sands, loamy sands, and sandy loams, wait an additional 7 days to plant. Add COC at 1 gal per 100 gals or NIS at 2 pt per 100 gal of spray solution plus nitrogen fertilizer (UAN at 2 qt/A or AMS at 2 lb/A). FIRSTSHOT may be tank mixed with 2,4-D LVE (for improved control of cutleaf eveningprimrose, henbit, and Carolina geranium), GLYPHOSATE, CLARITY, LIBERTY, or GRAMOXONE. If tank mixing with 2,4-D LVE, observe the more restrictive waiting interval to plant (14-30 days, depending on rate, see 2,4-D LVE section). **Rainfast interval = 2 hours.**

Glyphosate acid equivalent (ae)				7 days	4 hours
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4.5 lb ae/gal	22-32 fl oz	0.75-1.13 lb ae	9		
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Comments: Apply in a minimum of 10 GPA of water per acre 14-30 days prior to cotton planting. Controls henbit, ryegrass, cutleaf evening primrose and wild radish (*although not as effective as glyphosate + 2,4-D LVE*). 2,4-D or CLARITY can be added to this mixture. **Rainfast interval = heavy rainfall soon after application may wash product off the foliage and a repeat application may be needed to ensure adequate weed control (suggest 1 hour).**

Goal 2XL (oxyfluorfen)	1.0-2.0 pt	0.25-0.5 lb	14	75 days	24 hours
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Comments: Apply GOAL 2XL a minimum of 7 days before planting cotton. Tank mix with GLYPHOSATE or PARAQUAT for control of larger winter annual broadleaf weeds or annual grasses in fallow beds (fall or late winter/early spring burndown). Provides postemergence and soil residual control of horseweed, pigweeds, and henbit.

Resistance Management: Make only one application of a group 14 containing herbicide per growing season.

Preplant Burndown Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			
Leadoff 33.4 DF	1.5 oz			30 days	4 hours
(<i>rimsulfuron</i> + <i>thifensulfuron</i>)		0.0157 lb 0.0157 lb	2 2		
Comments: Apply LEADOFF 30 days or more prior to planting cotton. LEADOFF tank mix partners include GLYPHOSATE, PARAQUAT, 2,4-D LVE, DICAMBA, or GLUFOSINATE. No additional surfactant is needed if tank mixed with glyphosate or glufosinate with a built-in adjuvant system. Otherwise, add NIS at 1 qt per 100 gal or COC at 1 gal per 100 gal or MSO at 0.5 gal per 100 gal of spray solution plus an ammonium nitrogen fertilizer (AMS at 2 lb/A or UAN at 2 qt/A).					
Liberty 280 SL (<i>glufosinate</i>)	29-43 oz	0.53-0.79 lb	10	70 days	12 hours
Interline 2.34SL					
Comments: Thorough spray coverage is essential for optimum performance. Ground application requires a minimum of 15 gallons of water/acre. Dense weed canopies require 20 to 40 gallons per acre. Best results obtained when daytime temps exceed 75 F. Consult label for maximum season application rates for LIBERTY (burndown + in-season applications). Rainfast interval = 4 hours.					
<i>Paraquat 2S</i>	2.0-4.0 pt	0.5-1.0 lb	22	7 days	12 hours
<i>Paraquat 3S</i>	1.7-2.7 pt	0.64-1.0 lb			
Comments: GRAMOXONE is a RESTRICTED USE PESTICIDE. Apply in a minimum of 10 GPA at planting. Controls seedling <i>glyphosate- and ALS-resistant Palmer amaranth</i> that have emerged since the early preplant burndown treatment. Add NIS at 1 qt/100 gal of spray mix. Rainfast interval = 30 minutes.					
Prowl 3.3EC (<i>pendimethalin</i>)	1.8-3.6 pt	0.75-1.5 lb	3	60 days	24 hours
Comments: Apply in a minimum of 10 GPA of water per acre. Apply PROWL up to 15 days before planting. PROWL must be activated by rainfall or irrigation, preferably within 2 days. For best results, apply to weeds that are less than 4" tall (less than 3" rosettes). Use higher rate for treating larger weeds. Dense weed or cover crop stands will reduce the effectiveness of residual weed control. Add 2,4-D LVE to improve control of cutleaf eveningprimrose and Carolina geranium.					
Resource 0.86EC (<i>fumiclorac</i>)	2.0-4.0 fl oz	0.013-0.026 lb	14	7 days	12 hours
Comments: Apply in a minimum of 10 GPA of water per acre any time prior to planting. For best results, apply to weeds that are less than 4" tall (less than 3" rosettes). Use higher rate for treating larger weeds. Add a COC (1-2 gal/100 gals), NIS (1 qt/100 gals), or MSO (1-2 gal/100 gals). Add 2,4-D LVE to improve control of cutleaf eveningprimrose. Rainfast interval = heavy rainfall soon after application may wash product off of the foliage and a repeat application may be needed to ensure adequate weed control (suggest 1 hour).					

Preplant Burndown Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Sharpen 2.85SC (saflufenacil)	1.0 fl oz	0.022 lb	14	80 days	12 hours
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Comments: Apply SHARPEN a minimum of **42 days** plus the accumulation of **1.0 inch of rainfall or irrigation** before planting cotton. Add COC at 1 gal per 100 gal or MSO at 1 gal per 100 gal of spray solution plus nitrogen fertilizer (UAN at 2 qt/A or AMS at 2 lb/A). If tank mixing with GLYPHOSATE, AMS is recommended. Do not apply SHARPEN with other group 14 (PPO inhibitors) products (i.e., VALOR OR REFLEX) as a tank mix or as a sequential application within 30 days or crop injury may result. Do not apply to coarse soils classified as SAND with less than 1.5% organic matter or cotton injury may result. Tank mix partners include CLARITY, DISTINCT, GLYPHOSATE, and PROWL H2O. **Rainfast interval = 1 hour.**

Valor 51WDG (flumioxazin)	2.0 oz	0.063 lb	14	21 days	12 hours
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Valor EZ 4SC	2.0 fl oz				
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Comments: Apply in a minimum of 10 GPA of water per acre 14-30 days prior to cotton planting. Controls cutleaf evening primrose and wild radish (*although not as effective as glyphosate + 2,4-D LVE*) and provides 2-4 weeks of residual control of weeds such as *glyphosate- and ALS-resistant Palmer amaranth*. 2,4-D or CLARITY may be tank mixed with this mixture. *Be sure to follow the clean-out instructions for removing VALOR from the sprayer after each day's use; do not let VALOR sit overnight in the tank.* See below for preplant burndown waiting intervals prior to cotton planting (Assumes 2.0 oz/A of Valor SX):

Ground Residue Amounts	Cotton Plant-Back Intervals (days before planting)	
	Strip-Till Before Valor SX	Strip-Till following Valor SX
<30 % residue cover	28 days	7 days
>30 % residue cover	21 days	7 days

Resistance Management: Make only **one** application of a group 14 containing herbicide per growing season.

Warrant 3.0ME (acetochlor)	1.25-2.0 qt	0.94-1.5 lb	15	---	12 hours
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Comments: Apply WARRANT any time prior to planting but before weeds germinate. Provides residual control of small seeded broadleaves and grasses. The optimum rate of WARRANT is 3 pt/A. Do not exceed 4.0 qt/A of WARRANT per season. Tank mix with GLYPHOSATE or PARAQUAT to control existing weeds. Do not apply ACETOCHLOR within 50ft of any well where depth to ground water is 30 feet or less: sands with less than 3% organic matter; loamy sands with less than 2% organic matter; or sandy loams with less than 1% organic matter.

2,4-D LVE (various)	1.0-2.0 pt	0.5-1.0 lb	4	---	48 hours
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Comments: Apply 15-30 days prior to planting cotton. Do not use on a light, sandy soil, or where soil moisture is limiting weed growth. Very effective for cutleaf evening primrose control. Can be tank-mixed with other burndown herbicides (see label).

Weed and Cover Crop Response to Burndown/Preplant Herbicides in Cotton¹

	Aim/ET ²	Glyphosate ²	Glyphosate + 2,4-D ²	Glyphosate + Direx ²	Glyphosate + Leadoff ²	Glyphosate + Sharpen ²	Glyphosate + Valor SX ²	Gramoxone ²	Gramoxone + 2,4-D ²	Gramoxone + Clarity ²	Gramoxone + Valor SX ²	Gramoxone + Direx ²	Liberty ²
barley, little	F	E	E	E	E	E	E	G	G	G	G	G	G
bluegrass, annual	G	F	F	E	E	E	E	G	G	G	G	G	P
buttercups	G	E	E	E	E	E	E	E	E	E	E	E	E
chickweed, common	G	F	G	GE	E	E	E	E	E	GE	E	E	E
clovers	P	PF	F	F	G	E	F	G	G	GE	GE	GE	F
cudweed	G	E	E	E	E	E	E	FG	FG	FG	FG	FG	G
dandelion	P	P	E	GE	E	G	G	N	E	GE	P	GE	FG
dock, curly	P	PF	G	F	F	F	G	F	FG	GE	P	F	G
eveningprimrose, cutleaf	GE	PF	E	GE	E	E	FG	F	E	GE	E	GE	G
geranium, Carolina	GE	FG	E	GE	E	E	E	GE	E	GE	E	E	GE
henbit/deadnettle	G	F	G	E	E	E	E	G	GE	E	E	GE	G
horseweed (maretail)	G	E	GE	E	GE	E	GE	F	GE	E	GE	GE	GE
mustard, wild	G	FG	E	GE	G	E	GE	FG	E	G	GE	G	GE
pansy, field	G	F	F	G	---	E	F	G	G	G	G	GE	G
peanut, volunteer	F	F	F	F	P	GE	FG	P	F	GE	F	F	GE
pepperweed, Virginia	G	G	E	GE	E	E	G	G	GE	G	G	GE	G
radish, wild	G	FG	GE	GE	G	E	GE	G	GE	GE	GE	GE	GE
ryegrass, Italian	F	G	F	FG	E	E	G	FG	FG	FG	FG	G	P
sorrel, red	F	E	E	E	G	G	E	E	E	E	E	E	PF
spurry, corn	G	GE	GE	GE	E	E	G	FG	G	G	G	G	---
swinecress	G	FG	G	G	E	E	FG	PF	FG	FG	PF	FG	GE
vetch	GE	F	E	G	E	E	FG	G	GE	GE	GE	G	GE
wheat/rye cover crop	P	E	E	G	E	E	E	FG	F	F	G	G	F

¹**Key to Response Ratings:** E = excellent control, 90% or better; G = good control, 80 to 90%; F = fair control 70 to 80%; P = poor control, less than 70%; --- = Insufficient Data.

²Herbicide rates for burndown are ET at 1.0 oz/A; Aim at 2.0 oz/A; Glyphosate at 0.75 lb ae/A (22 oz/A of 4.5 lb ae/gal or 32 oz/A of 3.0 lb ai/gal); 2,4-D at 1-2 pt/A; Clarity at 8 oz/A; Direx at 1.6 pt/A; Leadoff at 1.5 oz/A; Sharpen at 1.0 oz/A; Gramoxone at 3.0 pt/A; Valor SX at 2.0 oz/A; and Liberty at 29 oz/A.

Management of Glyphosate-Resistant Palmer Amaranth in Cotton

Palmer amaranth populations have been documented in South Carolina that are resistant to glyphosate (i.e., Roundup, Touchdown), acetolactate synthase (ALS) inhibiting herbicides (i.e., Staple, Envoke) and dinitroaniline (yellow) herbicides (i.e., Prowl, Treflan, and Sonalan). The following table is designed to aid producers in managing glyphosate-resistant and ALS-resistant Palmer amaranth populations in cotton.

The recent introduction of Enlist (2,4-D choline tolerant) and Xtend (dicamba tolerant) cotton has allowed growers to use an additional mode-of-action in cotton to control glyphosate and ALS-resistant Palmer amaranth. Please read the labels for each technology and follow the recommended stewardship practices to maintain their future availability in cotton. Use of overlapping residual herbicides and rotation of postemergence herbicides will still be an important part of these new varieties.

Managing Glyphosate-resistant Palmer Amaranth in Glyphosate Tolerant Cotton¹

Herbicide Program				
Preplant Burndown (PPB), Preplant Incorporate (PPI) or Preemergence (PRE)	POST BROADCAST (1 to 4 leaf)	POST BROADCAST (5-6 leaf)	POST-DIRECTED/LAYBY	HOODED
Conventional Tillage Dryland Prowl or Treflan PPI fb Reflex ² + Diuron PRE	glyphosate + Dual Magnum or Warrant (no Palmer emerged)	glyphosate + Warrant (no Palmer emerged) OR glyphosate + Envoke ³ (Palmer <4")	Layby Pro + MSMA OR Caparol + MSMA OR Suprend + MSMA	Paraquat + Direx
Conventional Tillage Irrigated Reflex ² + Staple LX ³ PRE <u>or</u> Reflex ² + Diuron PRE <u>or</u> Reflex ² + Prowl PRE				
Conservation Tillage Dryland Valor ^{2,4} PPB followed by Direx + Warrant + Paraquat PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Diuron PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Warrant PRE	OR glyphosate + Staple LX ³ (Palmer <2")			
Conservation Tillage Irrigated Valor ^{2,4} PPB followed by Direx + Staple LX ³ + Paraquat PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Diuron PRE				

Managing Glyphosate- and ALS-resistant Palmer Amaranth in Glyphosate Tolerant Cotton¹

Herbicide Program				
Preplant Burndown (PPB), Preplant Incorporate (PPI) or Preemergence (PRE)	POST BROADCAST (1 to 4 leaf)	POST BROADCAST (5-6 leaf)	POST-DIRECTED/LAYBY	HOODED
Conventional Tillage Dryland Prowl <u>or</u> Treflan <u>or</u> Treflan + Cotoran PPI followed by Reflex ² + Warrant <u>or</u> Warrant + Diuron PRE	glyphosate + Dual Magnum or Warrant (no Palmer emerged)	glyphosate + Warrant (no Palmer emerged)	Layby Pro + MSMA OR Caparol + MSMA OR Suprend + MSMA	paraquat + Direx OR paraquat + Caparol
Conventional Tillage Irrigated Reflex ² + Diuron PRE <u>or</u> Reflex ² + Prowl PRE				
Conservation Tillage Dryland Valor ^{2,4} PPB followed by Diuron + Warrant + Paraquat PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Diuron PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Warrant PRE				
Conservation Tillage Irrigated Valor ^{2,4} PPB followed by Diuron + Warrant + Paraquat PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Diuron PRE				

¹Hand weeding, cultivation, and/or application of paraquat mixtures with hooded sprayers will likely be needed.

²Make only one application of Reflex or Valor during the growing season for resistance management.

³Make only one application of an ALS-inhibiting herbicide (Staple, Envoke, Suprend) per growing season. Will not control ALS-resistant Palmer amaranth.

⁴See Valor SX in the preplant burndown discussion for interval between application and planting with a strip-till planter.

Managing Glyphosate-resistant Palmer Amaranth in Liberty Tolerant Cotton¹

Herbicide Program				
Preplant Burndown (PPB), Preplant Incorporate (PPI) or Preemergence (PRE)	POST BROADCAST (1 to 4 leaf)	POST BROADCAST (5-6 leaf)	POST-DIRECTED/LAYBY	HOODED
Conventional Tillage <u>Dryland</u> Prowl or Treflan PPI fb Reflex ² + Diuron PRE	Liberty ⁴ + Dual Magnum OR Warrant (Palmer < 4")	Liberty ⁴ + Warrant (Palmer < 4")	Layby Pro + MSMA OR diuron + Valor ² + MSMA OR diuron + MSMA	Paraquat
Conventional Tillage <u>Irrigated</u> Reflex ² + Staple LX ³ PRE <u>or</u> Reflex ² + Diuron PRE <u>or</u> Reflex ² + Prowl PRE				
Conservation Tillage <u>Dryland</u> Valor ^{2,4} PPB followed by Direx + Warrant + Paraquat PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Diuron PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Warrant PRE	OR Liberty ⁴ + Staple LX ³ (Palmer < 4")			
Conservation Tillage <u>Irrigated</u> Valor ^{2,4} PPB followed by Direx + Staple LX ³ + Paraquat PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Diuron PRE				

¹Hand weeding, cultivation, and/or application of paraquat mixtures with hooded sprayers will likely be needed.

²Make only one application of Reflex or Valor throughout the growing season for resistance management.

³Make only one application of an ALS-inhibiting herbicide (Staple, Envoke, Suprend) per growing season. *Will not control ALS-resistant Palmer amaranth.*

⁴Liberty will not consistently control Palmer amaranth larger than 4" tall.

⁵See Valor SX in the preplant burndown discussion for interval between application and planting with a strip-till planter.

Managing Resistant Palmer Amaranth in Enlist/Xtend Cotton

Herbicide Program				
Preplant Burndown (PPB), Preplant Incorporate (PPI) or Preemergence (PRE)	POST BROADCAST (1 to 4 leaf)	POST BROADCAST (5-6 leaf)	POST-DIRECTED/LAYBY	HOODED
Conventional Tillage <u>Dryland</u> Prowl or Treflan PPI fb Reflex ² + Diuron PRE	Palmer < 4"	Palmer < 4"	Layby Pro + MSMA	Paraquat
Conventional Tillage <u>Irrigated</u> Reflex ² + Staple LX ³ PRE <u>or</u> Reflex ² + Diuron PRE <u>or</u> Reflex ² + Prowl PRE	Liberty ⁴ + Dual Magnum OR	Liberty ⁴ + Warrant OR	OR diuron + Valor ² + MSMA	
Conservation Tillage <u>Dryland</u> Valor ^{2,4} PPB followed by Direx + Warrant + Paraquat PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Diuron PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Warrant PRE	Enlist One ⁶ + residual OR	Enlist One ⁶ + Glyphosate OR	OR diuron + MSMA	
Conservation Tillage <u>Irrigated</u> Valor ^{2,4} PPB followed by Direx + Staple LX ³ + Paraquat PRE <u>or</u> Valor ^{2,4} PPB followed by Paraquat + Reflex ² + Diuron PRE	Dicamba ⁷ + residual OR Enlist Duo ⁶	Dicamba ⁷ + Glyphosate OR Enlist Duo ⁶		

²Make only one application of Reflex or Valor throughout the growing season for resistance management.

³Make only one application of an ALS-inhibiting herbicide per growing season. *Will not control ALS-resistant Palmer amaranth.*

⁴Liberty will not consistently control Palmer amaranth larger than 4" tall.

⁵See Valor SX in the preplant burndown discussion for interval between application and planting with a strip-till planter.

⁶USE ENLIST ONE OR ENLIST DUO HERBICIDES ONLY ON COTTON VARIETIES CONTAINING THE ENLIST TRAIT. Consult the website for approved residual herbicide tank mix partners for Enlist One at www.enlisttankmix.com.

⁷USE ONLY XTENDIMAX, FEXAPAN, OR ENGENIA DICAMBA HERBICIDES ON XTEND (DICAMBA TOLERANT) COTTON VARIETIES. Do not use any other dicamba product on XTEND cotton. Consult the website XTENDIMAX/FEXAPAN/ENGENIA tank mix websites for approved residual herbicide tank mix partners for DICAMBA.

Weed Response to Soil Applied Cotton Herbicides¹

	PREPLANT INCORPORATED		PREEMERGENCE							
	Prowl	Treflan	Brake	Command	Cotoran	Direx	Prowl	Reflex	Staple LX	Warrant
anoda, spurred	P	P	---	GE	F	F	P	---	E	---
barnyardgrass	E	E	E	E	G	G	G	P	FG	GE
beggarweed, Florida	P	P	---	FG	GE	G	P	P	G	P
bermudagrass	P	P	P	PF	P	P	P	P	P	P
citronmelon	P	P	P	P	FG	F	P	P	FG	P
cocklebur, common	P	P	P	F	GE	P	P	G	P	P
cowpea	P	P	P	P	P	P	P	P	FG	P
crabgrass	E	E	E	E	FG	FG	G	FG	P	E
crotalaria, showy	P	P	P	G	G	G	P	P	FG	P
croton, tropic	P	P	G	P	G	F	P	FG	P	---
crowfootgrass	E	E	E	E	FG	FG	G	---	---	E
dayflower, Benghal	P	P	---	P	G	P	P	P	P	---
eclipta	P	P	---	G	G	G	P	GE	G	P
goosegrass	E	E	E	E	F	F	G	---	PF	E
jimsonweed	P	P	E	G	G	G	P	---	FG	P
johnsongrass, seedling	E	E	E	G	P	P	G	---	FG	P
johnsongrass, rhizome	P	P	P	P	P	P	P	P	P	P
lambsquarters, common	GE	GE	E	G	E	E	G	E	FG	F
morningglory spp.	P	P	F	P	G	F	P	PF	F	P
nutsedge, purple	P	P	P	P	P	P	P	---	P	P
nutsedge, yellow	P	P	P	P	P	P	P	GE	P	F
panicum, fall	G	G	E	E	F	P	F	---	PF	E
panicum, Texas	P	P	E	G	P	P	F	F	P	PF
pigweed spp.	G	GE	E	P	GE	GE	F	E	GE	GE
ALS-resistant	G	GE	E	P	GE	GE	F	E	P	GE
DNA-resistant	P	P	E	P	GE	GE	P	E	GE	GE
poinsettia, wild	P	P	---	G	P	P	P	GE	G	P
purslane, common	E	E	E	GE	E	F	G	G	G	G
pusley, Florida	E	E	E	GE	G	F	G	P	P	GE
ragweed, common	P	P	F	GE	E	G	P	G	P	PF
redweed	P	P	F	GE	E	GE	P	G	GE	P
ryegrass, annual	E	E	E	GE	G	G	G	P	P	G
sandbur	E	E	E	G	G	G	G	---	---	FG
senna, coffee	P	P	FG	P	GE	P	P	P	G	P
sesbania, hemp	P	P	FG	G	P	P	P	P	P	P
sicklepod	P	P	FG	P	G	F	P	P	PF	P
sida, prickly	P	P	G	E	G	F	P	---	PF	P
signalgrass, broadleaf	G	G	E	E	P	P	G	FG	P	G
smartweed, Pennsylvania	P	P	FG	G	G	G	P	---	G	PF
spurge	P	P	G	P	P	F	P	G	G	F
starbur, bristly	GE	GE	F	P	GE	G	P	GE	FG	PF
velvetleaf	P	P	G	E	F	PF	P	P	E	P
vol. peanuts	P	P	P	F	P	P	P	P	P	P

¹**Key to Response Ratings:** E = excellent control, 90% or better; G = good control, 80 to 90%; F = fair control, 70 to 80%; P = poor control, less than 70%; --- = Insufficient Data.

Preplant Incorporated Herbicides for Weed Management in Cotton

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Prowl 3.3EC (pendimethalin)	1.0-2.0 pt	0.5-1.5 lb	3	21 days	24 hours
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Prowl H ₂ O 3.8CS	2.0-4.0 pt	0.95-1.9 lb			
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Comments: Apply PROWL up to 60 days before planting and incorporate. Controls annual grasses and some small-seeded broadleaf weeds, seedling johnsongrass; poor control of large-seeded broadleaf weeds (i.e., annual morningglory, cocklebur, sicklepod). For maximum pigweed control, use 2.0 pt/A application rate. Use the lower rate if a sequential application of pendimethalin is planned at planting. Incorporate to a depth of 2 to 3 inches immediately after application. Cross disk for best results. Application within a week of planting is recommended.

NOTE: If your field(s) have a history of poor Palmer amaranth control with yellow herbicides (PROWL, TREFLAN, SONALAN), a follow-up preemergence herbicide (i.e. Dual Magnum, Warrant) will be needed at planting or early postemergence.

Treflan 4HFP (trifluralin)	1.0-2.0 pt	0.5-1.0 lb	3	60 days	12 hours
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Comments: Controls annual grasses and some small-seeded broadleaf weeds, seedling johnsongrass; poor control of large-seeded broadleaf weeds (i.e., annual morningglory, cocklebur, sicklepod). Use 2.0 to 3.0 pt/A for rhizome johnsongrass control. For enhanced pigweed control, use 1.5 pt/A on coarse-textured soils and 2.0 pt/A on medium-textured soils. Incorporate to a depth of 2 to 3 inches immediately after application. Cross disk for best results. Application within a week of planting is recommended.

NOTE: If your field(s) have a history of poor Palmer amaranth control with yellow herbicides (PROWL, TREFLAN, SONALAN), a follow-up preemergence herbicide (i.e. DUAL MAGNUM, WARRANT) will be needed at planting or early postemergence.

Treflan 4HFP (trifluralin)	1.0-2.0 pt	0.5-1.0 lb	3	90 days	12 hours
+ Cotoran 4F (fluometuron)	1.0-2.0 qt	1.0-2.0 lb	7		

Comments: Controls annual grasses and broadleaf weeds, seedling johnsongrass; COTORAN improves control of large-seeded broadleaf weeds (i.e., annual morningglory, cocklebur, sicklepod). See above for soil texture and rate discussion on TREFLAN. Use lower rate of COTORAN on coarse textured soils. Incorporate to a depth of 2 to 3 inches immediately after application. Cross disk for best results. Application within a week of planting is recommended.

Preemergence Herbicides for Weed Management in Cotton

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Brake 1.2 SC (<i>fluridone</i>)	16-32 fl oz	0.15-0.30 lb	12	None	24 hours
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Comments: Very effective on Palmer amaranth (*glyphosate-resistant and ALS-resistant biotypes*), crabgrass, prickly sida, and crowfootgrass. A residual herbicide tank mix partner with BRAKE is required if rate is below 21 fl oz/A. Tank mix partners include REFLEX and DIURON. Do not apply more than 32 fl oz per acre per application. If there is an extended dry period following application of BRAKE, plan on scouting your fields to ensure weeds are controlled before exceeding weed size restrictions. Apply an early postemergence herbicide LIBERTY plus a residual herbicide (i.e., DUAL MAGNUM, STAPLE, or WARRANT) within 18 days after BRAKE preemergence application. Do not apply BRAKE in the same field more than 2 consecutive years.

Command 3ME (<i>clomazone</i>)	2.0-3.33 pt	0.75-1.25 lb	13	65 days	12 hours
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Comments: Controls crabgrass, fall panicum, crowfootgrass, Texas panicum, velvetleaf, spurred anoda, and prickly sida. Provides only marginal suppression of most other broadleaf weeds (i.e., *Palmer amaranth*). May be tank mix with other herbicides to broaden weed spectrum. Do not apply COMMAND to cotton unless disulfoton or phorate organophosphate insecticide is applied in-furrow with the seed at planting time at a minimum of 0.75 lb of active ingredient per acre. Do not reduce the application rate of the organophosphate insecticide when COMMAND is applied as a band treatment. Combinations of at-planting systemic granular carbamate and organophosphate insecticides applied in conjunction with COMMAND may result in injury to cotton. Crop injury may occur with higher rates of COMMAND on sandy soils. DIURON is not recommended at planting when COMMAND is used as plant injury may result. Do not apply in the air or within 1200 ft of housing developments, commercial fruit, vegetable, or nut production; or commercial ornamental nurseries or greenhouses. Do not apply more than 1.25 lb ai per acre per season. Do not allow livestock to graze on treated cotton forage or trash or feed treated cotton forage or trash to livestock.

Cotoran 4F (<i>fluometuron</i>)	2.0-4.0 pt	1.0-2.0 lb	7	60 days	24 hours
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Comments: Controls Palmer amaranth (*including ALS- and glyphosate-resistant*), sandbur, crabgrass, tropic croton, and coffee senna. Tank mix with STAPLE LX for improved control of spurred anoda and velvetleaf. For improved pigweed control, particularly in conservation tillage, REFLEX may be applied in combination with COTORAN preemergence. Cotton injury may be observed when COTORAN is applied in combination with a systemic insecticide at planting. In addition, COTORAN applied with COMMAND may result in cotton injury. Use the lower end of the rate range on lighter soils.

Direx 4L (<i>diuron</i>)	0.8 qt	0.8 lb	7	90 days	12 hours
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Comments: Controls Palmer amaranth (*including ALS- and glyphosate-resistant*), common ragweed, and bristly starbur. Do not apply where soil-applied organophosphate insecticide was used as severe crop injury and stand loss will occur. Seedling diseases may weaken cotton plants and increase the possibility of injury from the use of TRIFLURALIN products followed by DIREX. These treatments should only be used in conjunction with a standard fungicide seed treatment plus a supplemental soil fungicide program such as CAPTAN-PCNB mixture. Do not apply to sands or sandy loam soils with organic matter less than 1.0%.

Flexstar GT 3.5 2.82EC (<i>fomesafen</i> + <i>glyphosate</i>)	3.5-5.3 pt	0.25-0.37 lb + 0.99-1.50 lb ae	14 9	70 days	24 hours
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Comments: Very effective on Palmer amaranth (*glyphosate-resistant and ALS-resistant biotypes*) that has not emerged from the soil. Apply only to coarse textured soils (sandy loam, loamy sand, sandy clay loam). Adequate rainfall or irrigation (around 0.25") within 7 days of application is required for activation. Some crinkling or spotting of cotton foliage or stunting may occur, especially if heavy rainfall occurs during or soon after emergence, but plants outgrow these effects and develop normally. Tank mix with COTORAN, DIREX, PROWL, or STAPLE to broaden the spectrum of weed control.

Resistance Management: Make only one application of a group 14 containing herbicide per growing season.

Preemergence Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Paraquat 2S 2.0-4.0 pt 0.5-1.0 lb 22 7 days 12 hours

Paraquat 3S 1.7-2.7 pt 0.64-1.0 lb

Comments: PARAQUAT is a RESTRICTED USE PESTICIDE. Apply PARAQUAT broadcast or in a band behind the planter furrow alone in a minimum of 10 GPA at planting or after planting (before cotton emerges) tank mixed with residual herbicides, such as REFLEX, DIURON, WARRANT, and/or PROWL H2O. Controls seedling *glyphosate- and ALS-resistant Palmer amaranth* that have emerged from an earlier preplant burndown application. Increase the rate of PARAQUAT and spray volume if weeds are dense or have significant size (greater than 4 inches). Add NIS at 1 qt/100 gal of spray mix. **Rainfast interval = 30 minutes.**

Prowl H₂O 3.8CS (pendimethalin) 1.0-2.0 pt 0.48-0.95 lb 3 60 days 24 hours

Prowl 3.3EC 1.2-2.4 pt 0.50-0.99 lb

Comments: Controls Palmer amaranth (*glyphosate- and ALS-resistant biotypes*), common lambsquarters, Florida pusley, and crabgrass. Apply at planting or up to 2 days after planting.

Note: *If your field has a history of poor Palmer amaranth control with yellow herbicides, consider tank mixing PROWL with COTORAN, REFLEX, or STAPLE.*

Reflex 2 EC (fomesafen) 12-16 fl oz 0.1875-0.25 lb 14 70 days 24 hours

Dawn 2 EC

Comments: Very effective on Palmer amaranth (*glyphosate-resistant and ALS-resistant biotypes*). Apply only to coarse textured soils (sandy loam, loamy sand, sandy clay loam). Adequate rainfall or irrigation within 7 days of application is required for activation. Some crinkling or spotting of cotton foliage or stunting may occur, especially if heavy rainfall occurs during or soon after cotton emergence, but plants outgrow these effects and develop normally. Tank mix with COTORAN, DIREX, PROWL, or STAPLE to broaden the spectrum of weed control.

Resistance Management: *Make only one application of a group 14 containing herbicide per growing season.*

Staple LX 3.2SL (pyrithiobac) 1.7-2.1 fl oz 0.0425-0.0525 lb 2 60 days 4 hours

Comments: Controls Palmer amaranth (*glyphosate-resistant biotypes*), spurred anoda, and velvetleaf. Plant stresses from cool temps, thrips damage, or excessive soil moisture may cause temporary leaf yellowing or stunting. As conditions improve, cotton will recover. Do not use on soils where organic matter is less than 0.5% or on coarse textured soils (sands or loamy sands). Do not apply more than one preemergence application of STAPLE per year. Tank mix with PROWL for improved grass control.

Resistance Management: *Make only one application of a group 2 containing herbicide per growing season.*

Warrant 3.0ME (acetochlor) 1.25-2.0 qt 0.94-1.5 lb 15 --- 12 hours

Comments: Provides residual control of small seeded broadleaves and grasses. Apply after planting but before weeds germinate. The optimum rate of WARRANT is 3 pt/A. Do not exceed 4.0 qt/A of WARRANT per season. Tank mix with GLYPHOSATE or PARAQUAT to control weeds that have germinated since planting. Environmental conditions that follow application of WARRANT including cold, wet soils or saturated conditions from excessive rain may result in crop injury. Do not apply ACETOCHLOR within 50ft of any well where depth to ground water is 30 feet or less: sands with less than 3% organic matter; loamy sands with less than 2% organic matter; or sandy loams with less than 1% organic matter.

Weed Response to Postemergence Broadcast Cotton Herbicides¹

	Assure II	Cotoran	Dicamba ²	Enlist Duo ³	Enlist One ³	Envoke	Envoke + Staple	Fusilade DX/Fusion	Glyphosate ⁴	Glyphosate+Dual Mag. ⁴	Glyphosate + Envoke ⁴	Glyphosate + Prowl ⁴
anoda, spurred	P	---	G	GE	G	P	G	P	GE	GE	E	GE
barnyardgrass	G	G	P	E	P	---	---	G	E	E	E	E
beggarweed, Florida	P	G	G	E	G	GE	GE	G	E	E	E	E
bermudagrass	G	P	P	F	P	P	P	G	F	F	FG	F
citronmelon	P	G	G	GE	G	GE	GE	P	GE	GE	E	GE
cocklebur, common	P	FG	E	E	E	GE	G	P	E	E	E	E
cowpea	P	FG	E	E	E	G	GE	P	E	E	E	E
crabgrass	G	PF	P	E	P	P	P	G	E	E	E	E
crotalaria, showy	P	G	G	G	E	---	---	P	G	G	G	G
croton, tropic	P	FG	GE	E	E	PF	PF	P	E	E	E	E
crowfootgrass	G	PF	P	E	P	F	P	F	E	E	E	E
dayflower, Benghal	P	P	P	FG	P	F	F	P	FG	G	G	FG
eclipta	P	---	G	E	G	P	FG	P	E	E	E	E
goosegrass	G	PF	P	E	P	P	P	G	E	E	E	E
jimsonweed	P	G	E	E	E	P	GE	P	E	E	E	E
johnsongrass, seedling	E	P	P	E	P	FG	FG	GE	E	E	E	E
johnsongrass, rhizome	E	P	P	GE	P	PF	PF	GE	GE	G	GE	E
lambquarters, common	P	G	E	G	E	G	GE	P	G	G	E	G
morningglory spp.	P	G	E	G	E	G	G	P	G	G	E	G
nutsedge, purple	P	P	P	F	P	FG	FG	P	F	F	G	F
nutsedge, yellow	P	P	P	FG	P	G	G	P	FG	FG	GE	FG
panicum, fall	GE	PF	P	E	P	P	P	GE	E	E	E	E
panicum, Texas	G	P	P	E	P	P	P	G	E	E	E	E
pigweed spp.	P	PF	E	E	E	PF	F	P	E	E	G	E
glyphosate-resistant	P	PF	E	P	E	PF	F	P	P	P	P	P
ALS-resistant	P	PF	E	E	E	P	P	P	E	E	E	E
poinsettia, wild	P	F	E	G	E	G	G	P	G	G	E	G
purslane, common	P	FG	P	F	P	---	---	P	F	F	G	F
pusley, Florida	P	PF	P	F	P	P	P	P	F	F	PF	FG
ragweed, common	P	G	E	E	E	G	G	P	E	E	E	E
redweed	P	FG	E	GE	G	---	---	P	G	G	G	G
ryegrass, annual	G	P	P	E	P	---	---	G	E	E	E	E
sandbur, field	G	PF	P	E	P	---	P	G	E	E	E	E
senna, coffee	P	FG	E	G	FG	---	GE	P	E	E	E	E
sesbania, hemp	P	FG	E	G	FG	---	GE	P	F	F	---	---
sicklepod	P	FG	E	GE	G	E	E	P	GE	GE	E	GE
sida, prickly	P	FG	E	E	E	P	F	P	E	E	G	E
signalgrass, broadleaf	G	P	P	E	P	P	P	GE	E	E	E	E
smartweed, Pennsylvania	P	FG	E	GE	E	G	G	P	GE	GE	E	GE
spurge, annual	P	F	E	G	E	---	---	P	G	G	G	G
starbur, bristly	P	G	E	E	E	GE	GE	FG	E	E	E	E
velvetleaf	P	G	E	GE	GE	G	G	P	GE	GE	E	GE
vol. corn	G	P	P	E	P	P	P	E	E	E	E	E
RR hybrids	G	P	P	P	P	P	P	E	P	P	P	P
RR+LL hybrids	G	P	P	P	P	P	P	E	P	P	P	P
vol. peanuts	P	F	E	F	F	PF	PF	P	F	F	F	F

¹**Key to Response Ratings:** E = excellent control, 90% or better; G = good control, 80 to 90%; F = fair control, 70 to 80%; P = poor control, less than 70%; --- = Insufficient Data.

²USE ONLY XTENDIMAX, FEXAPAN, OR ENGENIA DICAMBA HERBICIDES ON XTEND (DICAMBA TOLERANT) COTTON VARIETIES. Do not use any other dicamba product on XTEND cotton.

Use only on Enlist (2,4-D tolerant) treated cotton varieties.

³Use only on glyphosate tolerant cotton varieties.

Weed Response to Postemergence Broadcast Cotton Herbicides(cont)¹

	Glyphosate + Staple ²	Glyphosate + Warrant ²	Liberty ³	Liberty + Dual Mag. ³	Liberty + Prowl ³	Liberty + Warrant ³	MSMA	Poast/Poast Plus	Select/Select MAX	Sequence ²	Staple
anoda, spurred	E	GE	P	P	P	P	P	P	P	GE	G
barnyardgrass	E	E	G	G	G	G	F	GE	GE	E	---
beggarweed, Florida	E	E	G	G	G	G	E	P	P	E	G
bermudagrass	FG	F	P	P	P	P	P	F	G	F	P
citronmelon	E	GE	G	G	G	G	PF	P	P	GE	---
cocklebur, common	E	E	E	E	E	E	E	P	P	E	G
cowpea	E	E	G	G	G	G	F	P	P	E	---
crabgrass	E	E	FG	G	G	FG	F	GE	GE	E	P
crotalaria, showy	G	G	G	G	G	G	F	P	P	G	---
croton, tropic	E	E	G	G	G	G	F	P	P	E	P
crowfootgrass	E	E	G	G	G	GE	F	FG	G	E	P
dayflower, Benghal	G	FG	FG	G	FG	FG	P	P	P	FG	P
eclipta	E	E	G	G	G	G	---	P	P	E	G
goosegrass	E	E	FG	G	G	FG	F	GE	GE	E	P
jimsonweed	E	E	E	E	E	E	P	P	P	E	E
johnsongrass, seedling	E	E	G	G	G	GE	F	GE	E	E	P
johnsongrass, rhizome	GE	E	P	P	P	P	P	G	GE	E	P
lambquarters, common	G	G	E	G	G	G	P	P	P	E	P
morningglory spp.	G	G	E	E	E	E	F	P	P	G	G
nutsedge, purple	FG	FG	P	P	P	P	F	P	P	FG	PF
nutsedge, yellow	FG	F	P	P	P	P	FG	P	P	F	PF
panicum, fall	E	E	G	G	GE	GE	F	E	E	E	P
panicum, Texas	E	E	G	G	GE	GE	P	E	E	E	P
pigweed spp.	E	E	G	G	G	G	P	P	P	E	G
glyphosate-resistant	E	P	G	G	G	G	P	P	P	P	G
ALS-resistant	E	E	G	G	G	G	P	P	P	E	P
poinsettia, wild	GE	E	GE	GE	GE	GE	N	P	P	G	F
purslane, common	G	F	FG	FG	FG	FG	P	P	P	G	F
pusley, Florida	PF	FG	P	P	G	PF	P	P	P	FG	P
ragweed, common	E	E	E	E	E	E	P	P	P	E	FG
redweed	G	G	E	E	E	E	P	P	P	G	---
ryegrass, annual	E	E	FG	FG	FG	FG	GE	G	G	E	---
sandbur, field	E	E	G	G	GE	GE	F	G	G	E	P
senna, coffee	E	E	GE	GE	GE	GE	P	P	P	E	GE
sesbania, hemp	GE	---	G	G	G	G	P	P	P	---	GE
sicklepod	GE	GE	E	E	E	E	F	P	P	E	PF
sida, prickly	G	E	G	G	G	G	P	P	P	E	F
signalgrass, broadleaf	E	E	G	G	GE	GE	F	E	E	E	P
smartweed, Pennsylvania	E	GE	GE	GE	GE	GE	P	P	P	GE	G
spurge, annual	G	G	FG	FG	FG	FG	P	P	P	G	FG
starbur, bristly	E	E	GE	GE	GE	GE	P	P	P	E	GE
velvetleaf	E	GE	G	G	G	G	P	P	P	GE	G
vol. corn	E	E	F	F	F	F	P	E	GE	E	P
RR hybrids	P	P	F	F	F	F	P	E	GE	P	P
RR+LL hybrids	P	P	P	P	P	P	P	E	GE	P	P
vol. peanuts	F	F	GE	E	GE	GE	P	P	P	F	P

¹**Key to Response Ratings:** E = excellent control, 90% or better; G = good control, 80 to 90%; F = fair control, 70 to 80%; P = poor control, less than 70%; --- = Insufficient Data.

²Use only on glyphosate-tolerant cotton varieties.

³Use only on glufosinate-tolerant (LibertyLink [LL]) cotton varieties.

Postemergence Broadcast Herbicides for Weed Management in Cotton

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			
Assure II 0.88E (quizalofop)	5-12 fl oz	0.034-0.069 lb	1	80 days	12 hours
<p>Comments: Apply ASSURE at 7-8 oz/A over-top to control annual grasses up to 6" tall. Apply 5 oz/A to control volunteer RR-corn in cotton. For control of rhizome johnsongrass, apply 5 oz of Assure II when johnsongrass is 10-24" tall and then retreat with 5 oz when regrowth reaches 6-10" tall. For bermudagrass control, apply 10-12 oz/A at 3" tall (up to 6" runners). Add COC at 1 gal/100 gallons or 1 qt/100 gallons of spray mixture. Application intervals should be 7 days apart to allow for regrowth. Do not exceed 18 oz/A in a growing season. Rainfast interval = 1 hour.</p>					
Cotoran 4L (fluometuron)	2.0-2.5 pt	1.0-1.25 lb	7	60 days	24 hours
<p>Comments: Apply COTORAN after cotton reaches 3 inches in height. Controls <i>glyphosate- and ALS-resistant Palmer amaranth (less than 2 inches tall)</i> and annual morningglory (less than 3 inches tall). Add surfactant at 2 qt/100 gal of spray solution. Tank mix partners may include MSMA, PARALLEL PCS, PYRIMAX Rainfast interval = 2 hours.</p>					
Dual Magnum 7.62EC (s-metolachlor)	1.0-1.33 pt	0.95-1.27 lb	15	100 days	24 hours
<p>EverpreX 7.62EC</p> <p>Comments: Apply S-METOLACHLOR at when cotton is 3 to 6 inches tall. S-METOLACHLOR does not control emerged weeds, but will provide residual control of annual grasses, pigweeds, and suppression of yellow nutsedge. Tank mix with MSMA, GLYPHOSATE (ROUNDUP READY FLEX) or LIBERTY (LIBERTY-LINK) for control of emerged weeds. Do not apply to sand or loamy sand soils. Rainfast interval = none.</p>					
Enlist One 3.8SL (2,4-D choline)	1.5-2.0 pt	0.71-0.95 lb ae	4	30 days	48 hours
<p>Comments: USE ONLY ON ENLIST TRAITED COTTON VARIETIES. Apply ENLIST ONE from cotton emergence but no later than full flowering (mid-bloom stage) when weeds are small and actively growing (less than 4 inches for Palmer amaranth). Before applying ENLIST ONE, conduct a survey of the area surrounding the planned treated field for susceptible crops (tomatoes, fruiting vegetables, cucurbits, grapes, and cotton). If you can see the susceptible crop and the wind is blowing toward it, DO NOT SPRAY. Make one to two postemergence applications with a minimum of 12 days between applications. Water carrier volume should be 10 to 15 gallons per acre for best results. Do not apply at wind speeds are less than 3 mph or greater than 15 mph. Do not apply during temperature inversion conditions because drift potential is high. A 30 ft downwind field buffer (where ENLIST ONE is not sprayed) is required when wind is blowing toward a sensitive area (i.e., wooded fenceline). Spray drift potential increases significantly as boom height increases; therefore, position the boom height at the minimum height suggested on the nozzle manufacturer's directions. Do not aerielly apply ENLIST ONE. Do not apply ENLIST ONE through an irrigation system. Do not apply more than 2.0 pts per acre in a single application and more than 6.0 pts of ENLIST ONE per acre combined per season. Do not apply ENLIST ONE if rain is expected within 24 hours of application or irrigate treated fields within 24 hours. Consult ENLIST DUO label and/or the web site www.enlisttankmix.com for the most up-to-date approved tank mix partners, required spray nozzles, and stewardship practices. <i>To avoid future susceptible crop injury from re-use of the sprayer after spraying ENLIST ONE, thoroughly clean using clean water the tank, lines, filters, pumps, strainers, nozzles bodies, and nozzles using the triple rinse method recommended in the ENLIST ONE label.</i></p>					

Postemergence Broadcast Herbicides for Weed Management in Cotton (cont)

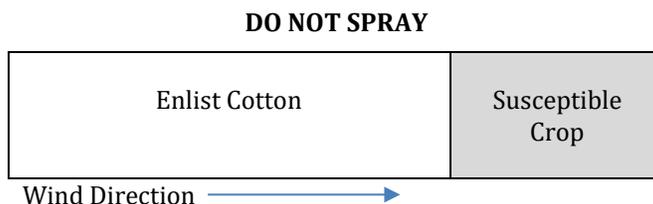
Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			
Enlist Duo 3.3SL (2,4-D Choline + glyphosate)	3.5-4.75 pt	0.70-0.95 lb ae + 0.73-1.01 lb ae	4 9	30 days	48 hours

Comments: USE ONLY ON ENLIST TRAITED COTTON VARIETIES. Apply ENLIST DUO from cotton emergence but no later than full flowering (mid-bloom stage) when weeds are small and actively growing (less than 4 inches for Palmer amaranth). **Before applying ENLIST DUO, conduct a survey of the area surrounding the planned treated field for susceptible crops (tomatoes, fruiting vegetables, cucurbits, grapes, and cotton[non-ENLIST]). If you can see the susceptible crop and the wind is blowing toward it, DO NOT SPRAY.** Make one to two postemergence applications with a minimum of 12 days between applications. Water carrier volume should be 10 to 15 gallons per acre for best results. Do not apply at wind speeds are less than 3 mph or greater than 15 mph. Do not apply during temperature inversion conditions because drift potential is high. **A 30 ft downwind field buffer (where ENLIST DUO is not sprayed) is required when wind is blowing toward a sensitive area (i.e., wooded fenceline).** Spray drift potential increases significantly as boom height increases; therefore, position the boom height at the minimum height suggested on the nozzle manufacturer’s directions. **Do not aerially apply ENLIST DUO. Do not apply ENLIST DUO through an irrigation system.** Do not apply more than 4.75 pts per acre per application and more than 14.75 pts of ENLIST DUO per acre from all applications per season. Do not apply ENLIST DUO if rain is expected within 24 hours of application or irrigate treated fields within 24 hours. Consult ENLIST DUO label and/or the web site www.enlisttankmix.com for the most current approved tank mix partners, required spray nozzles, and stewardship practices. *To avoid future susceptible crop injury from re-use of the sprayer after spraying ENLIST DUO, thoroughly clean using clean water the tank, lines, filters, pumps, strainers, nozzles bodies, and nozzles using the triple rinse method recommended in the ENLIST DUO label.*

Buffer Requirements for Sensitive Areas: Maintain a 30-foot downwind buffer between the last treated row and closest downwind edge (in the direction in which the wind is blowing). The following areas may be included in the buffer distance when adjacent to field edges: roads, paved or gravel surfaces; planted agricultural fields (except those crops listed in the susceptible crops section below); agricultural fields that have been prepared for planting; and areas covered by the footprint of a building, silo, or other manmade structure with walls and a roof.



Susceptible Crops: DO NOT APPLY ENLIST DUO when wind is blowing toward an adjacent non-Enlist susceptible crop [such as tomatoes, fruiting vegetables, cucurbits, grapes, and cotton (non-Enlist)]:



Postemergence Broadcast Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

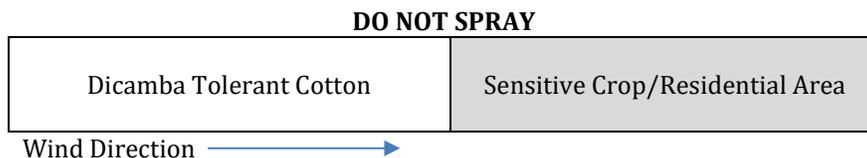
Engenia 5.0SL (dicamba)	12.8 fl oz.	0.5 lb ae	4	7 days	24 hours
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Comments: *ENGENIA* is a **RESTRICTED USE PESTICIDE** (*ONLY* certified applicators may purchase and apply *ENGENIA*). No applications of *ENGENIA* are permitted after December 20, 2020. **USE ONLY ON COTTON VARIETIES CONTAINING THE XTENDFLEX TECHNOLOGY!** Apply *ENGENIA* over-the-top from emergence through 60 days after planting or up until mid-bloom, whichever comes first to weeds that are less than 4 inches in height. **Before applying *ENGENIA*, conduct a survey of the area surrounding the planned treated area for sensitive crops (i.e.d, food, forage, or other planting grown for sale, use, or consumption), sensitive areas (i.e., bodies of water and non-residential, uncultivated areas that may harbor sensitive plant species), and residential areas.** Do not spray when wind is blowing in the direction of neighboring downwind sensitive crops or residential areas. **Wind shifts may occur during application, if wind direction shifts toward a neighboring sensitive crop (see product label for details) or residential areas, the applicator must STOP application.** Consult www.engeniatankmix.com for approved nozzles (use nozzles that produce extremely coarse to ultra-coarse droplets) and tank mix partners with *ENGENIA*. Make one to two postemergence applications with a minimum of 7 days between applications. Do not make more than two postemergence applications per season. Apply *ENGENIA* in a minimum of 15 gallons per acre. **Do not apply at wind speeds less than 3 mph or greater than 10 mph.** Do not exceed a boom height of 24 inches above target pest or crop canopy. ***ENGENIA* applications can only be made from 1 hour after sunrise until 2 hours before sunset. Do not aerially apply *ENGENIA*.** Do not apply during temperature inversion conditions because drift potential is high. Do not exceed a ground speed of 15 miles per hour (5 mph is recommended ground speed). **Do not tank mix ammonium-based products with *ENGENIA*.** It is recommended by BASF to check the spray solution pH prior to adding *ENGENIA* and add a buffering agent if pH is below 5. Do not tank mix *ENGENIA* with LORSBAN insecticide. Do not apply *ENGENIA* if expected rainfall amount may exceed field capacity of the soil and result in runoff in the next 24 hours. Clean spray equipment immediately after applying *ENGENIA* using the triple rinse method as recommended on the *ENGENIA* product label. **Rainfast interval = 4 hours.**

Buffer Requirements for Sensitive Areas/Sensitive Crops/Residential Areas: Prior to apply *ENGENIA*, the following website must be consulted for a listing of counties in South Carolina with endangered species present: www.epa.gov/espp/. Fields that exist in counties that harbor endangered terrestrial dicot plant species will require a 110-foot downwind buffer **and a 57-foot buffer on all other sides of the field.** For counties without an endangered species designation, maintain a 110-foot downwind buffer between the last treated row and closest downwind edge (in the direction in which the wind is blowing). The following nonsensitive areas may be included in the buffer distance when directly adjacent to the treated field edges: roads, paved or gravel surfaces, mowed and/or managed areas adjacent to field, such as rights-of-way; planted agricultural fields containing non-sensitive crops; agricultural fields that have been prepared for planting; and areas covered by the footprint of a building, silo, or other manmade structure with walls and a roof.



DO NOT APPLY *ENGENIA* when wind is blowing toward Sensitive Crops and/or Residential Areas:



Postemergence Broadcast Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Envoke 75WDG (trifloxysulfuron)	0.10-0.15 oz	0.0046-0.0069 lb	2	60 days	12 hours
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Comments: Apply ENVOKE at the 5-leaf or greater growth stage of cotton for control of pigweed, annual morningglory, and yellow nutsedge. *Weak on Palmer amaranth.* Add NIS (a minimum of 80% surface active) at 1 qt/100 gal of spray solution. Do not apply with any other additive or growth regulator as unacceptable injury may occur. Tank mix with STAPLE for enhanced smallflower morningglory control. Do not apply as a preemergence as substantial cotton injury will result. **Rainfast interval = 3 hours.**

Resistance Management: Make only one application of a group 2 containing herbicide per growing season.

Fusilade DX 2EC (fluazifop-p-butyl)	8-12 fl oz	0.125-0.188 lb	1	90 days	12 hours
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Comments: Controls annual and perennial grasses before they exceed 6-8" tall. For rhizome johnsongrass control, apply 12 oz/A when it is 8-18" tall. Make a second application (8 oz/A) when regrowth is 6-12" tall. For bermudagrass, apply 12 oz/A when runners are 4-8" long, and 8 oz/A when re-growth reaches 4-8". Add COC at 1 gal/100 gallon or NIS 2 pt/100 gal of spray solution. Controls volunteer RR-corn in cotton. Do not apply after boll set. Do apply more than 48 oz/A per or within 90 days of harvest. **Rainfast interval = 1 hour.**

Fusion 2.56EC (fluazifop-p-butyl + fenoxaprop-p-ethyl)	8-12 oz	0.16-0.24 lb	1 1	90 days	24 hours
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Comments: Apply FUSION at 8 oz/A for control of most annual grasses before they exceed 6-8" tall. For rhizome johnsongrass, apply 10-12 oz/A for control of johnsongrass 8-18" tall. A second 8 oz/A treatment may be applied to control regrowth 6-12" tall. For bermudagrass, treat 4-8" runners with 12 oz/A, and then apply a second application of 8 oz/A to 4-8" re-growth. Add COC at 1 gal/100 or NIS at 2 pt/100 gallon of spray solution. Controls volunteer RR-corn in cotton. **Rainfast interval = 1 hour.**

Glyphosate acid equivalent (ae)			9	7 days	4 hours
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4.5 lb ae/gal	22-32 fl oz	0.75-1.12 lb ae			
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Comments: **USE ONLY ON COTTON VARIETIES DESIGNATED AS GLY-TOL OR ROUNDUP READY FLEX!** Apply GLYPHOSATE at 0.75 to 1.12 lb ae/A over-the-top from ground cracking up to 7 days before harvest. Controls annual grasses and broadleaves. In general, the first over-the-top broadcast application should be applied early to minimize weed competition (1 to 3" tall weeds). No restriction on the timing of sequential treatments. Tank mix with STAPLE, DUAL MAGNUM, or WARRANT for residual control of weeds. Aerial application rates are limited to 0.75 lb ae/A. Maximum combined total of all applications from emergence through harvest cannot exceed 4.5 lb ae/A. **Rainfast interval = 2 hours.**

Resistance Management: *Glyphosate-and ALS-resistant Palmer amaranth biotypes are common in South Carolina. Apply multiple herbicide modes-of-action at each application (foliar plus residual herbicides) to prevent selection of new resistant biotypes of Palmer amaranth.*

Postemergence Broadcast Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Liberty 2.34 SL (glufosinate)	29-43 fl oz	0.53-0.79 lb	10	70 days	12 hours
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Interline 2.34 SL

Comments: USE ONLY ON COTTON VARIETIES DESIGNATED AS LIBERTY-LINK! Apply LIBERTY/INTERLINE in a minimum of 15 GPA using flat fan nozzles at 30-60 PSI from emergence up to the bloom growth stage. Spray coverage is essential for maximum LIBERTY/INTERLINE performance. Controls annual grasses, broadleaf weeds, and *ALS- and glyphosate-resistant Palmer amaranth (less than 4" tall)*. Up to three over-the-top applications (do not exceed 36 oz/A per application) spaced apart by 10-14 days may be made, but do not exceed 87 oz/A per growing season. Add AMS at 3 lb/A to the spray solution. Tank mix with STAPLE or DUAL MAGNUM for residual weed control. Do not apply LIBERTY in conjunction with grass herbicides (i.e., SELECT, FUSILADE, or POAST). Applications of postemergence grass herbicides and LIBERTY/INTERLINE should be separated by at least 5 days. Do not graze the treated crop or cut for hay. **Rainfast interval = 4 hours.**

Resistance Management: Do not rely solely on GLUFOSINATE for complete weed control in cotton. Tank mix a residual herbicide(s) at each GLUFOSINATE application. Soil residual herbicides at burndown and at planting will help ensure optimum weed management particularly if environmental conditions delay timely sprayer operations. Residual herbicides throughout the growing season are a key component of good weed resistance strategies.

MSMA 6.6 (MSMA)	2.4 pt	2.0 lb	17	--	12 hours
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MSMA 6 Plus 2.66 pt

Comments: Apply MSMA over-the-top cotton from 3-leaf (3 inches) up to early first square stage (about 6-inch cotton), whichever comes first using ground equipment. Slight burning and a reddish coloration of the cotton leaves may occur following application, but plant will develop normally. Only one application is allowed per season (at 2 lb ai/A), except where a salvage operation is needed (i.e., Palmer amaranth escapes the first application). A second repeat salvage treatment should be timed 1 to 3 weeks after first application. Do not make more than two applications per season with a seasonal maximum of 4 lb ai per acre per season. Do not apply within 50 ft of permanent water bodies or aquatic habitat including, but not limited to lakes, reservoirs, rivers, streams, marshes, ponds, and estuaries. Apply only when conditions do not favor drift onto adjacent crops. Do not feed foliage to livestock or graze treated areas. Do not apply after first bloom.

Poast 1.5E (sethoxydim)	1.0-1.5 pt	0.19-0.28 lb	1	75 days	12 hours
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Poast Plus 1E 1.5-2.25 pt

Comments: Apply POAST/POAST PLUS anytime during crop growth before annual grasses exceed 4-6" tall. For rhizome johnsongrass, apply 1.5 pt/A (2.25 pt/A POAST PLUS) up to 25" tall. A second 1.0 pt/A (1.5 pt/A POAST PLUS) treatment may be applied to control regrowth up to 12" tall. For bermudagrass, treat 6" runners with 1.5 pt/A (2.25 pt/A POAST PLUS), and then apply a second application of 1.0 pt/A (1.5 pt/A POAST PLUS) to 4" re-growth. Add 1 pt/A of DASH HC or SUNDANCE HC adjuvant or COC 2 pt/A. Include UAN at 4-8 pt/A or AMS at 2.5 lb/A for enhanced crabgrass activity. Consult label for tank mix partners. Controls volunteer corn in cotton. **Rainfast interval = 1 hour.**

Postemergence Broadcast Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Prowl H ₂ O 3.8CS (pendimethalin)	1.0-2.0 pt	0.48-0.95 lb	3	60 days	24 hours
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Prowl 3.3EC	1.2-2.4 pt	0.50-0.99 lb			
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Comments: Apply PROWL broadcast postemergence over the top after cotton reaches the 4- to 5-leaf stage of growth, but not after the 8-leaf stage of growth. Over the top applications made before the 4-leaf stage or after the 8-leaf stage of development may result in crop injury and/or yield loss. If a timely irrigation follows or rain occurs after application, PROWL provides residual control of Palmer amaranth (*glyphosate- and ALS-resistant biotypes*), common lambsquarters, Florida pusley, and crabgrass. Postemergence applications of PROWL may cause temporary growth reduction and/or leaf discoloration or malformation of cotton following application. **Note:** *If your field has a history of poor Palmer amaranth control with yellow herbicides, consider an alternative postemergence residual herbicide, such as WARRANT or DUAL MAGNUM.*

Prowl H ₂ O 3.8CS (pendimethalin)	1.0-2.0 pt	0.48-0.95 lb	3	60 days	24 hours
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Prowl 3.3EC	1.2-2.4 pt	0.50-0.99 lb			
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+ Glyphosate acid equivalent (ae)	22-32 fl oz		9		
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4.5 lb ae/gal		0.75-1.12 lb ae			
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Comments: **USE ONLY ON COTTON VARIETIES DESIGNATED AS ROUNDUP READY FLEX!** Apply PROWL broadcast postemergence over the top after cotton reaches the 4- to 5-leaf stage of growth, but not after the 8-leaf stage of growth. Over the top applications made before the 4-leaf stage or after the 8-leaf stage of development may result in crop injury and/or yield loss. Controls Palmer amaranth (*glyphosate- and ALS-resistant biotypes*), common lambsquarters, Florida pusley, and crabgrass. Postemergence applications of PROWL may cause temporary growth reduction and/or leaf discoloration or malformation of cotton following application. **Note:** *If your field has a history of poor Palmer amaranth control with yellow herbicides, consider an alternative postemergence residual herbicide such as WARRANT or DUAL MAGNUM.*

Prowl H ₂ O 3.8CS (pendimethalin)	1.0-2.0 pt	0.48-0.95 lb	3	70 days	24 hours
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Prowl 3.3EC	1.2-2.4 pt	0.50-0.99 lb			
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+ Liberty 280SL 2.34S (glufosinate)	29-43 fl oz	0.53-0.79 lb	10		
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Comments: **USE ONLY ON COTTON VARIETIES DESIGNATED AS LIBERTY-LINK!** Apply PROWL broadcast postemergence over the top after cotton reaches the 4- to 5-leaf stage of growth, but not after the 8-leaf stage of growth. Over the top applications made before the 4-leaf stage or after the 8-leaf stage of development may result in crop injury and/or yield loss. Controls Palmer amaranth (*glyphosate- and ALS-resistant biotypes*), common lambsquarters, Florida pusley, and crabgrass. Postemergence applications of PROWL may cause temporary growth reduction and/or leaf discoloration or malformation of cotton following application. **Note:** *If your field has a history of poor Palmer amaranth control with yellow herbicides, consider an alternative postemergence residual herbicide such as WARRANT or DUAL MAGNUM.*

Postemergence Broadcast Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Select 2EC (<i>clethodim</i>)	6.0-16.0 oz	0.094-0.25 lb	1	70 days	24 hours
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Select MAX 0.97EC	9.0-32.0 oz	0.068-0.24 lb			
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Comments: Apply SELECT/SELECT MAX anytime during crop growth before annual grasses exceed 4-6" tall. For rhizome johnsongrass, apply 8 oz/A (12-14 oz/A SELECT MAX) up to 24" tall. A second 6 oz/A (6-18 oz/A SELECT MAX) treatment may be applied to control regrowth. For bermudagrass, treat 6" runners with 8 oz/A (16 oz/A SELECT MAX), and apply 8 oz/A (16 oz/A SELECT MAX) to 6" re-growth. Add COC at 1 qt/A plus AMS at 2.5-4.0 lb/A for enhanced johnsongrass and volunteer corn activity. **Rainfast interval = 1 hour.**

Sequence 5.25L (<i>glyphosate</i> + <i>s-metolachlor</i>)	2.5 pt	0.75 lb ae + 0.94 lb	9 15	100 days	24 hours
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Comments: USE ONLY ON COTTON VARIETIES DESIGNATED AS ROUNDUP READY FLEX! Apply 2.5 pt/A over-the-top from cotyledon stage up to 10-leaf stage (not to exceed 12-inch cotton). Do not apply after the 10-leaf stage of cotton development as severe injury, including yield loss, may occur. Controls annual grasses and broadleaves. In general, the first over-the-top broadcast application should be applied early to minimize weed competition (1 to 3" tall weeds). Do not add AMS or other adjuvants. This combination provides residual control of annual grasses, pigweeds, Florida pusley, dayflower, and suppression of yellow nutsedge. Do not exceed 3.5 pt/A per season. Do not tank mix with STAPLE. **Rainfast interval = 2 hours.**

Staple LX 3.2SL (<i>pyrithiobac</i>)	1.3-3.8 fl oz	0.033-0.095 lb	2	60 days	4 hours
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Comments: Apply STAPLE over-the-top or post-directed beginning at the first true leaf stage of cotton to control cocklebur, pigweed, and annual morningglory. *Fair to good performance on Palmer amaranth (less than 2" tall).* For heavily infested field with glyphosate-resistant Palmer amaranth, apply STAPLE at 2.6 oz/A. Add NIS at 1 qt/100 gal of spray solution. May cause temporary leaf yellowing, bronzing, or crinkling particularly under cool conditions. A total of 5.1 oz/A may be applied per season. Allow a minimum of 7 days between applications. STAPLE may be tank-mixed with most insecticides approved for use on cotton. Do not tank mix with any DUAL product. DUAL and STAPLE applications should be spaced apart by at least 5 days. Do not tank-mix with malathion-containing insecticides. To avoid injury, MALATHION insecticide application should be made at least 24 hours before or after a STAPLE application. **Rainfast interval = 4 hours.**

Resistance Management: Make only one application of a group 2 containing herbicide per growing season.

Warrant 3.0ME (<i>acetochlor</i>)	3 pt	1.125 lb	15	---	12 hours
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Comments: Apply WARRANT over-the-top from emergence until cotton reaches first bloom. Provides residual control of small seeded broadleaves and grasses. Optimum application timing for first broadcast application is 2-3 leaf stage followed by a second directed application at 5-6 leaf stage (see POST DIRECTED section). Do not exceed 4.0 qt/A of WARRANT per season. Tank mix with GLYPHOSATE (use only on ROUNDUP READY FLEX varieties) or LIBERTY (use only on LIBERTY LINK varieties) for control of existing weeds. Do not apply WARRANT using a sprayable fluid fertilizer as the carrier because of severe crop injury may occur. Do not apply WARRANT to the following soils within 50ft of any well where depth to ground water is 30 feet or less: sands with less than 3% organic matter; loamy sands with less than 2% organic matter; or sandy loams with less than 1% organic matter.

Postemergence Broadcast Herbicides for Weed Management in Cotton (cont)

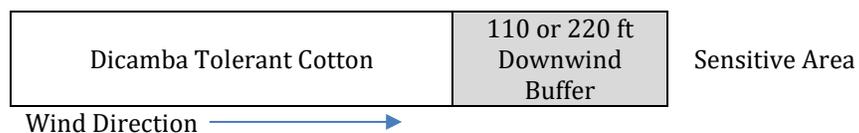
Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Xtendimax 2.9SL (dicamba)	22 fl oz.	0.5 lb ae	4	7 days	24 hours
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FeXapan 2.9SL

Comments: XTENDIMAX AND FEXAPAN ARE RESTRICTED USE PESTICIDES (*ONLY* certified applicators may purchase and apply XTENDIMAX/FEXAPAN). No applications of XTENDIMAX/FEXAPAN are permitted after December 20, 2020. **USE ONLY ON COTTON VARIETIES WITH THE XTENDFLEX TECHNOLOGY!** Apply XTENDIMAX/FEXAPAN over-the-top from emergence through 60 days after planting or up until mid-bloom (whichever occurs first) to weeds less than 4 inches in height. **Before applying XTENDIMAX/FEXAPAN, conduct a survey of the area surrounding the planned treated area for sensitive crops (i.e., food, forage, or other planting grown for sale, use, or consumption), sensitive areas (i.e., bodies of water and non-residential, uncultivated areas that may harbor sensitive plant species), and residential areas.** Do not spray XTENDIMAX/FEXAPAN when wind is blowing in the direction of neighboring sensitive crops or residential areas. **Wind shifts may occur during application, if wind direction shifts toward a neighboring sensitive crop (see product labels for details) or residential areas, the applicator must STOP application.** Consult the websites www.xtendimaxapplicationrequirements.com or www.fexapanapplicationrequirements.dupont.com for the approved nozzles and operating pressures. Make one to two postemergence applications with a minimum of 7 days between applications. Apply in a minimum of 15 gallons per acre. **Do not apply at wind speeds less than 3 mph or greater than 10 mph (Do not apply during an inversion).** Do not exceed a boom height of 24 inches above target pest or crop canopy. **XTENDIMAX/FEXAPAN applications can only be made from 1 hour after sunrise until 2 hours before sunset. Do not aerially apply XTENDIMAX/FEXAPAN.** Do not exceed a ground speed of 15 miles per hour (5 mph is recommended ground speed). **Do not tank mix ammonium-based products with XTENDIMAX/FEXAPAN.** Do not apply XTENDIMAX/FEXAPAN if expected rainfall may exceed soil field capacity and result in runoff in the next 24 hours. Clean spray equipment immediately after applying XTENDIMAX/FEXAPAN using the triple rinse method recommended on the product label.

Buffer Requirements for Sensitive Areas/Sensitive Crops/Residential Areas: Prior to applying XTENDIMAX/FEXAPAN, the following EPA website must be consulted for a listing of counties in South Carolina that may harbor endangered species: www.epa.gov/espp/. Fields that exist in counties that harbor endangered terrestrial dicot plant species will require a 110-ft downwind buffer (220-foot for rates above 22 fl oz/A) **and a 57-foot buffer on all sides of the field.** For counties without an endangered species designation, maintain a 110-foot downwind buffer (220-foot rates above 22 fl oz/A) between the last treated row and closest downwind edge (in the direction in which the wind is blowing). The following areas may be included in the buffer distance when adjacent to field edges: roads, paved or gravel surfaces, mowed and/or managed areas adjacent to field, such as rights-of-way; planted agricultural fields containing corn, dicamba tolerant cotton, dicamba tolerant soybean, sorghum, proso millet, small grains, and sugarcane; agricultural field that have been prepared for planting; and areas covered by the footprint of a building, silo, or other manmade structure with walls and/or roof.



DO NOT APPLY XTENDIMAX/FEXAPAN when wind is blowing toward Sensitive Crops and/or Residential Areas:

DO NOT SPRAY



Weed Response to Postemergence Directed Cotton Herbicides¹

	Aim	Liberty ²	MSMA	MSMA + Caparol	MSMA + Cobra	MSMA + Cotoran	MSMA + Direx	MSMA + Layby Pro	MSMA + Suprend	MSMA + Valor	Flexstar GT ³
anoda, spurred	G	P	P	F	F	FG	F	F	F	G	E
barnyardgrass	P	FG	F	FG	F	F	F	FG	FG	FG	E
beggarweed, Florida	G	P	P	F	F	FG	F	F	F	G	E
bermudagrass	P	P	P	P	P	P	P	P	P	P	F
citronmelon	P	G	F	G	G	G	G	G	G	G	E
cocklebur, common	G	E	E	E	E	E	E	E	E	E	E
cowpea	G	G	FG	G	FG	G	G	G	G	G	E
crabgrass	P	FG	F	FG	F	F	F	FG	FG	FG	E
crotalaria, showy	G	E	G	G	G	G	G	G	G	G	E
croton, tropic	G	G	F	G	E	G	G	G	GE	E	E
crowfootgrass	P	FG	F	FG	F	F	F	FG	FG	FG	E
dayflower, Benghal	P	PF	GE	GE	GE	GE	GE	GE	GE	GE	PF
eclipta	G	G	G	G	G	G	E	E	G	E	E
goosegrass	P	F	F	FG	F	F	F	FG	FG	F	E
jimsonweed	G	E	F	G	GE	GE	G	G	G	G	E
johnsongrass, seedling	P	G	F	FG	F	F	F	FG	FG	F	E
johnsongrass, rhizome	P	F	P	P	P	P	P	P	P	P	G
lambsquarters, common	FG	E	P	G	F	G	G	G	G	G	E
morningglory spp.	GE	E	F	E	E	G	GE	GE	E	E	G
nutsedge, purple	P	P	F	F	F	F	F	F	E	FG	FG
nutsedge, yellow	P	P	FG	FG	FG	FG	G	G	E	G	G
panicum, fall	P	FG	F	FG	F	F	F	FG	FG	FG	E
panicum, Texas	P	P	P	F	P	P	P	F	F	PF	E
pigweed spp.	G	G	P	FG	G	FG	GE	GE	GE	G	E
glyphosate-resistant	G	G	P	FG	G	FG	GE	GE	GE	G	G
ALS-resistant	G	G	P	FG	G	FG	GE	GE	GE	G	E
poinsettia, wild	G	PF	PF	PF	G	F	PF	G	P	G	G
purslane, common	P	F	PF	FG	G	FG	G	G	G	G	FG
pusley, Florida	G	F	P	F	F	F	F	F	F	FG	G
ragweed, common	FG	E	F	E	E	GE	E	E	E	GE	E
redweed (chocolateweed)	G	GE	P	G	GE	FG	GE	GE	G	GE	G
ryegrass, annual	G	FG	P	P	FG	P	GE	GE	P	F	E
sandbur	P	FG	F	FG	F	F	F	FG	FG	F	E
senna, coffee	---	GE	F	G	F	G	G	G	---	G	E
sesbania, hemp	P	---	P	PF	F	PF	PF	---	---	G	GE
sicklepod	P	E	F	GE	PF	G	GE	GE	E	GE	E
sida, prickly	FG	GE	P	GE	GE	FG	GE	GE	GE	GE	G
signalgrass, broadleaf	P	FG	F	FG	F	F	F	FG	FG	F	E
smartweed, Pennsylvania	---	GE	P	F	F	G	F	F	---	G	G
spurge	G	FG	P	G	G	P	G	G	G	G	E
starbur, bristly	---	G	PF	G	G	G	G	G	GE	G	GE
velvetleaf	F	G	P	G	G	F	G	G	FG	G	E
vol. corn	P	G	P	FG	FG	FG	G	G	FG	G	E
RR hybrids	P	G	P	FG	FG	FG	G	G	FG	G	F
RR+LL hybrids	P	P	P	FG	FG	FG	G	G	FG	G	F
vol. peanut	P	E	F	F	F	F	G	G	FG	G	F

¹**Key to Response Ratings:** E = excellent control, 90% or better; G = good control, 80 to 90%; F = fair control, 70 to 80%; P = poor control, less than 70%; --- = Insufficient Data.

²Use only on LibertyLink (LL) cotton varieties

³Use only on glyphosate-tolerant (Gly-Tol or Roundup Ready [RR] Flex) cotton varieties.

Weed Response to Postemergence Directed Cotton Herbicides (cont)¹

	Glyphosate ²	Glyphosate + Aim/ET ²	Glyphosate + Caparol ²	Glyphosate + Direx ²	Glyphosate + Envoke ²	Glyphosate + Prowl ²	Glyphosate + Staple ²	Glyphosate + Valor ²	Prefix	Reflex	Sequence ²	HOOD
												Paraquat+ Direx
anoda, spurred	E	E	E	E	E	E	E	E	P	P	E	G
barnyardgrass	E	E	E	E	E	E	E	E	P	P	E	G
beggarweed, Florida	E	E	E	E	E	E	E	E	G	G	E	E
bermudagrass	F	F	F	F	F	F	F	F	P	P	F	P
citronmelon	GE	GE	GE	GE	E	GE	E	E	G	G	E	G
cocklebur, common	E	E	E	E	E	E	E	E	G	G	E	G
cowpea	GE	GE	GE	GE	GE	GE	GE	E	F	F	GE	G
crabgrass	E	E	GE	GE	E	E	E	E	P	P	E	G
crotalaria, showy	G	G	G	G	G	G	G	G	---	---	G	G
croton, tropic	E	E	E	E	E	E	E	E	---	---	E	F
crowfootgrass	E	E	GE	GE	E	E	E	E	P	P	E	G
dayflower, Benghal	PF	GE	FG	FG	PF	PF	FG	GE	---	---	PF	G
eclipta	E	E	E	E	E	E	E	E	G	G	E	F
goosegrass	E	E	GE	GE	E	E	E	E	P	P	E	G
jimsonweed	E	E	E	E	E	E	E	E	G	G	E	G
johnsongrass, seedling	E	E	GE	GE	E	E	E	E	P	P	E	G
johnsongrass, rhizome	GE	GE	G	G	E	GE	GE	GE	P	P	GE	P
lambsquarters, common	G	GE	GE	GE	GE	G	GE	GE	FG	FG	G	F
morningglory, annual	FG	E	GE	GE	GE	FG	GE	E	G	G	FG	FG
nutsedge, purple	FG	FG	FG	FG	GE	FG	FG	GE	FG	P	FG	PF
nutsedge, yellow	G	F	F	F	E	G	FG	E	F	P	F	PF
panicum, fall	E	E	GE	GE	E	E	E	E	P	P	E	G
panicum, Texas	E	E	GE	GE	E	E	E	E	P	P	E	G
pigweed spp.	E	E	E	E	E	E	E	E	E	E	E	GE
glyphosate-resistant	P	F	F	G	G	P	G	G	E	E	P	GE
ALS-resistant	E	E	E	E	E	E	E	E	E	E	E	GE
poinsettia, wild	G	GE	GE	G	E	G	G	GE	G	G	GE	G
purslane, common	F	G	FG	GE	FG	F	FG	GE	P	P	F	G
pusley, Florida	PF	G	G	G	PF	PF	PF	GE	GE	GE	PF	PF
ragweed, common	E	E	E	E	E	E	E	E	GE	GE	GE	F
redweed (chocolateweed)	GE	GE	GE	GE	GE	GE	GE	GE	G	G	GE	FG
ryegrass, annual	E	E	E	E	E	E	E	E	F	F	E	F
sandbur, field	E	E	GE	GE	E	E	E	E	P	P	E	G
senna, coffee	E	E	E	E	E	E	E	E	FG	FG	GE	F
sesbania, hemp	F	GE	GE	FG	FG	F	GE	FG	GE	GE	G	F
sicklepod	E	E	E	E	E	E	E	E	FG	FG	E	GE
sida, prickly	FG	FG	G	G	FG	FG	G	GE	FG	FG	FG	PF
signalgrass, broadleaf	E	E	GE	GE	E	E	E	E	P	P	E	GE
smartweed, Pennsylvania	G	GE	G	G	E	G	E	G	---	---	G	G
spurge	G	GE	G	GE	G	G	G	G	G	G	G	G
starbur, bristly	GE	GE	GE	GE	GE	GE	GE	GE	---	---	GE	E
velvetleaf	E	E	E	E	E	E	E	E	PF	PF	E	---
vol. corn	E	E	E	E	E	E	E	E	FG	F	E	F
RR hybrids	FG	FG	FG	FG	GE	FG	FG	GE	FG	F	FG	F
RR+LL hybrids	FG	FG	FG	FG	GE	FG	FG	GE	FG	F	FG	F
vol. peanut	G	GE	G	G	FG	FG	F	FG	P	P	G	P

¹Key to Response Ratings: E = excellent control, 90% or better; G = good control, 80 to 90%; F = fair control, 70 to 80%; P = poor control, less than 70%; --- = Insufficient Data.

²Use only on glyphosate-tolerant (Gly-Tol or Roundup Ready [RR] Flex) cotton varieties

³Use only on Bollgard II XtendFlex cotton varieties

Postemergence Directed Herbicides for Weed Management in Cotton

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			
Aim 2EC (<i>carfentrazone</i>)	1.0-1.6 fl oz	0.013-0.025 lb	14	7 days	12 hours
Aim 1.9EW					
Comments: Apply AIM at 1.0-1.6 oz/A when cotton is a minimum of 6" tall (if less than 5-6 nodes, use a hooded sprayer) and where a sufficient height differential exists between crop and weed (3-4"). Care must be taken to ensure that no spray contacts green foliage or unbarked stem; otherwise, severe crop injury may occur. For best performance, apply to actively growing weeds less than 4" tall. Coverage is essential for good control. Add COC 1 gal or NIS at 2 pt/100 gallons of spray solution. For additional control of broadleaf and grass weeds, AIM may be tank mixed with other herbicides labeled for cotton post-directed and layby applications.					
Caparol 4L (<i>prometryn</i>)	1.3-2.4 pt	0.65-1.2 lb	5	---	12 hours
Comments: Apply CAPAROL at 1.3 pt/A when cotton is 6 inches tall and up to 2.4 pt/A when cotton is at least 12" tall before weeds are 2 inches in height. Add NIS at 2 qt/100 gal of spray solution. Tank mix partners may include GLYPHOSATE, MSMA, or GRAMOXONE (hooded applicatations only).					
Cobra 2EC (<i>lactofen</i>)	6.0-12.5 fl oz	0.094-0.195 lb	14	70 days	12 hours
Comments: Apply COBRA when cotton is 6" tall and where sufficient height differential exists between crop and weed (3-4"). Direct spray to the lower 2 inches of the cotton stem to avoid injury. Apply when weeds are small and actively growing. Adjust nozzles to ensure full coverage of target weeds. Do not apply more than 25 fl oz/A of COBRA per year. Do not apply more than 2 applications of COBRA per season. Do not apply a sequential application of COBRA within 14 days of first application. Tank mix partners may include MSMA or DIURON. Rainfast interval =30 minutes.					
Cotoran 4L (<i>fluometuron</i>)	2.0-4.0 pt	1.0-2.0 lb	7	60 days	24 hours
Comments: Apply COTORAN at 2.0-4.0 pt/A (depending on soil texture) when cotton is at least 3" tall. Add surfactant at 2 qt/100 gal of spray solution. Tank mix partners may include PYRIMAX, PARALLEL PCS, and MSMA.					
Diuron 4F (<i>diuron</i>)	1.0-1.5 pt	0.4-1.2 lb	7	---	12 hours
Comments: Apply DIREX at 1.0-1.5 pt/A when cotton is at least 6 inches tall (1.0 pt/A on 6-8" tall cotton and 1.5 pt/A on cotton that is 8-12" tall). For enhanced control of emerged weeds, tank mix with MSMA, GLYPHOSATE, or GRAMOXONE (hooded only).					
Dual Magnum 7.62 EC (<i>s-metolachlor</i>)	1.0-1.33 qt	0.95-1.27 lb	15	80 days	24 hours
Comments: Apply DUALMAGNUM at 1.0-1.33 pt/A when cotton is at least 3 inches tall. For enhanced control of emerged weeds, tank mix with MSMA, GLYPHOSATE, CAPAROL or COTORAN.					

Postemergence Directed Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

ET 0.208EC (pyraflufen ethyl)	0.5-1.0 fl oz	0.0008-0.0016 lb	14	7 days	12 hours
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ET X 0.338EC	0.3-0.6 fl oz				
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Comments: Apply ET at 0.5-1.0 fl oz/A or ET X at 0.3-0.6 fl oz/A when cotton is at least 18" tall and has a minimum of 3" of stem bark. Apply when weeds are less than 4" tall. Avoid contact with desirable foliage. Allow a minimum of 30 days between applications. **Rainfast interval = N/A**

Envoke (trifloxysulfuron)	0.1-0.2 oz	0.0047-0.0094 lb	2	60 days	12 hours
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Comments: Apply ENVOKE at 0.1-0.2 oz/A when cotton at least 6" tall through layby. For control of emerged weeds (use higher rate for larger weeds; max 4" tall). Add NIS at 2 qt or COC at 1 gal/100 gal of spray solution. **Rainfast interval = 3 hours.**

Resistance Management: Make only one application of a group 2 containing herbicide per growing season.

Fierce 76WDG (flumioxazin + pyroxasulfone)	3.0 oz	0.063 lb + 0.080 lb	14 15	60 days	12 hours
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Fierce EZ 2.04SC	6.0 fl. oz				
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Comments: Apply FIERCE at 3.0 oz/A when cotton is at least 6" tall with a directed shielded sprayer. For layby timings, FIERCE applied when cotton is at least 18" tall and should be directed at the lower 2 inches of the cotton stem to avoid injury. FIERCE should be tank mixed with MSMA, DIURON, or GLYPHOSATE to control emerged weeds. Add NIS at 1 qt per 100 gal of spray solution. Do not apply more than 3 oz/A of FIERCE during a single application. Do not apply more 6 oz/A during a single growing season. Do not make a sequential application of FIERCE within 30 days of the first application of FIERCE. **Rainfast interval = 1 hour.**

Flexstar GT 3.5SL (fomesafen + glyphosate)	3.5 pt	0.25 lb + 0.99 lb ae	14 9	70 days	24 hours
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Comments: **USE ONLY ON COTTON VARIETIES DESIGNATED AS ROUNDUP READY FLEX!** For directed applications, apply FLEXSTAR GT to cotton at least 6" tall. Apply FLEXSTAR GT to cotton at least 18" tall with 4" of bark at the base of the plant at layby. Care must be taken so that no spray contacts green foliage or unbarked stem; otherwise, severe crop injury may occur. Apply FLEXSTAR GT when weeds are small (2-4 cotyledon stage for broadleaf weeds) and if activated by rainfall will provide residual weed control. Do not apply more than 3.5 pt/A of FLEXSTAR GT per postemergence directed application per year. Tank mix partners may include any herbicide labeled for postemergence directed applications in cotton. **Rainfast interval = 1 hour.**

Resistance Management: Make only one application of a group 14 containing herbicide per growing season.

Postemergence Directed Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Glyphosate acid equivalent (ae) 9 7 days 4 hours

4.5 lb ae/gal 22-32 fl oz 0.75-1.12 lb ae

Comments: USE ONLY ON COTTON VARIETIES DESIGNATED AS ROUNDUP READY FLEX! Apply 0.63 to 1.12 lb ae/A from cracking until 7 days before harvest. Controls annual grasses and broadleaves. Direct spray allows better contact with weeds under the cotton canopy. Best results are obtained when weeds are less than 3" tall. Consult label for maximum application rates allowed during the season. Tank mixes with GLYPHOSATE labeled for post-directed applications to ROUNDUP READY FLEX cotton varieties include AIM, CAPAROL, DIREX, DUAL MAGNUM, DUAL II MAGNUM, ENVOKE, PARRLAY, STAPLE, VALOR, WARRANT, and PENDIMETHALIN. See tank mix partner labels for more information. **Rainfast interval = heavy rainfall soon after application may wash product off of the foliage and a repeat application may be needed to ensure adequate weed control (suggest 1 hour).**

Resistance Management: *Glyphosate-resistant (Group 9) Palmer amaranth is spreading rapidly throughout South Carolina. Continued reliance on glyphosate-only programs will enhance selection and spread of resistant biotypes. Tank mixing glyphosate with other chemistries must be utilized.*

Goal 2XL (oxyflourfen)	1.0-2.0 pt 0.25-0.5 lb	14	90 days	24 hours
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GoalTender 0.5-1.0 pt

Comments: Apply GOAL/GOALTENDER when cotton is 6 to 8 inches tall. Apply when weeds are small and actively growing preferably when there are not more than 4 true leaves present. Adjust nozzles to ensure full coverage of target weeds. Do not use hollow cone nozzles. Use a minimum of 20 GPA spray volume. Do not apply more than 0.5 lb ai/A of oxyflourfen per season. GOAL/GOALTENDER may be tank mixed with other herbicides registered for postemergence use in cotton.

Resistance Management: *Make only one application of a group 14 containing herbicide per growing season.*

Layby Pro 4L (linuron + diuron)	1.0-2.0 pt 0.25-0.5 lb + 0.25-0.5 lb	7 7	76 days	24 hours
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Comments: Apply LAYBY PRO at 1.0-1.5 pt/A when cotton at least 8" tall and 1.6-2.0 pt/A when cotton greater than 15" tall. For control of emerged weeds (use higher rate for larger weeds; max 4" tall). Add NIS at 2 qt or COC at 1 gal/100 gal of spray solution. **Rainfast interval = 2 hours.**

Liberty 280 2.34SL (glufosinate)	29-43 fl oz 0.53-0.79 lb	10	70 days	12 hours
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Interline 2.34 SL

Comments: USE ONLY ON COTTON VARIETIES DESIGNATED AS LIBERTY-LINK! Apply LIBERTY at 29 oz/A as a directed application when cotton canopy prevents spray from reaching weeds below. Do not exceed 87 oz/A per season (up to three 29 oz/A applications). If weather conditions prevent a timely 1st application, then LIBERTY may be applied up to 43 oz/A to control larger weeds. If more than 29 oz/A are used in any single application, seasonal total may not exceed 72 oz/A including all application timings. Controls annual grasses and broadleaves. Direct spray allows better contact with weeds under the cotton canopy. Best results are obtained when weeds are less than 3" tall. Direct spray to the lower third of the cotton plant. Add AMS at 3 lb/A to the spray solution. For residual control of weeds, tank mix DUAL MAGNUM, WARRANT, or STAPLE. **Rainfast interval = 4 hours.**

Postemergence Directed Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

MSMA 6L	2.67 pt	2.0 lb	17	---	12 hours
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Comments: Apply MSMA when cotton is 3" tall up to first bloom. Do not apply after first bloom. A slight burning or reddish discoloration of the foliage may occur after application; however, cotton plants will develop normally. Add surfactant at 2 qt/100 gal to the spray solution. Do not apply more than 4 lb ai/A of MSMA. **Rainfast interval = 2 hours.**

Prefix 5.29EC (<i>s-metolachlor</i> + <i>fomesafen</i>)	2.0-2.33 pt	1.09-1.26 lb + 0.24-0.28 lb	15 14	80 days	24 hours
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Comments: For directed applications, apply PREFIX to cotton at least 6" tall. Apply PREFIX to cotton at least 18" tall with 4" of bark at the base of the plant at layby. Care must be taken so that no spray contacts green foliage or unbarked stem; otherwise, severe crop injury may occur. PREFIX will control small emerged weeds (2-4 cotyledons for broadleaf weeds) and if activated by rainfall within 7-10 days will provide residual weed control. Add NIS at 1-2 qt or COC at 1 gal/100 gallons of spray solution. Do not apply more than 2.33 pt/A of PREFIX per season. Do not add liquid nitrogen to PREFIX tank mixes in cotton. Tank mix partners may include CAPAROL, DSMA, DIREX, ENVOKE, KARMEY, LAYBY PRO, MSMA, GLYPHOSATE (glyphosate-tolerant cotton varieties only), and SUPREND. **Rainfast interval = N/A.**

Resistance Management: Make only one application of a group 14 containing herbicide per growing season.

Prowl H20 3.8CS (<i>pendimethalin</i>)	1.0-2.0 pt	0.48-0.95 lb	3	60 days	24 hours
Prowl 3.3EC	1.2-2.4 pt				

Comments: Apply PROWL directly to the soil between rows as a directed spray following the last cultivation. Layby applications can be applied in cotton previously treated with PROWL. However, the total amount of PROWL applied per acre per season cannot exceed the highest label rate of PROWL for the given soil type. Controls Palmer amaranth (*glyphosate- and ALS-resistant biotypes*), common lambsquarters, Florida pusley, and crabgrass. **Note:** *If your field has a history of poor Palmer amaranth control with yellow herbicides, consider alternative soil residual partner for GLYPHOSATE (i.e., DUAL or WARRANT).* **Rainfast interval = N/A.**

Sequence 5.25SL (<i>glyphosate</i> + <i>s-metolachlor</i>)	2.5 pt	0.75 lb ae + 0.94 lb	9 15	50 days	24 hours
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Comments: **USE ONLY ON COTTON VARIETIES DESIGNATED AS ROUNDUP READY FLEX!** Apply SEQUENCE at 2.5 pt/A up to 12" tall cotton (10 leaf stage). Do not apply later in cotton development as severe injury, including yield loss, may occur. Controls annual grasses and broadleaves. Best results are obtained when weeds are less than 3" tall. Do not exceed 3.5 pt/A of Sequence per season. Can be tank mixed with CENTRIC or KARATE insecticides. **Rainfast interval = heavy rainfall shortly after application require retreatment.**

Postemergence Directed Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			
Suprend 80WDG (prometryn + trifloxysulfuron)	1.0-1.5 lb	0.79-1.18 lb + 0.007-0.0105 lb	7 2	60 days	12 hours

Comments: Apply SUPREND at 1.0-1.5 lb/A when cotton is at least 6" tall. For control of emerged weeds (use higher rate for larger weeds; less than 6" tall). Add surfactant at 2 qt/100 gal to the spray solution. Do not tank mix SUPREND with MALATHION, PROFENFOS, DENIM, ACEPHATE, BIDRIN, CAPTURE, KARATE or unacceptable crop injury may occur. Do not exceed 0.0188 lb ai/A of trifloxysulfuron per year. **Rainfast interval = 3 hours.**

Resistance Management: Make only one application of a group 2 containing herbicide per growing season.

Valor SX 51WDG (flumioxazin)	1.0-2.0 oz	0.032-0.064 lb	14	21 days	12 hours
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Comments: Apply VALOR SX at 2 oz/A when cotton is at least 18" tall as a direct spray to contact only lower 2" of bark on stem (no spray contacts green foliage or unbarked stem). Do not apply MSMA after first bloom. Add NIS at 1 qt/100 gal of spray solution. Do not use COC, MSO, organo-silicone adjuvants, or any adjuvant containing any of these. **Rainfast interval = 2 hours.**

Resistance Management: Make only one application of a group 14 containing herbicide per growing season.

Warrant 3.0ME (acetochlor)	1.5-2.0 qt	1.125 lb	15	---	12 hours
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Comments: Apply WARRANT postemergence directed from 5-6 leaf stage until cotton reaches first bloom. Provides residual control of small seeded broadleaves and grasses. Do not exceed 4.0 qt/A of WARRANT per season. Tank mix with GLYPHOSATE (use only on ROUNDUP READY FLEX varieties) or LIBERTY (use only on LIBERTY LINK varieties) for control of existing weeds. Do not apply WARRANT using a sprayable fluid fertilizer as the carrier because of severe crop injury may occur. Do not apply WARRANT to the following soils within 50ft of any well where depth to ground water is 30 feet or less: sands with less than 3% organic matter; loamy sands with less than 2% organic matter; or sandy loams with less than 1% organic matter.

Hooded Sprayer Herbicides for Weed Management in Cotton

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

ET 0.208EC (pyraflufen ethyl)	0.5-1.0 fl oz	0.0008-0.0033 lb	14	7 days	12 hours
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ET X 0.335EC	0.3-1.25 fl oz				
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Comments: Apply ET at 0.5-1.0 fl oz/A or ETX at 0.3-1.25 fl oz/A when cotton is 18 inches or more and has a least 3 inches of stem bark using hooded ground equipment only. Apply when weeds are less than 4" tall. Avoid contact with desirable foliage. Allow a minimum of 30 days between applications. Do not exceed 0.0033 lb ai PYRAFLUFEN ETHYL per season.

Fierce 76WDG (flumioxazin + pyroxasulfone)	3.0 oz	0.063 lb + 0.080 lb	14 15	60 days	12 hours
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Comments: Apply FIERCE at 3.0 oz/A when cotton is at least 6" tall with a hooded sprayer. FIERCE should be tank mixed with MSMA, DIURON, or GLYPHOSATE to control emerged weeds. Add NIS at 1 qt per 100 gal of spray solution. Do not apply more than 3 oz/A of FIERCE during a single application. Do not apply more 6 oz/A during a single growing season. Do not make a sequential application of FIERCE within 30 days of the first application of FIERCE. **Rainfast interval = 1 hour**

Flexstar GT 3.5SL (fomesafen + glyphosate)	3.5 pt	0.25 lb + 0.99 lb ae	14 9	70 days	24 hours
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Comments: For hooded or shielded sprayer applications, apply FLEXSTAR GT to cotton at least 6" tall. Care must be taken so that no spray contacts green foliage or unbarked stem; otherwise, severe crop injury may occur. Apply FLEXSTAR GT when weeds are small (2-4 cotyledon stage for broadleaf weeds) and if activated by rainfall will provide residual weed control. Adjust nozzles to ensure full coverage of target weeds. Do not apply more than 3.5 pt/A of FLEXSTAR GT per postemergence directed application per year. Tank mix partners may include any herbicide labeled for postemergence directed applications in cotton. **Rainfast interval = 1 hour.**

Resistance Management: Make only one application of a group 14 containing herbicide per growing season.

Glyphosate acid equivalent (ae)			9	7 days	12 hours
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4.5 lb ae/gal	22 fl oz	0.75 lb ae			
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Comments: Hoods should be kept as close to the ground as possible in conventional and non-Roundup Ready cotton varieties. Do not allow the spray to contact stems or foliage of non-Roundup Ready cotton. Apply in 5 -10 GPA at a maximum of 25 PSI. Do not exceed 5 MPH. Cotton should be at least 8" tall. See GLYPHOSATE product label for adjuvant recommendation. Tank mixes with CAPAROL, DIREX, ENVOKE, LAYBY PRO, STAPLE, PROWL, and VALOR will enhance residual weed control. **Rainfast interval = heavy rainfall soon after application may wash product off of the foliage and a repeat application may be needed to ensure adequate weed control (suggest 1 hour).**

Resistance Management: *Glyphosate-resistant Palmer amaranth is spreading rapidly throughout South Carolina. Continued reliance on glyphosate-only programs will enhance selection and spread of resistant biotypes. Tank mixing glyphosate with other chemistries must be used.*

Hooded Sprayer Herbicides for Weed Management in Cotton (cont)

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			
<i>Paraquat 2S</i>	1.2-2.0 pt	0.3-0.5 lb	22	15 days	24 hours
<i>Paraquat 3S</i>	0.8-1.3 pt	0.3-0.49 lb			
Comments: Hoods should be kept as close to the ground as possible. Do not allow the spray to contact stems or foliage of cotton. Apply in a minimum of 10 GPA at a maximum of 25 PSI. Do not exceed 5 MPH. Cotton should be at least 8" tall. Add NIS at 2 pt or COC at 1 gal/100 gal of spray solution. Allow 14 days between multiple applications. CAPAROL or DIREX may be tank mixed with GRAMOXONE and will enhance residual weed control. Rainfast interval = 30 minutes.					
Liberty 280 2.34SL (<i>glufosinate</i>)	29-43 fl oz	0.53-0.79 lb	10	70 days	12 hours
<i>Interline 2.34SL</i>					
Comments: Hoods should be kept as close to the ground as possible in conventional and non-Liberty-Link cotton varieties. Do not allow the spray to contact stems or foliage of cotton. Apply in a minimum of 15 GPA at a maximum of 25 PSI. Do not exceed 5 MPH. Apply LIBERTY at 29-43 oz/A as a hooded application when cotton canopy prevents spray from reaching weeds below. Cotton should be at least 8" tall. Do not exceed 87 oz/A per season from all application sources. Add AMS at 3 lb/A to the spray solution. For non-Liberty-Link varieties, Tank mix partners for hooded applications of LIBERTY include AIM, CAPAROL, COTORAN, DIREX, DUAL MAGNUM, GLYPHOSATE, KARMEX, PENDIMAX, PROWL, SELECT MAX, and STAPLE. Rainfast interval = 4 hours.					
Prefix 5.29EC (<i>s-metolachlor</i> + <i>fomesafen</i>)	2.0-2.33 pt	1.09-1.26 lb + 0.24-0.28 lb	15 14	80 days	24 hours
Comments: For hooded or shielded sprayer applications, apply PREFIX to cotton at least 6" tall. Care must be taken so that no spray contacts green foliage or unbarked stem; otherwise, severe crop injury may occur. PREFIX will control small emerged weeds (2-4 cotyledons for broadleaf weeds) and if activated by rainfall within 7-10 days will provide residual weed control. Add NIS at 1-2 qt or COC at 1 gal/100 gallons of spray solution. Do not apply more than 2.33 pt/A of PREFIX per season. Tank mix partners include CAPAROL, DSMA, DIREX, ENVOKE, KARMEX, LAYBY PRO, MSMA, GLYPHOSATE (glyphosate-tolerant cotton varieties only), and SUPREND. Rainfast period = N/A (suggest 1 hour)					
Resistance Management: Make only <u>one</u> application of a group 14 containing herbicide per growing season.					

Harvest Aids for Cotton

Herbicide	Rate/Acre Broadcast		Mode of Action	Preharvest Interval	Restricted Entry Interval
	Formulation	Active Ingredient			

Aim 2 EC (<i>carfentrazone</i>)	1.6 fl oz	0.025 lb	14	7 days	12 hours
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Aim 1.9 EW

Comments: Apply AIM up to 1.6 oz/A after 60 to 70% of the bolls are open. Use a minimum of 10 gallons per acre for ground applications and 5 gallons per acre for aerial applications. Coverage is essential for good defoliation. A repeat application of up to 1.6 oz/A is allowed if foliage is remaining or regrowth is occurring. Dense canopy, large plant sizes, and environmental conditions non-conducive to complete plant coverage may reduce initial application performance and increase need for a second application. AIM may be tank mixed with PREP, FINISH, DEF, DROPP, FOLEX, HARVADE, GINSTAR, COTTONQUIK, or other registered cotton harvest aid products. Do not apply more than 3.2 oz/A per season as a harvest aid. Add a NIS a 0.25% v/v (warmer periods of defoliation) or COC at 1 gal per 100 gal (cooler periods of defoliation). **Rainfast interval = 6-8 hours.**

ET 0.208 EC (<i>pyraflufen ethyl</i>)	1.5-2.75 fl oz	0.0024-0.0045 lb	14	7 days	12 hours
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Comments: Apply ET up to 2.75 oz/A when bolls are 60% open. Use a minimum of 20 gallons per acre for ground applications or 5 gallons per acre for aerial applications. Coverage is essential for good defoliation. Adequate defoliation is generally achieved within 7 to 14 days after application. A repeat application of up to 2.75 oz/A is allowed if foliage is remaining or regrowth is occurring. Do not exceed 2 applications or 5.5 oz/A of ET for defoliation of cotton. Applications must be made a minimum of 7 days apart. ET may be tank mixed with COTTONQUIK, CYCLONE, DEF, DROPP, FINISH, FOLEX, GINSTAR, PREP, GRAMOXONE, and/or GLYPHOSATE. **Rainfast interval = 1 hour.**

<i>Glyphosate</i> acid equivalent (ae)			9	7 days	12 hours
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4.5 lb ae/gal	22-44 fl oz	0.75-1.5 lb ae			
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Comments: Apply GLYPHOSATE after 60% of the bolls are open (non-Roundup Ready cotton). Can be tank mixed with some defoliant; see labels for details. Apply to Roundup Ready cotton varieties after 20% cracked boll stage or to Roundup Ready FLEX cotton up to 7 days before harvest. Do not apply GLYPHOSATE to cotton grown for seed as a reduction in vigor or germination may occur. **Rainfast interval = heavy rainfall soon after application may wash product off the foliage and a repeat application may be needed to ensure adequate weed control (suggest 1 hour).**

<i>Paraquat 2S</i>	8.0 fl oz	0.13 lb	22	7 days	12 hours
<i>Paraquat 3S</i>	5.4 fl oz				

Comments: Defoliate cotton as normal. After at least 75-80% of bolls are open, the remaining bolls expected to be harvested are mature, and most of the cotton leaves have dropped, apply GRAMOXONE in a minimum of 20 GPA and add 1 pt NIS per 100 gal of spray solution. **Rainfast interval = 30 minutes.**