

Crop, Situation, and Active Chemical Per Broadcast Acre	Weeds Controlled	Formulated Material Per Broadcast Acre	Time of Application	Method of Application and Precautions
<b>COTTON</b>				
For additional information on burndown herbicides see p. 24, WEED RESPONSE RATINGS FOR BURNDOWN HERBICIDES.				
<b>Preplant–Burndown</b>				
paraquat @ 0.47 to 0.94 lb/A	Most emerged broadleaf weeds and grasses.	<b>Paraquat (3 lb/gal formulations)</b> 1.25 to 2.5 pt/A. Use high rate on weeds larger than 2 inches. Add a surfactant (p. 3).	After beds are formed but prior to planting.	Apply for knockdown of existing vegetation prior to planting. Not dependent upon temperature for activity. Add 2,4-D or Clarity for improved control of horseweed.
glufosinate @ 0.73 lb/A	Most emerged broadleaf and grass weeds.	<b>Ignite 280 SL</b> 40 oz/A. Follow label for surfactant use.	Prior to planting.	Add 2,4-D or Clarity for improved control of horseweed if preplant interval can be achieved. Use nozzles and pressure that create medium spray droplets. Use 10 gpa.
glyphosate @ 1 lb/A	Annual grasses and broadleaf weeds. Does not control entire-leaf and ivyleaf morningglories.	<b>Glyphosate (4 lb/gal formulations)</b> 2 pt/A.	Use prior to planting for vegetation knockdown.	Add 2,4-D or Clarity for control of horseweed.
glyphosate + carfentrazone @ 1 lb/A + 0.016 lb/A	Improved control of morning-glory and henbit.	<b>Glyphosate (4 lb/gal formulations) + Aim 2EC</b> 2 pt/A + 1.0 oz.	Use prior to planting for vegetation knockdown.	Add surfactant if glyphosate formulation does not contain one. Add 2,4-D or Clarity for improved control of horseweed.
glyphosate + 2,4-D @ 1 lb/A + 1 lb/A	Annual grasses and broadleaf weeds.	<b>Glyphosate (4 lb/gal formulations) + 4 SL 2,4-D Amine</b> 2 pt/A + 2 pt/A.	At least 28 days prior to planting.	Adding residual herbicide such as Caparol, Valor, Cotoran or Direx provides residual control of horseweed.
glyphosate + dicamba @ 1 lb/A + 0.25 lb/A	Annual grasses and broadleaf weeds including horseweed.	<b>Glyphosate (4 lb/gal formulations) + Clarity 4 SL</b> 2 pt/A + 8 oz/A.	At least 21 days prior to planting following 1 inch of rainfall.	Good option for glyphosate-resistant horseweed. Adding residual herbicide such as Valor, Caparol, Cotoran or Direx provides residual control of horseweed.
glyphosate + flumioxazin @ 1 lb/A + 0.032 to 0.063 lb/A	Annual grasses and broadleaf weeds.	<b>Glyphosate (4 lb/gal formulations) + Valor 51 WDG</b> 2 pt/A + 1 to 2 oz/A.	At least 14 days for 1 oz/A or 21 days for 2 oz/A + 1 inch of rain prior to planting.	Valor is rainfast in 1 hour. Provides residual control of horseweed. Add Clarity for resistant horseweed.
glyphosate + fomesafen @ 1 lb/A + 0.25 lb/A	Broadleaf weeds including Palmer pigweed.	<b>Glyphosate (4 lb/gal formulations) + Reflex 2 EC</b> 2 pt/A + 1 pt/A.	Apply 14-21 days preplant + 0.5 inch rainfall prior to planting.	Provides residual control of horseweed and pigweed for 6 weeks after application. Knocking or dragging top of beds prior to planting will remove herbicide and allow weed infestation.
glyphosate + flumioxazin + dicamba @ 1 lb/A + 0.063 lb/A + 0.25 lb/A	Annual grass and broadleaf weeds including horseweed.	<b>Glyphosate (4 lb/gal formulations) + Valor 51 WDG</b> 2 pt/A + 2 oz/A.	At least 30 days following 1 inch of rainfall prior to planting.	Provides residual control of horseweed and pigweed for 6 weeks after application.

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<b>Preplant Incorporated</b>				
pendimethalin @ 0.5 to 1.5 lb/A	Annual grasses, seedling johnsongrass, pigweed and suppression of morningglories.	<b>Prowl</b> 1.2 to 3.6 pt/A. or <b>Prowl H<sub>2</sub>O 3.8 CS</b> 1.0 to 3.2 pt/A.	Immediately prior to planting.	<b>All preplant herbicides on cotton are recommended to be applied during final seedbed preparation, after bed knockdown, and incorporated immediately. The rolling cultivator or a similar implement does an excellent job of incorporating the herbicide in the top 2 inches and leaves the soil intact on the bed. A Do-All tends to drag treated soil from the bed but can be used with care.</b>
trifluralin @ 0.5 to 1 lb/A	Same as above.	<b>Treflan 4 EC, Trilin 4 EC</b> 1 to 2 pt/A.	Same as above.	NOTE: Where rhizome johnsongrass is a severe problem, the herbicide should be disked in prior to bedding to get the herbicide deeper.
<b>Preplant</b>				
fomesafen @ 0.25 lb/A	Pigweed and morningglory.	<b>Reflex 2L</b> 1 pt/A.	Do not plant until 0.5 inch rainfall occurs.	Do not disturb beds after application. If application to planting is longer than 21 days, follow up with a preemergence herbicide.
<b>Preemergence</b>				
diuron @ 0.5 to 1 lb/A	Most annual grasses and small seeded broadleaf weeds. Good option for pigweed.	<b>Direx 4L</b> 1 to 2 pt/A. Be sure to check label for formulation.	At planting.	Use the lowest rate on low organic sandy loam and silt loam soils. <b>Crop injury may occur with diuron or fluometuron when organophosphate insecticides are used.</b>
fluometuron @ 0.8 to 1 lb/A	Same as above but more effective on hard-to-kill weeds such as prickly sida (teaweed), cocklebur, and morningglory.	<b>Cotoran 4L</b> 1.6 to 2 pt/A 4L.	Same as above.	For control of existing small vegetation at planting, add 2 pt/A paraquat plus a surfactant.
pyrithiobac @ 0.032 to 0.070 lb/A	Prickly sida, spurge, spurred anoda and velvetleaf.	<b>Staple 3.2 LX</b> 1.3 to 2.1 oz/A.	At planting.	Temporary leaf yellowing or stunting may occur following preemergence treatments – especially in wet, cool conditions. Some pigweed species are known to be resistant to ALS herbicides.
pyrithiobac + fluometuron or diuron 0.032 lb/A + 0.5 to 0.75 lb ai/A	Most annual grasses and small seeded broadleaf weeds with improved control of spurge, prickly sida and pigweed over Cotoran alone.	<b>Staple 3.2 LX + Cotoran 4L or Direx</b> Add 1.3 oz/A broadcast rate of Staple LX to labeled rate of Cotoran or Direx, 1.0 to 1.5 pt/A.	At planting.	Addition of Staple LX may not improve control of morningglory and cocklebur over Cotoran alone.
<b>REPLANTING</b> –It is recommended that an additional preemergence surface herbicide not be applied at time of planting. However, if only an incorporated material has been used, a surface-applied herbicide can be used if weeds remain uncontrolled.				

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<b>Postemergence – Over the Top</b>				
<b>Roundup Flex Varieties Only</b>				
glyphosate @ 1 lb/A	Emerged annual grasses, johnsongrass, cocklebur, sicklepod, morningglories, prickly sida, velvetleaf, eclipta, spurge, hemp sesbania, northern jointvetch, and smartweed.  See table for other species.	<b>Glyphosate (4 lb/gal formulations)</b> 2 pt/A per application. Sequential applications are needed for difficult-to-control weeds.	Application timing is important. Apply to actively growing weeds. Application should be made before morningglories produce runners.  Maximum of 175 ounces of 4 lb/gal or equivalent glyphosate per season. Maximum of 60 ounces 4 lb/gal or equivalent glyphosate between layby and 60% open bolls.	<b>For use on Roundup Flex varieties only.</b>  <b>Check labels of glyphosate products to insure that they are approved for use on Roundup Flex cotton.</b>  <b>Properly used residual herbicides will help control and prevent development and spread of glyphosate-resistant weeds.</b>
glyphosate + metolachlor @ 1 lb/A + 0.95 to 1.25 lb/A	Emerged annual grasses, johnsongrass, cocklebur, sicklepod, morningglories, prickly sida, velvetleaf, eclipta, spurge, hemp sesbania, northern jointvetch and smartweed plus residual on pigweed and grass.  See table for other species.	Same as above + <b>Dual Magnum 7.62 EC or metolachlor 8 EC</b> 1.0 or 1.25 pt/A. or <b>Sequence 5.25 L</b> 2.5 pt/A.		University data suggests that 1.25X generic metolachlor product rate is needed to provide equal weed control to the S-isomer Dual Magnum product.
pyrithiobac + glyphosate @ 0.021 to 0.032 + 1 lb/A	Emerged annual grasses, johnsongrass, cocklebur, sicklepod, morningglories, prickly sida, velvetleaf, eclipta, spurge, hemp sesbania, northern jointvetch and smartweed. Better control of yellow nutsedge, morningglory. Adds residual control of some weeds.  See table for other species.	<b>Staple LX 3.2 + Glyphosate (4 lb/gal formulations)</b> 0.8 to 1.7 oz/A + 2 pt/A.		Staple LX may cause temporary yellowing and stunting. Do not tank mix with Dual for postemergence applications. Staple LX can be applied in two sequential applications of 0.4 oz/A.

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<b>Postemergence – Over the Top</b>				
Cotton varieties containing the “Widestrike” insecticide gene have shown some tolerance to glufosinate. The level of tolerance is lower and less consistent than in the Liberty Link varieties. Ignite should be used on Widestrike varieties only in salvage situations.				
<b>Liberty Link Varieties Only</b>				
glufosinate @ 0.42 to 0.53 lb/A	Emerged annual grasses, seedling johnsongrass, annual broadleaf weeds.	<b>Ignite 280 SL</b> (2.34 lb ai/gal) 23 to 29 oz/A.	Apply over the top to small, actively growing weeds. From cotton emergence to early bloom stage.	Complete coverage of weeds is crucial. Air induction spray tips and low water volumes may reduce effectiveness. See label for restrictions. Do not apply more than 87 ounces per season.
glufosinate @ 0.78 lb/A	Same as above.	<b>Ignite 280 SL</b> (2.34 lb ai/gal) 43 oz/A.	May be used for salvage situations.	Slight cotton stunting may occur when higher rates are used. Research indicates that two applications of 29 oz ten days apart are superior to single 43-oz rate.
glufosinate + metolachlor @ 0.42 to 0.53 + 0.95 or 1.25 lb/A	Same as above with improved residual on pigweeds and grasses.	<b>Ignite 280 SL + Dual Magnum 7.62 EC or metolachlor 8 EC</b> 23 to 29 oz/A + 1 pt or 1.25 pt.	Apply over the top prior to 12-leaf cotton.	Some leaf speckling may occur, but it normally is only temporary.
glufosinate + pyriithiobac @ 0.42 to 0.53 + 0.021 to 0.032 lb/A	Same as above. Better control of prickly sida and nutsedge.	<b>Ignite 280 SL + Staple LX</b> 23 to 29 oz/A + 0.8 to 1.7 oz/A.	Apply over the top to small, actively growing weeds.	Staple LX may cause temporary yellowing and stunting. Do not tank mix with Dual for postemergence applications. Staple LX can be applied in two sequential applications of 0.4 oz/A.
<b>Roundup Flex, Liberty Link and Conventional Varieties</b>				
pyriithiobac @ 0.065 lb/A	Morningglories, cocklebur, velvetleaf, smartweed, and suppression of prickly sida and spurge.	<b>Staple 3.2 LX</b> 2.6 oz/A. Add 0.25% nonionic surfactant.	Apply to small, actively growing weeds. Cotyledon or larger cotton.	Rainfall after application aids in prickly sida and spurge control. Avoid drift to corn or grain sorghum. Some pigweed species are known to be resistant to ALS herbicides.
trifloxysulfuron @ 0.0047 to 0.007 lb/A	Sicklepod, nutsedge, good on morningglory	<b>Envoke 75 DG</b> 0.10 to 0.15 oz/A. Use 0.25% v/v nonionic surfactant.	After 5-leaf stage. Post direct on large cotton to improve coverage and soil contact.	Crop response in the form of temporary chlorosis may be observed. Do not apply within 24 hours of a malathion application. Some pigweed species are known to be resistant to ALS herbicides. Do not apply within 60 days of harvest.

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sethoxydim @ 0.188 to 0.25 b/A	Annual grasses, johnsongrass.	<b>Poast Plus 1 EC</b> 1.5 to 2 pt/A. Add 1 qt/A crop oil concentrate. Use 1 pt rate only on small annual grasses. Bermudagrass may require repeat treatment of 1 pt/A following initial 1 1/2 pt treatment. For spot treatment, use 1% solution of Poast + 1% crop oil concentrate. Spray to wet but not to runoff.	Before annual grasses exceed 14 days after emergence. Timing very critical. Johnsongrass–15" to 20"	Apply only under conditions of active growth. Thorough coverage required. Do not tank mix with other pesticides. Do not cultivate 7 days before or after treatment. However, cultivation soon after 7 days will be helpful.
fluazifop @ 0.188 lb/A	Bermudagrass, johnsongrass, annual grasses.	<b>Fusilade DX 2 EC</b> 0.75 pt/A. Add 1% crop oil concentrate or 0.25% nonionic surfactant. For spot treatment use 2 qt Fusilade/100 gal. Add 1 gal crop oil or 1 qt nonionic surfactant per 100 gal.	Before annual grasses exceed 14 days after emergence. Timing very critical. Johnsongrass–12" to 18" Bermudagrass–3" ht or 6" to 12" runner length maximum	Apply only under conditions of active growth. Somewhat less effective than Poast on annual grasses, more effective on bermudagrass. Repeat if necessary. Thorough coverage required. Do not tank mix. Do not cultivate 7 days before or after treatment. However, cultivation soon after 7 days will be helpful. See label for details.
fluazifop @ 0.094 to 0.188 lb/A + fenoxaprop @ 0.026 to 0.053 lb/A	Bermudagrass, johnsongrass, annual grasses.	<b>Fusion 2.56 EC</b> 6 to 12 oz/A most annual grasses. 10 oz/A red rice. 12 oz/A bermudagrass and johnsongrass and repeat with 8 oz/A for regrowth. Add 1% crop oil concentrate or 0.25% nonionic surfactant. For spot treatment use 2 qt Fusion per 100 gal. Add 1 gal crop oil concentrate or 1 qt nonionic surfactant per 100 gal.	Apply to most annual grasses at 2" to 4". Johnsongrass–8" to 18" Bermudagrass–4" to 8" runner	See above comments for Fusilade on cultivation and tank-mixes.
quizalofop p-ethyl @ 0.031 to 0.063 lb/A	Annual grasses, bermudagrass, johnsongrass, red rice.	<b>Assure II 0.88 EC</b> 5 oz/A volunteer corn and milo, 8 oz/A most annual grasses, 9 oz/A red rice. Repeat if needed. 10 oz/A rhizome johnsongrass and bermudagrass. Add crop oil concentrate at 1% ground application or 0.5% for aerial application or nonionic surfactant at 0.25%.	Before annual grasses exceed 14 days after emergence. Timing very critical. Johnsongrass–10" to 24" Red rice–1st 14 days after emergence or 1 to 4 leaf Timing for annual grass and red rice is very critical.	See above comments for Poast and Fusilade on cultivation and tank mixing. Performance comparable to Poast on annual grasses and Fusilade on rhizome johnsongrass. Better than either on small red rice.
clethodim @ 0.094 to 0.25 lb/A	Annual grasses, bermudagrass, johnsongrass.	<b>Select 2 EC</b> 6 to 8 oz/A most annual grasses. 8 to 10 oz/A rhizome johnsongrass. Repeat application with 6 to 8 oz/A for regrowth. 8 to 16 oz/A bermudagrass. Repeat application with 6 to 8 oz/A for regrowth. Add 1% crop oil concentrate.	Before annual grasses exceed 14 days after emergence. Johnsongrass–2" to 24" Bermudagrass–3" height or 6" runner length maximum	See above comments for Poast and Fusilade on cultivation and tank mixing. Performance comparable to Assure II for annual grasses and johnsongrass.

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<b>COTTON</b> <b>Postemergence – Directed</b>				
carfentrazone @ 0.025 lb/A	Morningglory, hemp sesbania and prickly sida.	<b>Aim 2 EC</b> 1.6 oz/A. Add crop oil concentrate at 1 pt/A.	After cotton plants are 8 inches or more. Extreme care must be taken to avoid contact with foliage.	Must be mixed with another product for residual control. Do not mix with MSMA. Direct to base of cotton. Avoid fine spray droplets.
glyphosate @ 0.75 to 1 lb/A + prometryn @ 0.5 to 0.8 lb/A	Emerged annual grasses, johnsongrass, cocklebur, sicklepod, morningglories, prickly sida, velvetleaf, eclipta, spurge, hemp sesbania, northern jointvetch and smartweed. See table for other species. Improved morningglory control and improved pigweed control.	<b>Glyphosate (4 lb/gal formulations)</b> 2 pt/A plus <b>Caparol 4L</b> or <b>Cotton Pro 4L</b> at 1 to 1.6 pt/A.	After cotton is 6 inches or more high.	Avoid contacting foliage with spray.
glyphosate @ 0.75 to 1 lb/A + fluometuron @ 0.8 lb/A	Same as glyphosate with improved residual control of morningglory and pigweed.	Same as glyphosate above + <b>Cotoran 4L</b> at 1.6 pt/A.	After cotton is 6 inches or more high.	Avoid contacting foliage with spray.
MSMA @ 2 lb/A	Small grasses and seedling cocklebur. Suppression of nutsedge and small johnsongrass.	<b>MSMA</b> Many formulations exist. Refer to label on specific material to be used.	After cotton is 3 inches tall and before 1st bloom.	Use as a directed spray. Combination with other herbicides more effective if a broad spectrum of weeds is present.
NOTE: The herbicide combinations with MSMA should not need an additional surfactant if the MSMA used contains one. If the MSMA does not contain a surfactant, add it according to herbicide label directions. All MSMA rates listed are average rates. Refer to specific label on product to be used for exact rate. NOTE: Research has shown arsenical herbicides can cause straighthead in rice. Precautions for straighthead should be taken when rice is grown following cotton.				
fluometuron + MSMA @ 0.8 lb/A + 1.5 to 2 lb/A	Most small-seeded annual and perennial weeds in the seedling stage of growth.	<b>Cotoran 4L + MSMA</b> Tank mix at 1 lb/A Cotoran + 1 qt of 6.6 lb/gal MSMA or equivalent.	After cotton plants are 6 or more inches.	Direct in manner to obtain maximum coverage of weeds with minimum contact to cotton foliage.
prometryn + MSMA @ 0.5 + 2 lb/A	Same weed spectrum as Cotoran but more active.	<b>Caparol 4L or Cotton Pro 4L + MSMA</b> 1 pt/A Caparol or Cotton Pro + MSMA at rates shown above.	After cotton plants are 6 or more inches.	Same as above.
trifloxysulfuron + prometryn @ 0.007 to 0.015 lb/A + 0.79 to 1.19 lb/A	Morningglories, sicklepod, yellow nutsedge.	<b>Suprend 80 WG</b> 1 to 1.5 lb/A. Add 0.25% v/v nonionic surfactant.	After cotton plants are 6 or more inches.	Avoid contact with foliage.
diuron + MSMA @ 0.4 lb/A + 1.5 to 2 lb/A	Same as above.	<b>Direx 4L + MSMA</b> 1 pt/A + MSMA at rates shown above.	After cotton plants are 6 or more inches.	Direct spray to lower 1/3 of cotton stem.
prometryn @ 1.2 to 1.6 lb/A	Cocklebur, prickly sida and spurge, but more effective on morningglory, grasses and cocklebur.	<b>Caparol or Cotton Pro 4L</b> Coarse Soil 2.4 pt/A Medium Soil 2.8 pt/A Fine Soil 3.2 pt/A Add a surfactant.	After cotton is 15 inches tall.	Do not plant rotational crops other than cover crops until the following year.

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diuron @ 0.4 to 1.2 lb/A	Most small seeded annual grasses and broadleaf weeds.	<b>Direx 4L</b> Coarse Soil (light) - 0.8 pt/A Medium Soil - 1.6 pt/A Fine Soil (heavy) - 2.4 pt/A Add a surfactant if emerged weeds present.	After cotton is 15 inches tall.	Provide longest residual and greatest potential for carryover to sensitive crops. Less burn on emerged weeds.
linuron @ 0.5 to 1.5 lb/A	Most small seeded annual grasses and broadleaf weeds.	<b>Linex 4L</b> Coarse Soil - 1 pt/A Medium Soil - 2 pt/A Fine Soil - 3 pt/A Add a surfactant if emerged weeds present.	After cotton is 15" tall.	Intermediate residual period. Fall seeded crops may be planted.
flumioxazin @ 0.063 lb/A	Most annual broadleaves and small grasses.	<b>Valor 51 WDG</b> 2 oz/A. Add 0.25% NIS.	After cotton has 4 inches of bark. Good residual control of pigweed and morningglory.	Minimize contact with foliage. Adding glyphosate, Ignite or MSMA will improve control of larger grasses.
fomesafen @ 0.25 lb/A	Most annual broadleaves and small grasses.	<b>Reflex 2L</b> 1 pt/A. Add 0.25% NIS.	After cotton has 4 inches of bark. Good residual control of pigweed and morningglory.	Minimize contact with foliage. Adding glyphosate, Ignite or MSMA will improve control of larger grasses.
<b>Spot Treatment</b>	<b>Also see Poast and Fusilade above.</b>			
glyphosate	Johnsongrass, bermudagrass, purple nutsedge, trumpetcreeper and most other annual and perennial grasses.	<b>Glyphosate (4 lb/gal formulations)</b> 2% solution. Add 1% surfactant.	Anytime before boll opening.	Treatment most effective on large, actively growing weeds. Cotton in area will be severely injured or killed. Avoid windy conditions and high pressure. Follow label directions.
<b>Postemergence – Speciality Treatments Conventional Cotton</b>				
glyphosate wipe-on	Johnsongrass emerged above canopy.	<b>Glyphosate (4 lb/gal formulations)</b> 33% solution in Ropewick or other wipe-on applicator.	Anytime before boll opening. Ropewick applicator.	Cotton will not tolerate accidental crop contact. Even though vegetative effects are not obvious, yield reduction may occur.
paraquat + diuron @ 0.47 to 0.94 + 0.5 lb ai/A	Pigweed and small grasses.	<b>Paraquat (3 lb/gal formulations) + Direx 4L</b> 1.25 to 2.5 pt + 1 pt.	Apply in middles with <b>hooded sprayer</b> . Do not allow any spray particles to escape from under the hood.	May be used in salvage situations to remove pigweed from middles and reduce hand chopping labor.
<b>Between Cropping Application</b>				
dicamba @ 2 lb/A	Redvine.	<b>Banvel SGF 2 SL</b> 1 gal/A + 0.25% nonionic surfactant. <b>Clarity 4 SL</b> 2 qt/A + 0.25% nonionic surfactant.	After harvest and at least 1 week prior to killing frost.	Apply when redvine has recovered from defoliant/dessicants and is actively growing.
glyphosate @ 1 to 2 lb/A	Trumpetcreeper, johnsongrass.	<b>Glyphosate (4 lb/gal formulations)</b> 2 to 4 pt/A.	Can be applied with defoliant at 60% open bolls or after harvest but at least 1 week prior to killing frost.	Good coverage is essential; for trumpetcreeper control, good coverage will usually be achieved after harvest.