

# 2013 Cotton Harvest Aid Guidelines for Louisiana



## Introduction

One of the last, but most important, steps in producing a cotton crop is harvest preparation. Successful harvest preparation includes scheduling for defoliation and harvest operations, removal of foliage and facilitating boll opening. Successful defoliation has many benefits including increased picker efficiency, elimination of trash in harvested seed cotton, faster drying of dew, which increases picking hours per day; straightening of lodged plants; and reduction of boll rot.

The activity of harvest aids is highly dependent on a number of factors such as environmental conditions, soil moisture, nitrogen levels, foliar pathogens and secondary plant growth. Moreover, cotton defoliation is a balancing act between leaf injury that stimulates leaf drop but does not desiccate and stick leaves to the plant. No one harvest aid tank mix will work in all situations. A good understanding of the influence of defoliation timing and the relative attributes of available harvest aids can help in deciding when to terminate a crop and which harvest aids to use.

## Defoliation Timing

There is always a balancing act between yield and fiber quality when defoliating cotton, but close attention to individual fields can help maintain quality while preserving yield. There are several accepted methods to time defoliation, and all methods have strengths and weaknesses. The following is a refresher of some of the more common defoliation-timing techniques.

### Percent of Open Bolls

The most widely used method is based on a determination of the total percentage of bolls in a field that have opened, with 60 percent of bolls open being the most commonly recommended point for defoliant application. In many situations, unopened bolls are mature enough to resist negative effects



and will open before harvest. This method, however, has limitations. Research in Louisiana has shown that depending on fruit distribution on the plant, maximum yield can be obtained when defoliation occurs before 60 percent open bolls. In addition, in cases where a large fruiting "gap" (no bolls present at fruiting sites) occurs and a large percentage of bolls are less mature and set in the uppermost region of the plant, optimum defoliation timing may occur later than 70 percent open. Research evaluating optimum defoliation timing in Louisiana and other states has shown maximum yield can be achieved with application ranging from 42 percent to 81 percent open bolls, depending on crop maturity and fruit distribution.

### Nodes Above Cracked Boll

In contrast to the percentage of open bolls method, the nodes above cracked boll, or NACB, method focuses on the unopened portion of the crop. The nodes above cracked boll measurement is determined by locating the uppermost first-position boll that is cracked open with visible lint and counting the number of main-stem nodes to the uppermost harvestable boll. By focusing on the unopened portion, NACB takes into account potential fruiting gaps. Most recommendations call for defoliation at four NACB. Low plant population and skip-row cotton, however, often are more safely defoliated at three NACB. Lower plant population usually means a later-maturing crop, with a significant portion of yield coming from outer-position bolls and bolls set on vegetative branches. Defoliating at a nodes above cracked boll greater than four usually will result in yield loss.



### Accumulated Heat Units After Cutout

Similar to NACB, a method developed in Arkansas recommends defoliation after accumulation of 850 heat units, or DD60s, after cutout.



A DD60 is a measure of accumulated heat needed for growth and development using a 60 degrees Fahrenheit minimum. Research from Louisiana indicates that under our environmental conditions, the appropriate defoliation timing may be greater than 850 heat units (that is, 1050 heat units) beyond a cutout of node above white flower four (four main-stem nodes above uppermost first-position white flower). While this method focuses on the unopened portion of the crop and is supposed to allow enough time and DD60s for full development of all bolls, it requires making a determination of cutout. The definition of cutout is a moving target and can often be different for every field.

$$\text{Daily DD60} = (\text{Daily High} + \text{Daily Low}) \div 2 - 60$$

$$\text{example: } 95 + 74 = 169 \div 2 = 84.5 - 60 = 24.5 \text{ DD60s}$$

### Visual Inspection



Immature Boll.....Fully Mature Boll

Whatever method is employed, growers should also visually inspect unopened bolls for maturity. A boll is considered mature if it is difficult to slice in cross-section with a knife and seeds have begun to form a tan/brown or black seed coat. Once a dark seed coat has formed, defoliation will not adversely affect yield of those bolls. Cotton bolls need 40 to 60 days to mature, depending on temperature. Bolls set later in the season will take longer to mature and may never be harvestable. Growers should walk their fields before defoliation and examine only those bolls that can reasonably be expected to mature

Research in Louisiana has shown that, on average, cotton is harvested from a 12-14 node

range on the plant. This fact can serve as a tool to simplify identifying the last harvestable boll as well as timing defoliation. To use the 12-node rule, identify the lowest first position boll that is expected to be harvested. Count up 12 nodes on the plant. The boll present at that position is likely to contribute to yield. Under some circumstance, a boll on the 14th node from the bottom could be considered harvestable. Bolls produced above that position on the plant are unlikely to contribute to yield, and waiting on them to mature places heavier bolls at the bottom of the plant at risk to unnecessary weather-related losses. Once the last harvestable boll has been identified, use the visual inspection technique to determine when it is mature and ready for defoliation.

### Harvest Scheduling

Harvest capacity also should be a consideration in defoliation timing. In general, defoliating only the amount of acreage that can be harvested within the 12-day period following treatment greatly reduces exposure of lint to weather losses and possible grade discounts. In addition, a delayed harvest may require regrowth to be controlled more aggressively using higher rates of regrowth-inhibiting products. In severe cases, an additional application of desiccant may be required to remove regrowth.

Defoliation may not always be warranted, because cotton that is completely cutout will drop some of its leaves naturally. If cotton is harvested with care, defoliation may not be needed to eliminate leaf trash and prevent excess staining. Before proceeding with this option, growers are strongly urged to harvest an adequate sample to evaluate effects on ginning efficiency. Limited research in Louisiana suggested as little as 20 percent green leaf (mature and juvenile) on the plant can significantly affect final grade and loan value when a single lint-cleaning operation is used. Therefore, growers are urged to proceed with caution about potentially deciding to eliminate defoliation.

### Defoliation of Late-Maturing Varieties

Full-season varieties tend to initiate fruiting on higher nodes and cutout earlier compared to earlier varieties. The implication for defoliation timing is that these varieties are more likely to continue to produce small, green bolls in the top of the plant. The value of waiting on these bolls is questionable, especially considering the relative lack of "stormproofness" of these varieties. The temptation, however, will be to wait on those bolls at the top of the plant to mature. In many

Table of Expected Activity of Various Harvest Aids

Material	Estimated Minimum Temperature (Fahrenheit)	Expected Activity			
		Mature Leaves	Juvenile Growth	Regrowth Prevention	Boll Opening
Def 6/Folex 6 EC	60 degrees	Excellent	Fair	Poor	None
Thidiazuron	65 degrees	Excellent	Excellent	Excellent	None
Ginstar EC/CutOut	60 degrees	Excellent	Excellent	Excellent	None
Aim EC	55 degrees	Good-Excellent	Excellent	Poor	None
ET	55 degrees	Good-Excellent	Excellent	Poor	None
Resource	55 degrees	Good-Excellent	Excellent	Poor	None
Blizzard	55 degrees	Good-Excellent	Excellent	Poor	None
Display	55 degrees	Good-Excellent	Excellent	Poor	None
Ethephon	60 degrees	Fair	Poor	Poor	Excellent
Finish 6 Pro	60 degrees	Excellent	Poor	Fair	Excellent
FirstPick	60 degrees	Good-Excellent	Poor	Poor/Fair	Excellent
Glyphosate	55 degrees	Fair	Fair	Excellent	None
Sodium Chlorate	55 degrees	Fair	Fair	Poor	None
Paraquat	55 degrees	Desiccation	Excellent	Poor	Fair

cases, those varieties may need to be picked with some green bolls at the top of the plant, but this can be done without reducing overall yield.

### Spray Coverage

Thorough canopy coverage is essential for acceptable results with all harvest aids. Carrier volume and nozzle selection are the most important factors in obtaining adequate spray coverage. Research in Louisiana and Tennessee indicated defoliant activity increases as carrier volume increases. Carrier volumes less than 10 gallons per acre are not recommended, and 15 gallons per acre is the suggested level. Lower carrier volumes increase the likelihood of needing a second application. While higher carrier volumes are inconvenient, water remains the cheapest thing you can put in the tank.

The use of drift-reduction nozzles has become widespread in recent years. These nozzles are excellent at controlling drift and placement of any spray solution. As droplet sizes become larger, however, thorough coverage of leaf surfaces within the canopy can decrease. Research in Louisiana and Tennessee has shown decreased defoliant activity with some drift-reducing nozzles when used at low operating pressures and/or low carrier volumes. Flat-fan and hollow-cone nozzles provide excellent spray coverage of harvest aids and are recommended for most applications. Always operate calibrated sprayers within the nozzle manufacturer's guidelines for operating pressure

and carrier volume to obtain maximum canopy coverage and minimal off-target movement.

### Rotational Crops Restrictions

When double-cropping wheat following cotton, some consideration should be given to label restrictions of harvest aids for rotational crops. The following table summarizes harvest aid label restrictions for planting wheat following cotton.

Label Restrictions for Planting Small Grains Following Application as a Harvest Aid in Cotton

Material	Re-crop Interval Following Application for Planting Small Grains
Def 6/Folex 6 EC	None
Thidiazuron	14 days
Ginstar EC/CutOut	1 month
Aim EC	None
Display	None
ET	None
Blizzard	None
Resource	30 days
Ethephon	30 days
FirstPick	30 days
Finish 6 Pro	30 days
Glyphosate	None
Sodium Chlorate	None
Paraquat	None

## Harvest Aid Materials

No one harvest aid or tank-mix combination may be appropriate for every situation or field. The selection of a harvest aid often is made based on prior experience and price. When selecting a harvest aid program, consider environmental and crop conditions, yield potential and value of the crop in the field.

The following list shows the majority of products available for use as harvest aids (other products with the same active ingredient may be available). All materials listed have strengths and weaknesses and perform better in certain environments. Always refer to the product label for directions, precautions, notes, appropriate rates, adjuvant use, preharvest intervals, tank mixes allowed and other information about a product's use.

### Harvest Aids for Cotton

Product	Active Ingredient	Labeled Rate of Product Application per Acre	Acres Treated by 1 Gallon or 1 Pound Product	Remarks
Aim EC	carfentrazone-ethyl	0.25–1.6 ounces	80–512	Can provide desiccation of morning glory and other broadleaf weeds. Use an adjuvant according to label directions. Maximum of 3.2 ounces per season. Rainfall within six to eight hours after application may reduce efficacy. Leaf desiccation potential may increase with higher rates under high temperatures. Low rate application ranging from 0.25 to 0.5 ounces per acre is labeled as a managed maturity application at 15 percent open boll being optimum.
FirstPick	ethephon + synergist	3–3.5 quarts alone 1.5–2 quart tank-mix	1.1–1.3 2–2.67	Effective defoliation when applied alone to very mature cotton. Most consistent defoliation and regrowth inhibition observed with tank mixes. Maximum of 3.5 quarts per season.
Finish 6 Pro	ethephon + cyclanilide	1.3–2.67 pints	3 – 6	Rainfall within six hours after application may reduce efficacy.
Several brands	glyphosate			For non-Roundup Ready cotton only. Use labeled rates for weed control.
ET	pyraflufen-ethyl	1.5–2.75 ounces	47–85	Can provide desiccation of morning glory and other broadleaf weeds. Use an adjuvant according to label directions. Maximum of 5.5 ounces per season. Rainfall within one hour after application may reduce efficacy. Leaf desiccation potential may increase with higher rates under high temperatures.
Resource	flumiclorac pentyl-ester	6–8 ounces	21–32	Apply with 1-2 pints COC or methylated seed oil. Maximum of 14 ounces per season. Rainfall within one hour of application may reduce efficacy.

## Harvest Aids for Cotton

Product	Active Ingredient	Labeled Rate of Product Application per Acre	Acres Treated by 1 Gallon or 1 Pound Product	Remarks
Blizzard	fluthiacet-methyl	0.5–0.6 ounce	213–256	Use an adjuvant according to label directions. Maximum of 1.25 ounces per season. Rainfall within one hour after application may reduce efficacy.
Display	Carfentrazone-ethyl + fluthiacet-ethyl	1 ounce	128	Can provide desiccation of morning glories and other broadleaf weeds. Use an adjuvant according to label directions. Maximum of 1 ounce per application and 2 ounces per season. Rainfall within six to eight hours after application may affect performance.
Dropp SC Freefall SC	thidiazuron	1.6–6.4 ounces 1.6–6.4 ounces	40–80 40–80	Thidiazuron is temperature sensitive. Either avoid or use at higher rates during cooler conditions. Rainfall within 24 hours after application may reduce efficacy.
Ginstar EC/ CutOut	thidiazuron + diuron	6.4–16 ounces	10–40	Higher rates and tank mixes with other products and adjuvants can increase likelihood of desiccation under high temperatures. More active than thidiazuron alone under cooler conditions. Maximum of 16 ounces per season. Rainfall within 12 hours after application may reduce efficacy.
Def 6 Folex 6 EC	tribufos	1.3–1.5 pints	5.3–6.1	Maximum of 1.5 pints per season. Rainfall within one hour after application may reduce efficacy.
Several brands	ethephon	1.3–2.67 pints	3–6.1	Maximum of 2 pounds per season (2.67 pints of a 6 pound formulated material). Rainfall within six hours after application may reduce efficacy.
Gramoxone Inteon	paraquat	See label		See label for specific application timing instructions. Maximum of 2 pints per season. Rainfall within 15 minutes of application may reduce efficacy. Can provide desiccation of weeds.
Several brands	sodium chlorate	See label		Can provide desiccation of weeds.

## Defoliation Decision Guide

This guide can be used in determining the appropriate harvest aid or harvest aid combination for particular situations. Use the key to identify the group of suggested materials that best fit a specific situation. Some of the products are sold under a variety of trade names; refer to the descriptions of specific materials for alternate brand names.

The following should be used only as a guide in determining materials, combinations and rates. Cotton response to these and other harvest aid options always depends on environmental conditions—sometimes requiring rates higher or lower on the labeled range than those suggested here. For some combinations, an adjuvant may be required or suggested on the label. Always read and follow label instructions.

### Expected Daytime High Temperature Above 80 Degrees Fahrenheit

Regrowth potential is high

Boll opening is needed

Will attempt a once-over defoliation program.....SEE GROUP 1

Will be a two-step program .....SEE GROUP 2

Boll opening is not needed

Will attempt a once-over defoliation program.....SEE GROUP 3

Will be a two-step program .....SEE GROUP 4

Regrowth potential is low

Boll opening is needed

Will attempt a once-over defoliation program.....SEE GROUP 5

Will be a two-step program .....SEE GROUP 6

Boll opening is not needed

Will attempt a once-over defoliation program.....SEE GROUP 7

Will be a two-step program .....SEE GROUP 8

### Expected Daytime High Temperature Lower Than 80 Degrees Fahrenheit

Boll opening is needed

Will attempt a once-over defoliation program .....SEE GROUP 9

Will be a two-step program .....SEE GROUP 10

Boll opening is not needed

Will attempt a once-over defoliation program .....SEE GROUP 11

Will be a two-step program .....SEE GROUP 12

## Suggested Harvest Aids and Combinations

### GROUP 1 – High temperatures; boll opening; regrowth control; once-over

thidiazuron 2.4–3.2 ounces + ethephon 1.3 pints

thidiazuron 1.6–2.4 ounces + Def 6/Folex 6 EC 1.3 pints + ethephon 1.3 pints

thidiazuron 1.6 ounces + Aim 1 ounce\*/ET 1.5 ounces\* + ethephon 1.3 pints

thidiazuron 1.6 ounces + Finish 6 Pro 1.3 pints

thidiazuron 1.6 ounces + FirstPick 2 quarts

\*\*Glyphosate 1 pound ai + ethephon 1.3 pints or Finish 6 Pro 1.3 pints or FirstPick 2 quarts

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource and Display at labeled rates have resulted in similar levels of cotton defoliation.

\*\*For control of grasses and pigweeds only in non-Roundup Ready cotton. Weed control may take 14 days.

### GROUP 2 – High temperatures; boll opening; regrowth control; two-step programs

thidiazuron 2.4 ounces + ethephon 1.3 pints followed by Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials)

thidiazuron 1.6 ounces + Finish 6 Pro 1.3 pints followed Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) or Aim 1 ounce\*/ET 1.5-2 ounce\*

thidiazuron 1.6 ounces + FirstPick 2 quarts followed by Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) or Aim 1 ounce\*/ET 1.5 ounces\*

Aim 1 ounce\*/ET 1.5 ounces\* + ethephon 1.3 pints or Finish 6 Pro 1.3 pints or FirstPick 2 quarts followed by Aim 1 ounce\*/ET 1.5 ounces\*

Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) + ethephon 1.3 pints or Finish 6 Pro 1.3 pints followed by Aim 1 ounces\*/ET 1.5 ounces\*

Finish 6 Pro 1.3–2 pints followed by Aim 1 ounce\*/ET 1.5 ounces\*

FirstPick 3–3.5 quarts followed by Aim 1 ounce\*/ET 1.5 ounces\*

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

### GROUP 3 – High temperatures; regrowth control; once over

thidiazuron 2.4–3.2 ounces (for well cutout cotton only)

thidiazuron 1.6–2.4 ounces + Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials)

thidiazuron 1.6–2.4 ounces + Aim 1 ounces\*/ET 1.5 ounces\*

Ginstar EC 6.4–8 ounces (potential for desiccation increases with rate and temperature)

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

## Suggested Harvest Aids and Combinations

### GROUP 4 – High temperatures; regrowth control; two-step programs

thidiazuron 1.6–2.4 ounces followed by Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) or Aim 1 ounces\*/ET 1.5 ounces\*

Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) followed by Aim 1 ounces\*/ET 1.5 ounces\*

Aim 1 ounces followed by Aim 1 ounces\*/ET 1.5 ounces\*

Ginstar EC 6.4 ounces followed by Aim 1 ounces\*/ET 1.5 ounces\*

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

### GROUP 5 – High temperatures; low regrowth potential; boll opening; once-over

thidiazuron 1.6 ounces + Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) + ethephon 1.3 pints

thidiazuron 1.6 ounces + Finish 6 Pro 1.3 pints

thidiazuron 1.6 ounces + FirstPick 2 quarts

Def 6/Folex 6 EC 1.3–1.5 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) + ethephon 21 ounces

Finish 6 Pro 2 pints

Finish 6 Pro 1.3 pints + Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) or Aim 1 ounces\*/ET 1.5 ounces\*

FirstPick 2 quarts + Def 6/Folex 6 EC 1.3 pints (lower rates have provided good defoliation and reduced potential for desiccation in research trials) or Aim 1 ounces\*/ET 1.5 ounces\*

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

### GROUP 6 – High temperatures; low regrowth potential; boll opening; two-step programs

Def 6/Folex 6 EC 1.3 pints + ethephon 1.3 pints followed by Def 6/Folex 6 EC 1.3 pints or Aim 1 ounces\*/ET 1.5 ounces\*

thidiazuron 1.6 ounces + ethephon 1.3 pints followed Def 6/Folex 6 EC 1.3 pints or Aim 1 ounces\*/ET 1.5 ounces\*

Finish 6 Pro 1.3–1.5 pints followed by Def 6/Folex 6 EC 1.3 pints or Aim 1 ounces\*/ET 1.5 ounces\*

FirstPick 2 quarts followed by Def 6/Folex 6 EC 1.3 pints or Aim 1 ounces\*/ET 1.5 ounces\*

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

## Suggested Harvest Aids and Combinations

### GROUP 7 – High temperatures; low regrowth potential; once over

thidiazuron 1.6 ounces + Def 6/Folex 6 EC 1.3–1.5 pints or Aim 1 ounces\*/ET 1.5 ounces\*  
Def 6/Folex 6 EC 1.5–2 pints

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

### GROUP 8 – High temperatures; low regrowth potential; two-step programs

Def 6/Folex 6 EC 1.3 pints followed by Def 6/Folex 6 EC 1.3 pints or Aim 1 ounces\*/ET 1.5 ounces\*  
Aim 1 ounces followed by Aim 1 ounces\*/ET 1.5 ounces\*

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

### GROUP 9 – Lower temperatures; boll opening; once over

Def 6/Folex 6 EC 1.3–1.5 pints + ethephon 1.5 pints or Finish 6 Pro 1.3–1.5 pints

Finish 6 Pro 1.5–2 pints

Finish 6 Pro 1.3–1.5 pints + Aim 1 ounces\*/ET 1.5 ounces\*

FirstPick 2 quarts + Def 6/Folex 6 EC 1.3 pints

FirstPick 2 quarts + Aim 1 ounces\*/ET 1.5 ounces\*

Ginstar EC 6.4–9 ounces + ethephon 1.3 pints

Ginstar EC 6.4 ounces + Finish 6 Pro 1.3 pints

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

### GROUP 10 – Lower temperatures; boll opening; two-step programs

Def 6/Folex 6 EC 1.3–1.5 pints + ethephon 1.5 pints followed by Aim 1 ounces\*/ET 1.5 ounces\*

Def 6/Folex 6 EC 1.3 pints + Finish 6 Pro 1.3 pints followed by Aim 1 ounces\*/ET 1.5 ounces\*

Def 6/Folex 6 EC 1.3 pints + FirstPick 2 quarts followed by Aim 1 ounces\*/ET 1.5 ounces\*

Finish 6 Pro 1.3–1.5 pints followed by Aim 1 ounces\*/ET 1.5 ounces\*

Finish 6 Pro 1.3 pints followed by Finish 6 Pro 1 pints

FirstPick 3–3.5 quarts followed by Aim 1 ounces\*/ET 1.5 ounces\*

Ginstar EC 6.4 ounces + ethephon 1.3 pints followed by Aim 1 ounces\*/ET 1.5 ounces\*

Aim 1 ounces + ethephon 1.5 pints followed by Aim 1 ounces\*/ET 1.5 ounces\*

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

## Suggested Harvest Aids and Combinations

### GROUP 11 – Lower temperatures; once over

Def 6/Folex 6 EC 1.5–2 pints

Finish 6 Pro 1.3–1.5 pints + Def 6/Folex 6 EC 1 pints or Aim 1 ounces\*/ET 1.5 ounces\*

Finish 6 Pro 1.5–2 pints

FirstPick 2–3 quarts + Aim 1 ounces\*/ET 1.5 ounces\*

Ginstar EC 6–10 ounces

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

### GROUP 12 – Lower temperatures; two-step

Def 6/Folex 6 EC 1.5 pints followed by Def 6/Folex 6 EC 1.5 pints or Aim 1 ounces\*/ET 1.5 ounces\*

Aim 1 ounces/ET 1.5 ounces followed by Aim 1 ounces\*/ET 1.5 ounces\*

Finish 6 Pro 1.5 pints followed by Aim 1 ounces\*/ET 1.5 ounces\*

FirstPick 2 quarts followed by Aim 1 ounces\*/ET 1.5 ounces\*

Ginstar EC 6 ounces followed by Ginstar EC 6 ounces

Ginstar EC 6–9 ounces followed by Aim 1 ounces\*/ET 1.5 ounces\*

Sodium chlorate followed by sodium chlorate

\*Addition of Aim, ET or Display at recommended rates will desiccate most broadleaf weed species. Blizzard, Resource or Display at labeled rates have resulted in similar levels of cotton defoliation.

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