

# Northwest Plains Pest Management News

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Bailey and Parmer Counties

October 1, 2004

Cool wet weather has returned to the Northwest Plains. Corn harvest has come to a stop in most areas. Local weather stations have recorded the following accumulated precipitation amounts over the last 10 days: Farwell 4.08, Friona 4.18, Muleshoe 9.02, Muleshoe Wildlife Refuge 14.03. Heat unit accumulation over the last 10 days has slowed to a crawl, 23.5 at Farwell, and 41.5 at both Friona and Muleshoe.

Lack of sufficient heat units to adequately mature cotton will make harvest aid decisions difficult. A hard freeze on immature bolls can prevent them from opening. A high rate of Prep (up to 42 oz/acre) could pop these bolls open. The mic would undoubtedly be low but as J.C. Banks has been reported as saying “a low mic is better than no mic”. I would not want to use this approach until I was sure no further heat units were likely to be accumulated. Harvest-aid chemicals cannot increase the rate of fiber development. Only additional good growing weather including open skies and adequate heat units can mature cotton bolls.

Harvest-aids are generally applied to hasten harvest of a mature crop, and to reduce potential preharvest losses of lint yield and fiber quality. Proper harvest-aid material selection, tank mix

<b>Daily Water Use</b>	
Crop	Inches per day
Wheat	.05
Cotton	.14
Grain Sorghum	.11
Bermuda grass	.09
Fescue/Bluegrass	.12

## Cotton Heat Unit Accumulation

Location	Current*	2003*	2002*
Farwell	1608	1789	1914
Friona	1722	2011	2181
Muleshoe	1762	1919	2024

*\*Based on May 1st planting date.*

partners and rates vary with environmental and crop conditions. What works best in one year is not necessarily the best for the next season. There are several factors that affect the performance or lack of performance of harvest-aid chemicals including crop maturity, overall plant health, ambient temperature, sunshine, and soil moisture. Maturity can be determined by using a sharp knife to cut into the bolls.

### Immature Boll

- Easy to slice cross section
- Seed coat hardly visible
- Seeds are gelatinous

### Boll Approaching Maturity

- Seed coat still indistinct yet taking on a slight tan color
- Seed still gelatinous and not well formed
- Fiber beginning to “string out” yet is watery

### Mature Boll

- Firm and difficult to slice
- Seed coat tan to light brown color
- Cotyledons formed on the seed
- Boll is mottled appearance
- Fiber “strings out” readily and feels moist but not watery

When determining boll maturity of adjacent fruit, one can consider the following. When moving up

the plant from a first position boll that has just cracked to a first position closed boll on the next fruiting branch, about 60 additional heat units (DD60s) are required to obtain similar boll maturity. If moving out from a first position boll to a second position boll on the same fruiting branch, about 120 heat units will be required to reach the same level of maturity. For an individual boll, a total of about 800-850 heat units are required after pollination to produce normal size and quality. However, bolls obtaining fewer heat units may still make productive lint of lower micronaire that may contribute to final yield.

Harvest aids are basically classed in three categories – desiccants, defoliant, and boll openers. Desiccants (paraquat formulations such as Gramoxone Max and various tank-mixes) dry the plant down by causing the cells to rupture and lose cellular contents and water due to leakage. The old "rule of thumb" is that desiccants are normally applied when approximately 80 percent of the productive bolls are open, or at 2-3 nodes above cracked boll. However, if sufficient numbers of bolls are mature, then these materials may be applied to somewhat lower percent open boll fields. Applications of Gramoxone Max made in the late afternoon prior to a bright, sunny, day appear to enhance the effectiveness of desiccation and tends to increase regrowth control.

Defoliant (Ginstar, Def, Harvade, Aim 2EC, LintPlus, ET 2.5%EC, sodium chlorates, Gramoxone Max at low rates, and other products) result in initiation of an abscission layer at the base of the leaf petiole where it attaches to the stem. The natural abscission layer formation process is enhanced by the defoliant, which results in leaf drop. Warm air temperatures generally enhance activity. The commonly used rule of thumb is that defoliant can be safely applied when 50-60 percent of the bolls are open and the remaining bolls are of sufficient maturity to obtain desired yield. A follow-up application of paraquat-based materials or a killing freeze is necessary to allow stripping of the crop.

Boll openers (Prep, Ethephon 6, SuperBoll, Boll'd) and boll openers-defoliant (Finish 6 Pro and CottonQuik) are based on ethephon chemistry. These materials affect natural plant processes associated with boll opening, but do not increase the rate of boll or fiber maturation. These materials result in significant defoliation responses at high rates, but generally are applied at lower rates to obtain boll opening. The response to ethephon is generally driven by temperatures. Under warmer conditions, reduced rates of ethephon may be used compared to cooler temperature regimes where higher rates are required to obtain similar plant responses. Applications of boll opening products when bolls lack adequate maturity will result in reduced lint yield and micronaire. Follow-up application of paraquat is generally required to sufficiently condition the crop for stripper harvest.

Glyphosate (Roundup and various generics) can be applied as a harvest aid material to conventional cotton specifically to target weed problems and/or to reduce regrowth potential. Effective silverleaf nightshade (or whiteweed) control can be observed in the following season with application of 1-2 quarts per acre of glyphosate when weeds are in the green-berry stage. Control of severe weed infestations may be increased by the higher rate. Applications made in September should target cotton that is 50-80 percent open. After October 1, cotton can be treated when 30 percent of the bolls are open.



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*Educational programs conducted by Texas Cooperative Extension serve people of all ages regardless of socioeconomic level, race, color, sex, religion, handicap or national origin. The information given herein is for educational purposes only. References to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by Texas Cooperative Extension is implied.*

# 2004 HIGH PLAINS COTTON HARVEST-AID DECISION TABLE

NOT ALL TREATMENTS ARE EQUALLY EFFECTIVE

RATES LISTED ARE UNITS OF PRODUCT PER ACRE

CROP CONDITION	DRY TEMPERATURES GREATER THAN 80° (0-3 DAYS AFTER TREATMENT)	DRY TEMPERATURES LESS THAN 80° (0-3 DAYS AFTER TREATMENT)	WET TEMPERATURES LESS THAN 75° (0-3 DAYS AFTER TREATMENT)
<b>HEIGHT:</b> Short 12-14 inches  <b>YIELD:</b> up to 400 lb/acre	Gramoxone Max 5.3-21.3 oz <sup>1</sup>	Gramoxone Max 5.3-21.3 oz <sup>1</sup>	Gramoxone Max 5.3-21.3 oz <sup>1</sup>
	Gramoxone Max 2.6-5.3 oz FB Gramoxone Max up to 32 oz total <sup>2</sup>	Gramoxone Max 5.3-8 oz FB Gramoxone Max up to 32 oz total <sup>2</sup>	Gramoxone Max 5.3-8 oz FB Gramoxone Max up to 32 oz total <sup>2</sup>
	Gramoxone Max 4-6.7 oz + defoliant/desiccant <sup>3</sup>	Gramoxone Max 5.3-8 oz + defoliant/desiccant <sup>3</sup>	Gramoxone Max 6.7-16 oz + defoliant/desiccant <sup>3</sup>
	Ginstar 6-8 oz banded	Ginstar 8 oz banded	Ginstar 8-10 oz banded
	Aim EC 1 oz + COC with or without defoliant/desiccant	Aim EC 1 oz + COC with or without defoliant/desiccant	Aim EC 1 oz + COC with or without defoliant/desiccant
	Aim EC 1 oz + COC FB Aim EC 1 oz + COC	Aim EC 1 oz + COC FB Aim EC 1 oz + COC	Aim EC 1 oz + COC FB Aim EC 1 oz + COC

CROP CONDITION	DRY TEMPERATURES GREATER THAN 80° (0-3 DAYS AFTER TREATMENT)	DRY TEMPERATURES LESS THAN 80° (0-3 DAYS AFTER TREATMENT)	WET TEMPERATURES LESS THAN 75° (0-3 DAYS AFTER TREATMENT)
<b>HEIGHT:</b> Medium 15-24 inches  <b>YIELD:</b> 500+ lb/acre	<b>FOR TREATMENTS LISTED BELOW, A SEQUENTIAL APPLICATION OF PARAQUAT-BASED PRODUCT 10-14 DAYS AFTER INITIAL TREATMENT WILL LIKELY BE NECESSARY TO SUFFICIENTLY CONDITION CROP</b>		
	Gramoxone Max 4-6.7 oz + defoliant/desiccant <sup>3</sup>	Gramoxone Max 5.3-8 oz + defoliant/desiccant <sup>3</sup>	Gramoxone Max 6.7-16 oz + defoliant/desiccant <sup>3</sup>
	Gramoxone Max 2.6-5.3 oz FB* Gramoxone Max up to 32 oz total <sup>2</sup>	Gramoxone Max 4-5.3 oz FB* Gramoxone Max up to 32 oz total <sup>2</sup>	—
	Ginstar 6-8 oz	Ginstar 8 oz	Ginstar 8-10 oz
	Harvade 8 oz + 1 pt COC + sodium chlorate 77 oz <sup>5</sup> FB Gramoxone Max	Harvade 8 oz + 1 pt COC + sodium chlorate 77 oz <sup>5</sup> FB Gramoxone Max	Harvade 8 oz + 1 pt COC + sodium chlorate 77 oz <sup>5</sup> FB Gramoxone Max
	LintPlus 20 oz FB Gramoxone Max	LintPlus 20 oz FB Gramoxone Max	LintPlus 20 oz FB Gramoxone Max
	Aim EC 1 oz + COC + defoliant/desiccant	Aim EC 1 oz + COC + defoliant/desiccant	Aim EC 1 oz + COC + defoliant/desiccant
	Aim EC 1 oz + COC FB Aim EC 1 oz + COC	Aim EC 1 oz + COC FB Aim EC 1 oz + COC	Aim EC 1 oz + COC FB Aim EC 1 oz + COC
	Prep 16 oz + Ginstar 3-5 oz	Prep 16-21 oz <sup>4</sup> + Ginstar 3-5 oz	Prep 21 oz <sup>4</sup> + Ginstar 3-5 oz
	Prep 16-21 oz + Def/Folex 8-16 oz	Prep 16-21 oz <sup>4</sup> + Def/Folex 16 oz	Prep 21 oz <sup>4</sup> + Def/Folex 16 oz
	Prep 16-21 oz + Aim EC 1 oz + COC	Prep 16-21 oz <sup>4</sup> + Aim EC 1 oz + COC	Prep 21 oz <sup>4</sup> + Aim EC 1 oz + COC
	Finish 6 Pro 21 oz + defoliant (Def/Folex 8 oz or Ginstar 3-5 oz)	Finish 6 Pro 21-32 oz <sup>4</sup> (defoliant may be required)	Finish 6 Pro 21-42 oz <sup>4</sup> (defoliant may be required)
CottonQuik 3 pts + Ginstar 3 oz	CottonQuik 3-4 pts <sup>4</sup> + Ginstar 5 oz	CottonQuik 4 pts <sup>4</sup> + Ginstar 6-8 oz	

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<b>HEIGHT:</b> Greater than 24 inches  <b>YIELD:</b> 800+ lb/acre	<b>FOR TREATMENTS LISTED BELOW, A SEQUENTIAL APPLICATION OF A PARAQUAT-BASED PRODUCT 10-14 DAYS AFTER INITIAL TREATMENT WILL LIKELY BE NECESSARY TO SUFFICIENTLY CONDITION CROP</b>		
	Prep 21 oz + Def/Folex 8-16 oz	Prep 21 oz + Def/Folex 16 oz	Prep 21-28 oz <sup>4</sup> + Def/Folex 16 oz
	Finish 6 Pro 21 oz + defoliant (Def/Folex 8 oz or Ginstar 3-5 oz)	Finish 6 Pro 21-32 oz <sup>4</sup> + defoliant (Def/Folex 8-10 oz or Ginstar 4-6 oz)	Finish 6 Pro 32-42 oz <sup>4</sup> + defoliant (Def/Folex 8-10 oz or Ginstar 6-8 oz)
	Finish 6 Pro 21 oz + Aim EC 1 oz + COC	Finish 6 Pro 21-32 <sup>4</sup> oz + Aim EC 1 oz + COC	Finish 6 Pro 32-42 <sup>4</sup> oz + Aim EC 1 oz + COC
	Prep 21 oz + Ginstar 3-5 oz	Prep 21 oz + Ginstar 4-6 oz	Prep 21-28 <sup>4</sup> oz + Ginstar 6-8 oz
	Prep 21 oz + Aim EC 1 oz + COC	Prep 21 oz + Aim EC 1 oz + COC	Prep 21-28 <sup>4</sup> oz + Aim EC 1 oz + COC
	CottonQuik 3-4pts + Ginstar 3-5 oz	CottonQuik 4-5 pts <sup>4</sup> + Ginstar 6-8 oz	CottonQuik 6-7pts <sup>4</sup> + Ginstar 6-8 oz
	CottonQuik 3-4 pts + Aim EC 1 oz + COC	CottonQuik 4-5 pts <sup>4</sup> + Aim EC 1 oz + COC	CottonQuik 6-7 pts <sup>4</sup> + Aim EC 1 oz + COC
	Harvade 8 oz + 1 pt COC + sodium chlorate 77 oz <sup>5</sup> FB Gramoxone Max	Harvade 8 oz + 1 pt COC + sodium chlorate 77 oz <sup>5</sup> FB Gramoxone Max	Harvade 8 oz + 1 pt COC + sodium chlorate 77 oz <sup>5</sup> FB Gramoxone Max
	LintPlus 20 oz FB Gramoxone Max	LintPlus 20 oz FB Gramoxone Max	LintPlus 20 oz FB Gramoxone Max
	Ginstar 6-8 oz	Ginstar 8 oz	Ginstar 8-10 oz
<b>LATE MATURING</b>	<b>CONDITIONING TREATMENT ONLY</b> (Apply after daily heat units drop below 5, but 7 days before average first killing freeze date)		
	Gramoxone Max 2.6-5.3 oz	Gramoxone Max 4.6-8	Gramoxone Max 6.7-10.7
	Prep 21-24 oz	Prep 21-32 oz <sup>4</sup>	Prep 32-42 oz <sup>4</sup>
	Prep 21-24 oz + Def/Folex 8 oz or + Ginstar 8 oz or + Aim EC 1 oz + COC	Prep 21-32 oz <sup>4</sup> + Def/Folex 8 oz or + Ginstar 8 oz or + Aim EC 1 oz + COC	Prep 21-32 oz <sup>4</sup> + Def/Folex 16 oz or + Ginstar 8-16 oz or + Aim EC 1 oz + COC

\* - FB = Followed by

<sup>1</sup> - Use on cotton with natural leaf shed. High rates can cause green, healthy leaves to stick. Always use a non-ionic surfactant when applying paraquat-based materials (Gramoxone Max). There is some concern for the single high dose rate on hairy-leaved cotton varieties. High leaf grades may be obtained. Make sure the cotton has 80% open bolls at application, use enough paraquat to completely kill all foliage, then stripper harvest only when leaves are dry enough to "crunch" when crushed by hand. Avoid stripper harvesting moist, dead leaves or high leaf grades may be encountered.

<sup>2</sup> - No more than 32 oz total of Gramoxone Max may be applied (in up to 3 multiple applications) in one season based on the Texas Special Local Need 24(C) label. The need for and rate of Gramoxone Max in a second application will depend upon green leaves remaining. Use higher rates if regrowth is excessive.

<sup>3</sup> - Tankmix partners with Gramoxone Max include Accelerate, sodium chlorate, Def/Folex, and Leafall.

<sup>4</sup> - Ethephon-based material (such as Finish 6 Pro, CottonQuik, Prep, SuperBoll, Boll'd, Ethephon 6) activity is determined by rate and temperature. At lower temperatures, boll opening response can be enhanced by increasing rate.

<sup>5</sup> - Always use crop oil concentrate with this combination and follow with paraquat-based desiccant 7-10 days later.