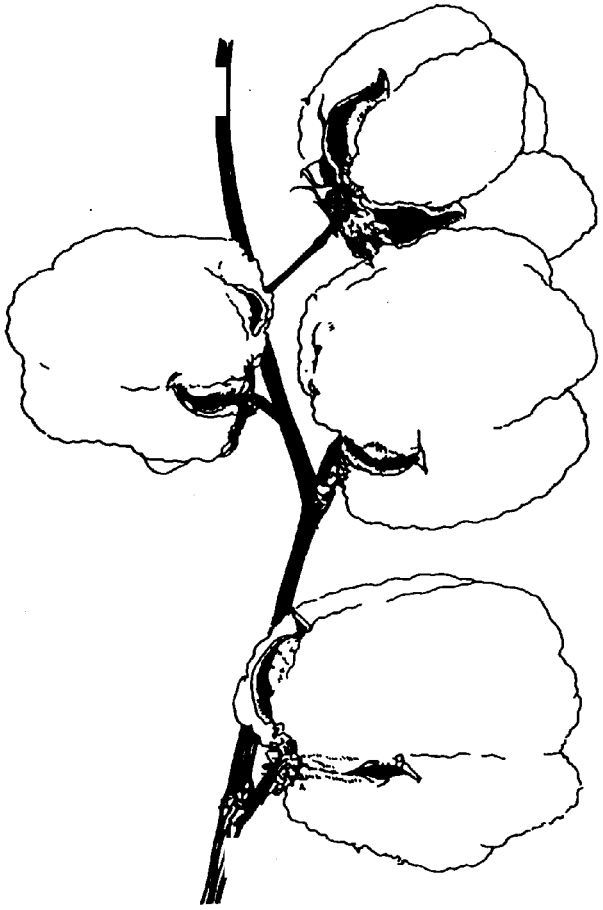
Mississippi State University Extension Service

Cotton

Postemergence and Layby Herbicides



Success or failure of the cotton weed-control program is largely related to the attention given to the post-directed spray program.

The herbicides Assure II, Fusilade DX, Poast Plus, and Select can safely be applied at almost any stage of cotton growth. Over-the-top applications of MSMA, DSMA, Cotoran, or Meturon are risky and should be avoided unless absolutely necessary. Do not apply Roundup or Staple Plus over-the-top of Roundup Ready cotton beyond the 4-leaf stage.

The preplant and preemergence herbicide programs keep weeds controlled until cotton is more than 3 inches tall. When cotton is 3 to 5 inches, program to control escaped weeds and add additional preemergence herbicide to the soil. Directed sprays should be applied with minimal cotton foliage contact to avoid injury.

Surfactants

Surfactants generally are added to postemergence herbicides to enhance control of actively growing weeds. Some herbicide formulations already contain surfactant. Consult the label before adding surfactant to the spray solution. Most herbicides require 1 quart of surfactant (85% ± 10% active ingredient) per 100 gallons of spray solution. However, some herbicides require as much as 4 quarts per 100 gallons. Consult the labels of the herbicide and surfactant to determine the correct surfactant rate.

Crop oil concentrates (COC) are not routinely suggested for use with directed sprays in cotton. Several cases of cotton injury have been observed when a COC was substituted for surfactant and used on small cotton.

Spray Volumes. The recommended spray volume is 5 to 10 gallons by air and 10 to 20 gallons by ground equipment. In fields with dense populations of large weeds, a volume of 1 gallon per inch of treated band may be needed for good spray coverage. Control with certain herbicides is usually better when the lower recommended spray volumes are used. Thorough spray coverage is essential for acceptable weed control. Spray volume does not usually affect weed control if the correct herbicide rate is applied uniformly and as recommended.

Layby and Spot Treatment Herbicides

Recall the number and rates of postemergence herbicides that were used before making layby applications. Where rotation is not a consideration, late-season weeds are expected to be troublesome, or where stands are erratic, layby herbicides should be used. **Read the label for the maximum amount of a herbicide that can be used. Do not exceed this amount in any one year.**

Two methods of layby herbicide application are recommended. Use a split application where perennial weeds, such as redvine, nutsedge, and johnsongrass, are not a problem. Make the first application with one-half the recommended rate when cotton is 10 to 15 inches tall. Apply the other half rate at the normal layby time or when the cotton is 18 to 24 inches tall. In most fields, cultivation after the first application will not be needed. A single late-season application of the full rate is preferred when late cultivation is used to suppress perennials.

The selection of a layby herbicide program should be based on weeds present, crop rotation restrictions, cotton stands, and economics.

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast	Time of application	Weeds controlled	Special instructions and remarks
Postemergence — directed				
Many of the suggested postemergence treatments include MSMA with another herbicide for broader spectrum weed control. Costs can be reduced by omitting the MSMA where nutsedge, cocklebur, or grasses are not a problem. When omitting MSMA in the spray mixture, be sure to add surfactant.				
Use of the arsenical herbicides (DSMA and MSMA) is limited to two applications whether used alone or in combination with other herbicides. Timely directed applications are preferable to over-the-top applications because of better weed control and less cotton injury. **DO NOT APPLY DSMA OR MSMA AFTER FIRST BLOOM.** A number of instances of MSMA/DSMA resistance in common cocklebur have been documented throughout Mississippi.				
3-inch cotton or larger				
DSMA at 3.6 lb/A or MSMA at 2.0 lb/A	DSMA — 8.0 pt of a formulation containing 3.6 lb/gal DSMA hexahydrate equivalent in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix unless formulation contains surfactant or MSMA — 2.7 pt of a 6 lb/gal formulation in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix unless formulation | contains surfactant.	1 or 2 applications after the smallest cotton reaches a height of 3 inches.	Most annual grasses, susceptible cocklebur, and some other annual broadleaf weeds. Nutsedge and small johnsongrass plants will be topkilled. More effective during hot, dry periods than in cool, wet periods. Combinations with other herbicides more effective on goosegrass than when used alone.	DSMA is preferred for the first application when cotton is small or stressed from adverse weather, disease, thrips, etc. **Do not apply after first bloom.** Addition of fluometuron or prometryn will broaden spectrum of weeds controlled.
fluometuron at 0.8 lb/A (or plus DSMA or MSMA, see above)	4 lb/gal formulation — 0.8 qt in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix.	1 or 2 applications when cotton is 3 to 6 inches tall.	Annual grasses and most seedling broadleaf weeds.	Relatively safe on young cotton and also provides residual preemergence weed control.
prometryn at 0.5 lb/A (or plus DSMA or MSMA)	4 lb/gal formulation — 1 pt in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix.	Apply 1 or 2 times after cotton is 3 inches tall.	Most seedling broadleaf weeds including prickly sida if sprayed before 2 inches tall. Addition of MSMA or DSMA improves grass control.	**Do not** apply at the 3-inch stage if cotton is stressed. Provides some residual preemergence control in addition to killing emerged weeds.
6-inch cotton or larger (in addition to herbicides listed for smaller cotton)				
carfentrazone 0.012 - 0.024 lbA	Aim — 0.5 to 1 oz 40DF or 0.8 to 1.6 oz 2EC	Cotton should be a minimum of 6 inches in height with 5 to 6 nodes. Applications to smaller cotton must be made with hooded or shielded sprayer equipment to completely avoid contact with cotton plants.	Morningglories, pigweed, and velvetleaf.	Directed spray equipment should position nozzles a minimum of 3 to 4 inches above the soil, with nozzles directed underneath the crop canopy. **Do not allow spray solution to contact cotton foliage or green stem tissue. Coverage is essential for good control.** For control of additional broadleaf weeds and grasses, Aim Herbicide may be tank mixed with other herbicides registered for use in cotton. Aim may be tank mixed with Roundup Ultra, Staple, Buctril, Caparol, Cotoran (or other products containing Fluometuron), Karmex, MSMA, or other herbicides registered for cotton post directed and/or layby applications. Do not apply more than 2.0 ounces 40 DF or 3.2 oz 2EC total per season by post directed and layby applications.Use a crop oil concentrate at 1% v/v (1 gallon per 100 gallons of spray solution).

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast	Time of application	Weeds controlled	Special instructions and remarks
diuron at 0.2 to 0.5 lb/A (or plus DSMA or MSMA)	80% formulation –0.25 to 0.62 lb or 4L formulation 0.4 to 1 pt in 20 gal water. Add 1 qt surfactant to each 100 gal of spray mix.	1 or 2 applications after cotton is 6 inches tall.	Most seedling broadleaf weeds. Addition of MSMA or DSMA improves grass control.	Apply as directed spray. Diuron plus MSMA provides better weed control under a wide range of growing conditions than either herbicide alone. Use the higher rate of diuron as cotton and weeds become larger. The higher rate provides some residual preemergence control in addition to killing emerged weeds.
lactofen at 0.2 lb/A (or plus DSMA or MSMA)	Cobra 2E — 0.8 pt in 20 gal water. Add 0.5 to 1.0 pt/A crop oil concentrate for cotton 6 - 8 inches tall or 1.0 to 2.0 pt/A for cotton greater than 12 inches tall.	Apply 1 or 2 times after cotton is 6 inches tall. For best results, spray weeds before 3-inch height.	Most small broadleaf weeds. Addition of MSMA or DSMA improves grass control.	Use as a well directed basal spray to minimize cotton injury. Height differential between cotton and weeds is important since good spray coverage on the weeds is necessary for control
linuron 0.5 to 0.75 lb/A	1 to 1.5 pints of Linex 4L or 1 to 1.5 lb of Lorox 50DF.	Linex 4L or Lorox 50DF should be applied as a directed spray with nozzles adjusted to minimize contact to cotton. Apply when cotton is at least 8 inches tall and weeds are not over 2 inches tall.	Annual grass and broadleaf species.	One pint of surfactant may be added for each 25 gallons of spray mixture if emerged weeds are present. If a second application is needed, use the same rate and apply one week or more after first treatment. Should not be used on Pima varieties of cotton. Do not feed forage or gin trash from treated areas to livestock. Do not graze treated fields.
oxyfluorfen at 0.25 or 0.5 lb/A (or plus DSMA or MSMA)	Goal 2XL — 1 or 2 pt in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix.	After cotton is 6 inches tall. Apply before weeds have more than 4 true leaves.	Most seedling broadleaf weeds including prickly sida, morningglory, and hemp sesbania. Addition of MSMA or DSMA improves grass control.	Good spray coverage on the weeds is essential for control. Oxyfluorfen is most effective under optimum growing conditions. Use the higher rate on larger weeds or under drought conditions.
Postemergence — Over-the-top				
bromoxynil at 0.5 lb/A	Buctril 4 EC at 1 pt/A per application, not to exceed 3 pints per year.	From prior to planting but after weed emergence up to 75 days prior to harvest; up to 1- to 4-inch weeds for broadcast rates.	Excellent postemergence control of most broadleaf weeds especially cocklebur and morningglory. Does not control grasses or nutsedge.	**ONLY USE ON COTTON THAT CONTAINS THE BROMOTOL™ GENE FOR BUCTRIL RESISTANCE (BXN cotton). Do not tank mix with sufactant or other pesticides. Do not use** at a rate greater than 1 pt/application for each planted acre of transgenic BROMOTOL™ cotton. Total cumulative rate should not exceed 3 pt/planted acre.

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast	Time of application	Weeds controlled	Special instructions and remarks
clethodim at 0.0625 to 0.125 lb/A	Select 2EC — 6 to 8 oz/A (see table below) in 10 to 30 gal/A by ground or 3 gal/A by air. Add 1 qt/A crop oil concentrate.	Apply to actively growing grasses up to 60 days before harvest. See table below.	Annual and perennial grasses.	Apply over the top or semi-directed to cover grasses. Adjust spray volume and pressure to ensure thorough coverage of grass. **Do not apply:** 1) more than 32 oz/A per season 2) within 1 hour of anticipated rainfall 3) to stressed grasses **Do not** cultivate within 7 days of application.

Kind of grass	Weed height (in)	Rate fl oz/A
Seedling johnsongrass	4-10	6
Volunteer corn	4-18	6
Red rice	1-3	6
Most annual grasses	2-6	6
Rhizome johnsongrass	12-24	8
2nd application	6-10	6
Bermudagrass	3	8
2nd application	3	8

DSMA at 1.2 to 3.2 lb/A or MSMA at 0.75 to 1.0 lb/A	1 to 1.3 pt of a 6 lb/gal MSMA formulation or 1.6 to 4.3 pt of a 3.6 lb/gal DSMA formulation in 10 to 20 gal water. Add 1 qt nonionic surfactant to each 100 gal of spray mix unless formulation contains surfactant.	Apply when cotton is 3 to 6 inches tall. Do not apply after first square or when cotton is more than 6 inches tall.	Excellent control of susceptible cocklebur and small annual grasses. Poor control of hemp sesbania and prickly sida.	**Use as a salvage treatment only.** Possible burning and reddish color of foliage may appear. May delay cotton maturity. **Do not** tank mix with other herbicides. Apply only to healthy cotton under favorable growing conditions.
fluometuron at 0.5 to 1.0 lb/A	4 lb/gal formulation — 1 to 2 pt. Add 1 qt surfactant for each 100 gal of spray mix.	Apply after cotton reaches 3 inches and weeds are as small as possible.	A wide spectrum of annual weed seedlings controlled or suppressed to allow more effective directed sprays later.	**Use as a salvage treatment only. Crop injury may occur.** Apply only to healthy cotton under favorable growing conditions. Use the higher rate on vigorously growing cotton and bigger weeds.
fluazifop at 0.094 to 0.188 lb/A	Fusilade DX — 0.375 to 0.75 pt in a minimum of 5 gal water by air or ground equipment. Add either a crop oil concentrate at 1% or a surfactant at 0.25%.	Apply to actively growing grasses at the appropriate stage of growth. See table below.	Most annual grasses, rhizome johnsongrass and bermudagrass. See table below.	Apply over the top of cotton or as a semi-directed spray to the grass at rates given in the table below. Adjust spray volume and pressure to ensure thorough coverage of grass foliage. For annual grasses, retreat if needed for late emerging grasses. If regrowth of johnsongrass or bermudagrass occurs following the first application, a second application can be made as indicated in the table. **Do not** apply more than 48 oz/A/season. **Do not** apply after boll set or within 90 days of harvest.

Kind of grass	Size (in)	Rate lb ai/A	Rate oz/A
Seedling johnsongrass	2-8 tall	0.094	6
Goosegrass	2-4 tall	0.125	8
Barnyard and crabgrass	1-2 tall	0.188	12
Broadleaf signalgrass	2-4 tall	0.188	12
Rhizome johnsongrass	8-18 tall	0.188	12
2nd application	6-12 tall	0.125	8
Bermudagrass	4-8 runners	0.188	12
2nd application	4-8 runners	0.125	8

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast	Time of application	Weeds controlled	Special instructions and remarks
glyphosate at 0.5 to 1.0 lb/A	glyphosate 4/5 lb/gal — 0.5 to 1 qt/0.4 to 0.8 qt/A.	After weed emergence but before cotton reaches 4-leaf stage. POST-DIRECT IF COTTON IS BEYOND 4-LEAF STAGE.	Postemergence control of most annual broadleaf and grass weeds, including control of johnsongrass. A well-designed pre-emergence program is recommended for optimum control.	**For use only on Roundup-ready cotton. Do not apply over-the-top beyond 4-leaf stage. Allow two nodes of growth and 10 days between sequential applications. Do not mix with surfactants. Topical applications beyond the 4th leaf stage reduces early season fruit retention.** Apply as a post-directed spray after 4-leaf stage. Post-directing does not ensure tolerance. Use precision with post-direct applications and minimize cotton contact with spray solution. **Multiple applications without allowing sufficient growth between treatments and/or improper application causes abnormal fruiting patterns and yield losses.**
pyrithiobac at 1.0 to 1.5 oz/A	Staple 85 SP — 1.2 to 1.8 oz/A. Add nonionic surfactant at 1 qt per 100 gal of spray mix.	From 1 true-leaf cotton up to 60 days prior to harvest; after weed emergence up to 1- to 4-inch weeds except sicklepod and prickly sida. See label for sicklepod program. **Proper timing is essential to reach expected levels of control shown on page 9.**	Excellent postemergence control of most broadleaf weeds. Poor grass control. **Apply to prickly sida up to 1 inch tall for adequate control.** Thorough coverage of weed foliage and a well-designed pre-emergence program are recommended for optimum control.	**Do not tank mix with insecticides containing malathion.** Staple antagonizes grass control with postemergence grass herbicides. Adequate control can be achieved by treating grass 3 to 5 days prior to or 5 to 7 days after Staple application. **Apply as a "sloppy" postdirected spray when applying Staple with MSMA or DSMA.** Do not tank mix with Dual as a postemergence treatment. Do not exceed 1.8 oz/A in a single application or 2.4 oz/A per season. Do not apply within 60 days of harvest. If rate does not exceed 1.8 oz/A, corn may be planted 10 months after last application, or if rate exceeds 1.8 oz/A, corn may be recropped the following year only if Staple was applied as a 50% or less band and the land is thoroughly tilled after application.
pyrithiobac + glyphosate 0.5 to 0.5 + 12 oz/A	1 container Staple Plus per 10 treated acres.	After weeed emergence but before cotton reaches 4-leaf stage. **POST-DIRECT IF COTTON IS BEYOND 4-LEAF STAGE.**	Postemergence control of most annual broadleaf and grass weeds, including johnsongrass. A well-designed pre-emergence program is recommended for optimum control.	**For use only on Roundup-ready cotton. Do not apply over-the-top beyond 4-leaf stage. Allow two nodes of growth and 10 days between sequential applications. Do add surfactants. Topical applications beyond the 4th leaf stage reduces early season fruit retention.** Apply as a post-directed spray after 4-leaf stage. Post-directing does not ensure tolerance. Use precision with post-direct applications and minimize cotton contact with spray solution. **Multiple applications without allowing sufficient growth between treatments and/or improper application causes abnormal fruiting patterns and yield losses.** When applied at the labeled rate, this treatment contains 0.5 oz ai pyrithiobac and 0.75 lb ai glyphosate/Acre. Do not exceed 2.0 oz ai pyrithiobac/Acre/year. **Do not tank mix with insecticides containing malathion.** Do not apply within 60 days of harvest. If no more than 1.8 oz/A of Staple are applied in the entire growing season, corn may be planted 10 months after last application, or if rate exceeds 1.8 oz/A, corn may be recropped the following year only if Staple was applied as a 50% or less band and the land is thoroughly tilled after application.

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast	Time of application	Weeds controlled	Special instructions and remarks
quizalofop at 0.0313 to 0.0625 lb/A	Assure II — 5 to 10 oz/A in a minimum of 10 gal/A by ground or 2 gal/A by air. Add crop oil concentrate at 1.0% v/v or nonionic surfactant at 0.25% v/v. Use crop oil at 0.5% v/v for aerial application. Use only petroleum based crop oils.	Apply to actively growing grasses any time prior to 80 days before harvest. See table below for proper rates and grass stages.	Annual and perennial grasses, excellent control of johnsongrass.	Apply over-the-top or semi-directed to cover grasses. Adjust pressure and spray volume to ensure thorough coverage of grass. **Do not apply:** 1) using crop-origin (vegetable) oils as an adjuvant or carrier 2) more than 18 fl oz/A per season 3) within 24 hours of a postemergence broadleaf herbicide. **Do not** cultivate within 7 days of application.

Kind of grass	Weed height (in)	Rate (fl oz/A)
Seedling johnsongrass	2-8	5
Volunteer corn	8-18	5
Most annual grasses	2-6	7
Barnyard grass	2-6	8
Broadleaf signalgrass	2-6	8
Crabgrass	2-6	8
Red rice	1-4	9
Rhizome johnsongrass	10-24	10
2nd application	6-10	7
Bermudgrass	3	10
2nd application	3	7

sethoxydim at 0.19 to 0.28 lb/A	Poast Plus — 1.5 to 2.25 pt in a minimum of 5 gal water by air or ground equipment. Add a crop oil concentrate at 1 qt/A with aerial and ground applictions.	Apply to actively growing grasses at the appropriate growth stage. See table below.	Most annual grasses, seedling and rhizome johnsongrass, and bermudagrass.	Apply over the top of cotton or as a semi-directed spray to the grass. Adjust spray volume and pressure to ensure thorough coverage of grass foliage. Apply at rates and growth stages given in the table below. If more annual grasses emerge after the first application, then additional applications can be made to control regrowth of johnsongrass and bermudagrass. **Do not** apply within 40 days of harvest.

Kind of grass	Rate Size	Rate ai/A	pt/A
Crabgrass and goosegrass	up to 6 in. tall	0.19	1.5
Other annual grasses including seedling johnsongrass	up to 8 in. tall	0.19	1.5
Rhizome johnsongrass*	15-20 in. tall	0.19	1.5
2nd application	6-10 in. tall	0.19	1.5
Bermudagrass	plant diameter 6 in. or less	0.28	2.25
2nd application	regrowth 1-4 in. long	0.19	1.5

*If spray volume is more than 10 GPA, increase the rate on johnsongrass at first application to 2.25 pt/A.

Cultivation—use so that the soil moved by it will not interfere with subsequent use of postemergence herbicides. Cultivation will not normally detract from the control obtained from previously applied herbicides, but frequently will offer an economical means of extending or completing control established by herbicides. Deep cultivation (more than 2 inches) usually is not necessary and may damage the crop.

Spot treatment

clethodim	Select 2EC — 0.25 to 1% + 1% crop oil concentrate	Apply to actively growing grasses up to 60 days before harvest.	Annual and perennial grasses.	Spray to wet foliage but not to point of runoff.

<table>
<tr><th>Crop, weed, or situation and active chemical per treated land acre</th><th>Formulation needed to treat 1 acre broadcast</th><th>Time of application</th><th>Weeds controlled</th><th>Special instructions and remarks</th></tr>
<tr><td>fluazifop</td><td>Fusilade DX —1% + 0.25% surfactant or 1% crop oil concentrate. See table below.</td><td>Apply to all actively growing foliage of 8- to 18-inch johnsongrass or bermudagrass up to 3 inches tall before runners are 8 inches long.</td><td>Johnsongrass and bermudagrass.</td><td>Spray grass to wet all foliage but not to the point of runoff. Do not apply more than 48 oz/A/season. Do not apply after boll set or within 90 days of harvest.
Amount of
Spray mix | Surfactant (0.25%) | or | Oil Conc. (1%) | Fusilade DX
1 gal | 0.5 oz | or | 1.5 oz | 0.75 oz
100 gal | 1 pt | or | 8 pt | 8 pt</td></tr>
<tr><td>glyphosate spray</td><td>glyphosate 4/5 lb/gal – 1%/0.8%, 2%/1.6% — 1% solution in water for most weeds including johnsongrass. Increase to 2% solution for harder-to-control perennials such as bermudagrass.</td><td>Spray to wet foliage of weeds before cotton bolls open.</td><td>Johnsongrass, bermudagrass, trumpetcreeper, and most other emerged annual and perennial weeds.</td><td>Treatment most effective on large actively growing weeds. Cotton sprayed with herbicide solution will be severely injured or killed. Avoid windy conditions and high pressure to minimize cotton injury. Repeat treatments may be necessary to control weeds regenerating from underground parts or seed. See label for details.</td></tr>
<tr><td>glyphosate rope wick</td><td>glyphosate 4/5 lb/gal – 1 gal/0.8 gal — 1 gal + 2 gal water. Quantity used per acre will vary depending on density of weeds. Do not add surfactant to the herbicide solution.</td><td>Apply when johnsongrass is at least 18 inches tall and 8 inches taller than crop plants.</td><td>Johnsongrass.</td><td>Use rope wick made of polyester over acrylic. Position wick bar 2 to 4 inches above crop plants to avoid contact with herbicide-laden rope. Repeat application as needed to control johnsongrass that later grows above crop canopy. Treatments may be applied in conjunction with tillage of crop. Crop will be injured if the herbicide comes in contact with the foliage by dripping or rubbing. Keep ground speed under 5 mph and reduce speed as weed density increases.</td></tr>
<tr><td>quizalofop</td><td>Assure II — 0.375% + 1% v/v crop oil concentrate or 0.25% v/v nonionic surfactant.</td><td>Apply to actively growing grasses up to 80 days before harvest.</td><td>Annual and perennial grasses.</td><td>Treat plants on a spray-to-wet basis insuring good coverage.</td></tr>
<tr><td>sethoxydim</td><td>Poast Plus — 1.5% + 1% crop oil concentrate. See table below.
Amount of
Spray mix | Oil conc. (1%) | Amount of Poast Plus
Herbicide conc. (1.5%)
1 gal | 1.28 oz | 1.9 oz
100 gal | 8 pt | 12 pt</td><td>See table below.</td><td>Bermudagrass and johnsongrass.</td><td>Mix as shown in table below. Spray grass to wet all foliage but not to the point of runoff. Spray actively growing foliage when johnsongrass is 15 to 20 inches tall and bermudagrass plants do not exceed 6 inches in diameter. Do not apply within 40 days of harvest.</td></tr>
</table>

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast	Time of application	Weeds controlled	Special instructions and remarks
Layby				
carfentrazone 0.012 - 0.024 lbA	Aim — 0.5 to 1 oz 40DF or 0.8 to 1.6 oz 2EC	Layby applications of Aim or Aim tank mixtures at later growth stages of cotton may be made when cotton plants have achieved a height of 12 inches or more with sufficient bark development and height differential between crop bottom leaves and the soil.	Morninglories, pigweed, and velvetleaf.	Spray solution should be directed at the base of cotton plants for minimal contact with green stem tissue or foliage while maintaining maximum contact with broadleaf weeds that are at appropriate treatment size. **Do not allow spray solution to contact cotton foliage or green stem tissue. Coverage is essential for good control.** For control of additional broadleaf weeds and grasses, Aim Herbicide may be tank mixed with other herbicides registered for use in cotton. Aim may be tank mixed with Roundup Ultra, Staple, Buctril, Caparol, Cotoran (or other products containing Fluometuron), Karmex, MSMA, or other herbicides registered for cotton post directed and/or layby applications. Do not apply more than 2.0 ounces 40 DF or 3.2 oz 2EC total per season by post directed and layby applications.Use a crop oil concentrate at 1% v/v (1 gallon per 100 gallons of spray solution).
clomazone 0.75 - 1.0 lb/A	2 - 2 ⅔ pt/A	Command 3ME may be applied as a postemergence directed spray at layby when cotton has at least 8 nodes.	Annual grasses and several broadleaf weeds. Command herbicide provides only preemergence control of key grasses and broadleaf weeds. If weeds have already emerged, either cultivation or an appropriate tank mixture will be required to achieve the desired layby weed control.	Command may be applied alone, or as a tank-mix combination, with ground equipment such as post-directed sprayers, layby sprayers, or hooded sprayers. Adjust spray equipment to minimize spray contact with cotton leaves and to insure that spray is applied to the soil in a uniform manner. **Severe bleaching will occur to those cotton leaves sprayed with Command. Do not spray Command over-the-top of cotton.** The use of an organophosphate insecticide is not required when Command is applied as a layby treatment after cotton plants have at least eight nodes. **Do not apply Command within 65 days of harvest.** Do not apply Command 3ME herbicide as a layby treatment if the product has already been applied as a planting time application. Do not apply more than 1.0 pound active ingredient per acre. Off site movement of spray drift or vapors of **Command 3ME herbicide can cause foliar whitening or yellowing of some plants**. Do not allow livestock to graze on treated cotton forage or trash. Do not feed treated cotton forage or trash to livestock.
dimethipin 0.23 to 0.55	Harvade 5F — 6 to 14 oz/A	Apply the tank mix combinations from early postemergence through layby; that is, when the young weeds are less than 4 inches tall, and the cotton is at least 10 inches tall. **If the cotton is less than 10 inches tall, apply the tank mix combination with a hooded sprayer.**	Sicklepod and morninglories.	**Direct contact of the spray mixture with cotton leaves and tenders stems will result in crop injury.** Do not use more than a total of 14 fl oz of Harvade 5F per acre per year on your cotton crop for combined postdirected and defoliation applications. A petroleum-based crop oil concentrate (83-17) **must be added to the spray mixture at 1 to 2 pints per acre.**

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast	Time of application	Weeds controlled	Special instructions and remarks
diuron at 0.5 to 1.0 to 1.2 lb/A.	80% formulation — 0.63 to 1.25 to 1.5 lb or 4 lb/gal formulation — 1 to 2 to 2.4 pt in 20 gal water. Add 1 qt surfactant for each 100 gal of spray mix.	Apply when cotton is at least 12 inches tall.	Most late-emerging annual grasses and small-seeded broadleaf weeds will be controlled if rain occurs within 10 days after treatment. Also, young, actively growing weeds less than 3 inches tall will be controlled.	Apply broadcast spray as indicated. Omit surfactant if no emerged weeds are present at time of treatment. Where the weed problem is light, apply a half rate after the cotton is 12 inches tall and re-treat only if necessary.
linuron 1.0 to 1.5 lb/A.	Linex 4L — 2 to 3 pt/A or Lorox 50DF — 2 to 3 lb/A.	Linex 4L or Lorox 50DF should be applied as a directed spray with nozzles adjusted to minimize contact to cotton. Apply when cotton is at least 20 inches tall and weeds are not over 2 inches tall.	Most late-emerging annual grasses and small-seeded broadleaf weeds will be controlled if rain occurs within 10 days after treatment. Also, young, actively growing weeds less than 3 inches tall will be controlled.	Apply broadcast spray as indicated. Omit surfactant if no emerged weeds are present at time of treatment. Where the weed problem is light, apply a half rate after the cotton is 12 inches tall and re-treat only if necessary.
pendimethalin at 0.5 to 1.5 lb ai/A	Prowl/Pendimax 3.3EC 1.2 to 3.6 pt/acre depending on soil texture.	Apply to the soil between rows as a directed spray following the last normal cultivation (layby). Destroy existing weeds prior to application.	Most annual grasses and small-seeded broadleaf weeds such as pigweed and purslane.	**Avoid spray contact to non-woody portion of cotton stems and foliage or serious crop injury may occur.** Apply at least 60 days before harvest.

Alternative weed management techniques

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

glyphosate at 1 to 2 lb/A	glyphosate 4/5 lb/gal — 1 to 2 qt/0.8 to 1.6 qt/A	Apply to 6-inch tall cotton **using hooded sprayer ONLY**. Keep bottom edge of hood in contact with soil surface.	Annual and perennial grasses and broadleaf weeds.	**Avoid crop contact with spray solution.** Allow 7 days between application and harvest. **Do not** exceed 8 quarts per acre per season. Tank mixing with triazine or urea herbicides may antagonize grass control.
paraquat at 0.312 to 0.625 lb/A	Gramoxone Max at 0.84 to 1.7 pt/A with 0.25% (v/v) nonionic surfactant or 1% (v/v) crop oil concentrate.	Apply to 6-inch tall cotton **using hooded sprayer ONLY.** Keep bottom edge of hood in contact with soil surface.	Annual grasses and broadleaf weeds less than 6 inches tall.	**Avoid crop contact with spray solution.** Avoid use of spray tips that produce fine spray droplets. (**State Label**).

Crop, weed, or situation and active chemical per treated land acre	Formulation needed to treat 1 acre broadcast	Time of application	Weeds controlled	Special instructions and remarks
Flame Cultivation — The newer types of burners available for flame cultivation allow use of lower pressures, while maintaining sufficient temperatures for excellent control of weeds coming into contact with the flame. In some cases, one flame treatment is sufficient. How- ever, at least two flamings, 1 to 5 days apart, are generally required for best results, especially for weeds larger that 2 inches. Flame cultivation provides no residual control. Flame cultivation does not control weeds in row middles.				
LP-gas with specialized burner equipment	3 to 5 gal/A at operating pressure of 15 to 30 psi and 3 to 5 mph.	Use in cotton with stems at least 3/16 inch at soil surface (8-inch tall cotton) with water shield delivering at least 7 gallons per acre. In 10- to 12-inch tall cotton, water shield is not necessary.	Annual grasses and broadleaf weeds, especially morningglory.	Use caution to avoid burning equipment, field borders, and perimeter areas. Operate cultivator with staggered burners positioned 6 to 10 inches above the soil surface at a 30 to 45-degree angle and 8 to 10 inches from the cotton stalks so flame strikes the soil surface 2 inches from cotton main stems. Ask for Extension Information Sheet 1500 for more details.

Estimated Levels of Weed Control Normally Expected[a]

Herbicides	Barnyardgrass	Broadleaf signalgrass	Crabgrass	Goosegrass	Fall panicum	Johnsongrass-seedling	Johnsongrass-rhizome	Bermudagrass	Nutsedge - purple	Nutsedge - yellow	Annual sedge	Cocklebur	Hemp Sesbania	Honeyvine milkweed	Annual morningglory	Pigweed	Prickly sida	Purslane	Smartweed	Nodding spurge	Spurred anoda	Velvetleaf	Sicklepod	Crop tolerance
Postemergence-directed																								
Cobra	3	3	3	3	3	3	2	0	-	2	2	**8**	-	5	6	**9**	**8**	**8**	7	**8**	7	**8**	-	G
+ MSMA	**8**	**8**	**8**	**8**	7	**9**	5	0	6	6	6	**9**	7	5	**9**	**9**	**8**	**9**	7	**8**	7	**8**	5	F
Prometryn	7	7	7	7	7	7	-	-	1	1	-	6	6	-	**8**	**8**	7	-	-	-	-	-	-	G
+ MSMA	**8**	**9**	**9**	**8**	**8**	**9**	5	0	6	6	**8**	**9**	6	2	**8**	**9**	**8**	**8**	4	5	5	7	**8**	F
Fluometuron	6	6	6	6	6	6	-	-	1	1	-	5	4	-	7	6	5	-	-	-	-	-	-	G
+ MSMA	**8**	**9**	**9**	**8**	**8**	**8**	5	0	6	6	**8**	**9**	5	2	**8**	**9**	7	6	4	4	3	6	**8**	F
DSMA or MSMA	7	**8**	**8**	4	7	**8**	5	0	6	6	6	**9**	2	1	3	3	2	3	1	0	0	0	3	G
Goal	4	4	4	4	4	4	2	0	2	2	2	**8**	-	2	**9**	**9**	**8**	**9**	**9**	7	-	**8**	-	G
+ MSMA	**8**	**8**	**8**	**8**	7	**9**	5	0	6	6	6	**9**	7	2	**9**	**9**	**8**	**9**	**9**	**7**	5	**8**	**8**	F
Diuron	5	5	6	5	5	5	2	0	0	0	4	4	4	1	7	7	4	5	3	4	3	3	**8**	G
+ MSMA	**8**	**9**	**9**	**8**	**8**	**9**	5	0	6	6	**8**	**9**	5	2	**8**	**9**	7	7	4	4	4	4	**8**	F
Lorox/Linex	5	5	5	5	5	5	2	0	0	0	4	7	**8**	2	**8**	**8**	7	**8**	4	6	5	6	**8**	G
+ MSMA	**8**	**9**	**9**	**8**	**8**	**9**	5	0	6	6	**8**	**9**	7	2	**9**	**9**	**9**	**8**	4	6	5	7	**8**	G
Postemergence-over-the-top																								
Assure II	**8**	**9**	**8**	**8**	**9**	**9**	**9**	**9**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
Buctril/BXN	0	0	0	0	0	0	0	0	0	0	0	**10**	**9**	3	**10**	6	6	0	**9**	**8**	**9**	**9**	4	E
Fusilade/Fusion	**9**	**9**	**9**	**9**	**9**	**9**	**9**	**9**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
PoastPlus	**9**	**9**	**9**	**9**	**9**	**9**	**8**	**8**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
Glyphosate/ Roundup Ready*	**9**	**9**	**9**	**8**	**9**	**9**	**8**	6	**8**	7	**10**	**8**	6	4	**8**	**9**	**9**	**9**	7	9	**9**	-	**8**	G
Select	**9**	**9**	**9**	**9**	**8**	**9**	**9**	**9**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	E
Staple	0	0	0	0	0	6	3	0	5	5	-	7	**9**	-	**9**	**10**	7	6	**9**	7	**9**	**9**	5	G
Staple Plus	**9**	**9**	**9**	**8**	**9**	**9**	**8**	6	**8**	7	**10**	**8**	**9**	4	**9**	**10**	**9**	**9**	**9**	**9**	**9**	**9**	**8**	G
Layby-preemergence activity																								
Command	**9**	**9**	**9**	**9**	**8**	**9**	3	-	-	-	-	6	4	-	5	7	**9**	**9**	**8**	**8**	**9**	**10**	0	F
Lorox/Linex	6	6	6	6	6	5	1	0	0	0	0	4	4	0	6	7	6	**8**	6	6	2	5	4	G

[a]Rating scale: 0-3, none to slight; 4-6, fair; 7-8, good; 9-10,excellent; Ratings assume the herbicides are applied in the manner suggested in the guidelines and according to the label under optimum growing conditions. Crop tolerance rating scale: E - excellent; G - good; F - fair.
*Two applications.

Consult labels for approved adjuvants.

Weed resistance to recommended use rates of certain herbicides has been documented in Mississippi. For more information, obtain a copy of Extension Publication 1907 *Herbicide Resistance–Prevention and Detection.*

Herbicide recommendations in this publication were approved by the Mississippi Weed Science Committee.

msucares.com

By **John D. Byrd, Jr., Ph.D.**, Extension Weed Specialist, **William H. McCarty, Ph.D.**, Extension Cotton Specialist, and **Charles Snipes**, Plant Physiologist.

Information Sheet 875
Extension Service of Mississippi State University, cooperating with U. S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. JOE H. MCGILBERRY, Director (rev-500-2-03)