

YEAR: 1999

EVALUATION OF HARVEST AIDS
ON HAILED-ON COTTON

COOPERATOR

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SUMMARY: Cotton can receive hail just prior to harvest and can make harvest decisions difficult on the High Plains of Texas. A significant increase in lint recovered from using either Prep at 1 pint followed by Cyclone 1 pint or Cyclone at 1.5 pints followed by Cyclone 1 pint were observed over the untreated check.

PROBLEM: Late summer and fall storms on the Southern High Plains of Texas which are accompanied by hail can remove foliage and damage fruit. This damage causes difficulty in harvest and uncertainty about the use of harvest aids.

OBJECTIVE: To evaluate cotton harvest aid products on damaged cotton.

MATERIALS AND METHODS: Field plots were 4 rows by 50 feet. A randomized complete block design with 3 replications was used. Harvest aid treatments were applied on September 20, 1999 at 2:30p.m. in 18 gallons of water per acre. Application was made using 3 nozzles per row. A second application to 2 rows of each plot was made on September 27, 1999 with cyclone at 1 pint.

RESULTS: See Table 1 for results of harvest aid treatments on hail damaged cotton. Table 2 contains results on cotton quality from the test. One week after initial applications all treatments provided significantly higher boll opening (>95%) when compared to the untreated check(74%) and significantly greater dessication (> 92.3%) compared to the check (78.3%). Two weeks after initial application all treatments were again at a significantly higher percent for dessication and boll opening compared to the check. The portion of the plots which were treated with Cyclone one week following initial treatments provided different results. These rating indicated that only the Finish or Cyclone treatments (> 99.7%) were significantly better than the Check (98%). The follow-by treatments of Cyclone effect on boll opening resulted in significantly better boll opening from all treatments (> 96.7%)except the lowest rate of Prep (95.3%) and the highest rate of Cyclone (94.7%) when compared to the Check (93.7%) All treatments except the two lowest rates (1 and 1.3pint) of Prep provided significantly lower regrowth (< 0.7) control compared to the Check. Results of cotton yields indicated that only the Cyclone 24 oz. alone

(344.4 lbs) was significantly higher than the Check (255.9 lbs). The addition of Cyclone to the treatments allowed the yield from Prep 1 pint treatment (435.7 lbs) to be significantly higher than the Check (288.2 lbs).

CONCLUSION: The Prep 1 pint followed by Cyclone 1 pint resulted in the highest yield (435.7%) with the next treatment being Finish followed by Cyclone (346.5 lbs) or Cyclone 24 oz alone (344.4 lbs). This test indicated an advantage of using a harvest aid to hail damaged cotton.

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ADDITIONAL NOTES: The hail storm was received on September 14th. We treated 6 days later on September 20th. Defoliation at time of treatment was 90%+, with the remaining leaves in very poor condition. I estimate that if this cotton would not have been damaged and had time to mature properly, it could have yielded in the neighborhood of +650 lbs. Damage to bolls in the top third and outside positions were severely bruised with some splits in carpel wall. The bottom inside crop did have some bruising but no splitting at time of treatment. At time of treatment this field was at approximately 7.5 nodes above cracked boll.

Table 1 Results of harvest aid treatments hailed cotton, Ropesville, Texas, 1999.

Treatments	Rates	NACB ^{1/} 9-27-99	Defoliation % 9-27-99	Dessication % 9-27-99	% Boll Open 9-27-99	Defoliation % 10-5-99	Dessication % 10-5-99	% Boll Open 10-5-99	Regrowth ^{2/} Rating 10-5-99	Cost of Product \$
Prep ^{3/} fb Cyclone	1pt 1pt	4.2 a ^{4/}	94.7 de	92.3 c	95.7 a	97.0 a 98.0 a	95.3 c 99.3 ab	94.7 c 95.3b-d	1.0 ab	7.06 3.44
Prep fb Cyclone	1.3pt 1pt	4.9 a	95.3 cd	92.7 c	95.0 a	96.7 a 97.0 ab	98.0 ab 99.3 ab	95.7 bc 97.3 ab	0.7 abc	9.18 3.44
Prep fb Cyclone	1qt. 1pt.	4.2 a	97.0 abc	95.3 abc	97.0 a	98.0 a 96.7 ab	97.3 abc 99.3 ab	98.3 ab 98.7 a	0.3 bc	14.12 3.44
Cotton Quik fb Cyclone	3pt 1pt	4.2 a	96.0 bcd	93.3 bc	97.0 a	97.3 a 96.7 ab	97.0 bc 99.0 ab	99.0 a 98.7 a	0.0 c	9.84 3.44
Finish 4L fb Cyclone	1.3pt 1pt	4.3 a	98.0 a	94.3 abc	94.3 a	98.0 a 97.7 ab	97.3 abc 99.7 a	98.7 ab 98.0 a	0.3 bc	9.06 3.44
Cyclone fb Cyclone	12oz 1pt	3.8 a	96.3 abcd	98.7 abc	97.3 a	95.3 ab 96.7 ab	99.0 ab 100.0 a	96.7abc 96.7abc	0.0 c	2.52 3.44
Cyclone fb Cyclone	1pt 1pt	4.5 a	97.7 ab	99.3 ab	97.7 a	94.7ab 96.0 ab	99.0 ab 99.7 a	97.3abc 97.7 ab	0.0 c	3.44 3.44
Cyclone fb Cyclone	24oz 1pt	4.3 a	97.7 ab	100.0 a	98.7 a	95.7 ab 96.7 ab	99.7 a 100.0 a	98.3 ab 94.7 cd	0.0 c	5.04 3.44
Untreated Check fb Cyclone	-- 1pt	3.7 a	93.0 e	78.3 d	74.0 b	93.0 b 94.7 b	91.7 d 98.0 b	86.3 d 93.7 d	1.3 a	-- 3.44

^{1/} NACB = Nodes above cracked boll.

^{2/} Regrowth 0 = No regrowth 10 = complete regrowth.

^{3/} fb = Followed by application of Cyclone 7 days after initial harvest aid on 2 rows of the 4 rows in each plot.

^{4/} Means followed by same letter do not significantly differ (P = .05, Duncan's New MRT).

Table 2. Cotton yield and quality measurements from hailed on cotton harvest aid study, Ropesville, Texas, 1999.

Treatments	Rates	Lint at lbs/Ac	Micronaire	Ohml	Uniformity	Strength	Elongation	Leaf	RD	+B
Prep fb Cyclone	1pt 1pt	280.3 ab 435.7 a	2.87 a ^{1/} 2.87 a	1.05 bc 1.073a	82.5 a 81.7 a	30.1 a 30.0 a	7.3 a 7.43 a	1.0 a 1.0 a	77.2 a 77.2 b	8.87 a 8.77 a
Prep fb Cyclone	1.3pt 1pt	272.3 ab 335.1 ab	2.63 a 2.7 a	1.08 abc 1.08 a	82.3 ab 82.5 a	31.0 a 31.2 a	7.63a 7.6 a	1.0 a 1.0 a	78.3 a 77.7 ab	8.97 a 9.0 a
Prep fb Cyclone	1qt. 1pt.	294.7 ab 228.5 b	2.67 a 2.6 a	1.047 c 1.06 a	82.0 ab 81.4 a	30.5 a 30.1 a	7.53 a 7.43 a	1.0 a 1.0 a	78.8 a 78.7 ab	8.9 a 8.87 a
Cotton Quik fb Cyclone	3pt 1pt	257.7 b 295.0 b	2.63 a 2.57 a	1.063 abc 1.07 a	81.3 b 82.1 a	30.5 a 30.2 a	7.53a 7.33 a	1.0 a 1.0 a	78.4 a 78.0 ab	8.83 a 9.0 a
Finish 4L fb Cyclone	1.3pt 1pt	313.8 ab 346.5 ab	2.8 a 2.8 a	1.067 abc 1.06 a	82.3 ab 81.4 a	31.4 a 30.6 a	7.23 a 7.17 a	1.0 a 1.0 a	78.2 a 77.9 ab	8.93 a 8.83 a
Cyclone fb Cyclone	12oz 1pt	276.3 ab 241.6 b	2.77 a 2.7 a	1.083 abc 1.06 a	82.4 a 81.7 a	31.0 a 30.2 a	7.63 a 7.43 a	1.0 a 1.0 a	78.7 a 78.4ab	8.8 a 8.87 a
Cyclone fb Cyclone	1pt 1pt	282.9 ab 259.2 b	2.73 a 2.67 a	1.087 ab 1.073 a	81.8 ab 81.7 a	30.0 a 30.8 a	7.33 a 7.53 a	1.67 a 1.0 a	78.1 a 78.8 ab	8.97 a 8.97 a
Cyclone fb Cyclone	24oz 1pt	344.4 a 302.4 b	2.8 a 2.57 a	1.077 abc 1.08 a	81.7 ab 81.7 a	30.1 a 30.4 a	7.6 a 7.37 a	1.0 a 1.0 a	78.4 a 78.9 a	8.87 a 8.87 a
Untreated Check fb Cyclone	- - 1pt	255.9 b 288.2 b	2.8 a 2.7 a	1.09 a 1.08 a	82.2 a 81.7 a	31.0 a 30.3 a	7.27 a 7.77 a	1.0 a 1.0 a	77.7 a 78.0 ab	8.93 a 8.83 a

^{1/} Means followed by same letter do not significantly differ (P = .05, Duncan-s New MRT).