

Table 9. Evaluation of Ethephon and Alar as Pre-conditioners at Yuma, 1975<sup>a</sup>

Pre-conditioner <sup>b</sup>	Percent defoliation, estimated Average of four replications <sup>c,d</sup>
Untreated check	18 b
None	56 a
0.25 lb/A ethephon	53 a
0.5 lb/A ethephon	56 a
1 lb/A ethephon	54 a
0.25 lb/A Alar	55 a
0.5 lb/A Alar	56 a
1 lb/A Alar	58 a

<sup>a</sup>The pre-conditioning treatments were applied on September 28, 1975.

<sup>b</sup>0.5% v/v surfactant WK included.

<sup>c</sup>A uniform defoliation treatment of 1.5 lb/A DEF 6, 0.195 lb/A endothall, and 0.5% v/v surfactant O-H was applied to all plots except the untreated check on October 9, 1975. Final evaluation was on October 23, 1975.

<sup>d</sup>Values followed by the same letter are not significantly different at the 1% level, according to Duncan's Multiple Range Test.

Table 10. Powered High-clearance Sprayer Test at Yuma, 1975<sup>a</sup>

Treatment	Percent defoliation <sup>b,c</sup> estimated	Percent total effect <sup>b,c,d</sup> estimated
Untreated check	5 c	5 c
1.55 lb/A cacodylic acid, 0.5% v/v surfactant O-H, volume rate: 10 gal/A	41 b	51 b
0.78 lb/A cacodylic acid, 0.2 lb/A paraquat, 0.5% v/v surfactant O-H, volume rate: 10 gal/A	69 a	81 a
1.5 lb/A DEF 6, 0.195 lb/A endothall, 2.5% v/v Atlas AL-411F, 0.5% v/v activate plus. Volume rate: 10 gal/A	65 a	71 a
1.5 lb/A DEF 6, 0.195 lb/A endothall, 2.5% v/v Atlas AL-411F, 0.5% v/v activate plus. Volume rate: 37.4 gal/A	71 a	79 a

<sup>a</sup>The treatments were applied on October 20, 1975. Final evaluation was on November 4, 1975.

<sup>b</sup>Values in each column are averages of four replications.

<sup>c</sup>Values within a column followed by the same letter are not significantly different at the 5% level according to Duncan's Multiple Range Test.

<sup>d</sup>Defoliation plus desiccation.

#### CHEMICAL TERMINATION OF COTTON FRUITING IN 1975

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We have been using plant growth regulators for five years (1971-1975) to reduce late season production of immature cotton bolls and thus reduce food available for the generation of pink bollworms going into diapause (overwintering stage). Percent reduction of immature bolls at first harvest has been a good estimate of reduction in percent of pink bollworms in diapause. Pink bollworms in diapause have been reduced 90 to 97 percent by the most effective chemical termination treatments with only small reductions in yield.

In 1975 we had eight tests with identical chemical termination treatments, except that TD 1123 plus chlorflurenol was applied 14 days after other treatments at Phoenix, Marana, and Safford, but not at Indio, Brawley, or Yuma. Test location, variety, treatment date, and harvest date are shown at the top of the column for each test in Table 1.

The defruiting efficiency index is the sum of the percentages for yield reduction and immature bolls as compared to the check. A low index value indicates little yield reduction and few immature bolls at first harvest.

MCPA, with one exception, was unsatisfactory for chemical termination. MCPA might be satisfactory with higher application rates. MCPA did not make leaves stick as 2,4-D has in past tests. MCPA in mixture with CCC and chlorflurenol was unsatisfactory in several instances. We assume that most of the benefit obtained in the last two treatments was from CCC and chlorflurenol, respectively, and not from MCPA. Comparison of CCC and chlorflurenol shows that on an average they were about equal in effect.

TD 1123 plus chlorflurenol was the most effective treatment used. However, it had higher than desired defruiting efficiency index at Phoenix and Safford. This is primarily the result of much of the crop being set very late in the season, particularly for Pima and Acala (AZ 64) cotton. This, along with a warmer and later fall than normal, caused much greater yield loss than normally would be expected.

At Indio, Brawley, and Yuma the effects on yield were fairly small even though there was no 14-day delay in application of TD 1123 plus chlorflurenol. These crops were managed to terminate production early and chemical termination served to clean up late immature bolls.

TD 1123 plus chlorflurenol was relatively inefficient for eliminating immature bolls at Safford. This suggests that the treatment needed to be applied earlier, or more likely, a higher rate of TD 1123 was needed for the lower temperatures at Safford.

Table 1. Evaluation of Four Chemical Termination Treatments in Eight Tests on Cotton in the Desert Southwest U.S. in 1975, Showing Effects on Seed Cotton Yield, Number of Immature Bolls on Plants at Harvest, and Defruiting Efficiency Index (Yield Reduction Plus Immature Bolls, Both As Percent of Check).

Location	Indio	Brawley	Yuma	Phoenix	Phoenix	Phoenix	Marana	Safford	
Variety	DPL 61	DPL 61	DPL 61	DPL 61	AZ 64	Pima S-4	DPL 61	Pima S-4	
Treatment date	9-4	9-4	9-4	8-26	8-26	8-26	8-25	8-25	
Harvest date	11-18	12-1	11-19	11-24	11-24	12-4	12-5	11-21	Mean
<u>Treatment</u>			<u>Lbs. seed cotton/A.</u>						
Check*	3046 a	2132 a	4137 a	3459 a	2695 a	2111 a	2409 a	1560 a	2694
MCPA	3324 a	2111 a	4027 a	3030 a	1854 b	1646 b	2066 a	1360 a	2427
TD + chlorf.	3030 a	1944 a	3908 a	2789 a	1437 d	1531 b	2168 a	1437 a	2281
MCPA + CCC	2769 a	1932 a	4141 a	2830 a	2050 b	1344 c	2107 a	1286 a	2307
MCPA + chlorf.	3010 a	1858 a	4439 a	2924 a	1646 c	1691 b	2013 a	1250 a	2354
			<u>Immature bolls/A.</u>						
Check	23000 a	123000 a	52000 a	28000 a	24000 a	65000 a	4000 a	68000 a	48000
MCPA	2000 b	53000 b	7000 b	28000 a	32000 a	44000 a	3000 a	33000 b	25000
TD + chlorf.	0 b	40 c	100 b	700 b	3000 c	19000 b	0 b	46000 b	9000
MCPA + CCC	3000 b	5000 c	2000 b	9000 b	21000 a	14000 b	100 b	10000 c	8000
MCPA + chlorf.	1000 b	1000 c	1000 b	7000 b	9000 b	19000 b	50 b	37000 b	9000
			<u>Defruiting efficiency index</u>						
Check	100	100	100	100	100	100	100	100	100
MCPA	2	44	16	112	165	90	92	62	62
TD + chlorf.	1	9	6	22	59	57	10	76	33
MCPA + CCC	21	13	3	49	113	58	15	33	31
MCPA + chlorf.	5	14	-5	39	75	50	17	74	32

\*MCPA is a herbicide similar to 2,4-D and was applied at 0.033 lbs. ai./acre when used alone and 0.025 lbs. ai./acre when used in mixture. TD is TD 1123, an experimental plant growth regulator, produced by Pennwalt Corp. It was used at 1.0 lbs. ai./acre. CCC and chlorflurenol (chlorf.) are plant growth regulators. TD 1123 plus chlorflurenol were applied at the same time as other treatments at Indio, Brawley and Yuma, but was applied 14 days later than other treatments at other locations.