



Cotton Harvest-Aid Chemicals

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Harvest-aid chemicals prepare the plant for machine harvest and reduce leaves, trash and green stain in the lint. Since maturity of cotton fiber essentially stops after the leaves shed, timing is important. Remember, if you defoliate before the last boll you wish to harvest reaches maturity, expect some reduction in fiber strength, micronaire and yield.

In these tests, harvest-aid chemicals were applied to separate plots of the same field on October 5, 1982, when the temperature was a maximum 92°F and minimum of 56°F. The application was made with a four row Hi-Boy sprayer using five nozzles per row at 1.5 mph. The total volume of spray was 26 gallons per acre and the pressure was 35 psi. The variety DPL-62 was about 44 inches tall with a plant population of three to four plants per foot or about 45,000 plants per acre. The last irrigation was applied on September 8th.

Results of potential harvest-aid chemicals are presented in Table 1.

TABLE 1. Harvest-Aid Chemicals. Application Date: October 5, 1982

Percentage Leaf-Drop	AVAILABLE CHEMICAL(S)	
	Chemicals	Rate per Acre
67 a ^{1/}	DROPP + Surf.*	.4 lbs.
62 ab	DROPP + Surf.	.3 lbs.
61 ab	DEF + Surf.	1.5 pts.
58 ab	Tumbleaf + Surf.	5 lbs.
54 ab	Sodium Chlorate + Surf.	4 lbs.
49 ab	Intensify + Paraquat + Surf.	2 qts. + 1/3 pt.
42 bc	Harvade + Surf.	8 oz.
26 c	Check	-

* Surfactant X-77 @ 0.5% v/v on all treatments.

C.V. Leaf-Drop: 17.9%

^{1/}Values followed by the same letter are not significantly different at the .05 level by the Student-Newman-Keul's Test.

BOLLS-EYE TEST

Percentage Leaf-Drop	Chemicals	Rate per Acre
72 a ^{1/}	Bolls-eye + Sodium Chlorate + Surf.*	2 pts. + 3 lbs.
68 a	Bolls-eye + DROPP + Surf.	2 pts. + .3 lb.
65 a	Bolls-eye + Harvade + Surf.	2 pts. + 8 oz.
64 a	Bolls-eye + Paraquat + Surf.	2 pts. + 1/3 pt.
60 a	Bolls-eye + Surf.	3 pts.
59 a	Harvade + Surf.	8 oz.
44 b	Sodium Chlorate + Surf.	4 lbs.
38 b	Check	-

* Surfactant X-77 @ 0.5% v/v on all treatments.

C.V. Leaf-Drop: 10.1%

^{1/} Values followed by the same letter are not significantly different at the .05 level by the Student-Newman-Keul's Test.

DEF TEST

Percentage Leaf-Drop	Chemicals	Rate per Acre
84 a ^{1/}	DROPP + Accelerate + Surf.*	.4 lb. + 1 1/2 pts.
70 b	Harvade + Accelerate + Surf.*	8 oz. + 1 1/2 pts.
68 b	DEF + Surf.*	1 1/2 pts.
66 b	DEF + SN 572 Surf.	1 pt. + 1 pt.
66 b	Intensify + Paraquat + Surf.*	2 qts. + 1/3 pt.
64 b	DEF + Accelerate + Surf.*	1 pt. + 1 1/2 pts.
61 b	DEF + Accelerate + Amway Surf.	1 pt. + 1 1/2 pts. + 1 pt.
38 c	Check	-

* Surfactant X-77 @ .5% v/v

C.V. Leaf-Drop: 9.84%

^{1/} Values followed by the same letter are not significantly different at the .05 level by the Student-Newman-Keul's Test.

DROPP TEST

Percentage Leaf-Drop	Chemicals	Rate per Acre
65 a ^{1/}	DROPP + SN 572	.3 lb. + 1 pt.
65 a	DROPP + SN 570	.3 lb. + 1 qt.
64 a	DROPP + Surf.*	.4 lb.
64 a	DROPP + Surf.*	.3 lb.
63 a	DROPP + Intensify + Surf.*	.3 lb. + 2 qts.
61 a	DROPP + SN 552	.3 lb. + 1 pt.
58 a	DROPP + Agri Dex	.3 lb. + 1 pt.
30 b	Check	-

* Surfactant X-77 @ .5% v/v

C.V. Leaf-Drop: 8.3%

^{1/} Values followed by the same letter are not significantly different at the .05 level by the Student-Newman-Keul's Test.

NEW AVAILABLE CHEMICALS

Percentage Leaf-Drop	Chemicals	Rate per Acre
70 a ^{1/}	Tumbleaf + SN 572	5 lbs. + 1 pt.
68 ab	DROPP + SN 572	.3 lb. + 1 pt.
68 ab	DROPP + Surf.*	.3 lb.
65 ab	Tumbleaf + Surf.*	5 lbs.
61 b	Harvade + Surf.*	8 oz.
61 b	Harvade + SN 572	8 oz. + 1 pt.

* Surfactant X-77 @ .5% v/v

C.V. Leaf-Drop: 5.9%

^{1/} Values followed by the same letter are not significantly different at the .05 level by the Student-Newman-Keul's Test.

SDF 2286 TEST

Percentage ^{1/} Leaf-Drop	Chemicals	Rate per Acre
81	SDF 2286 + DEF + Surf.*	1.8 lb. + 1 1/2 pts.
71	SDF 2286 + DEF + Surf.	.9 lb. + 1 1/2 pts.
69	SDF 2286 + DEF + Surf.	.45 lb + 1 1/2 pts.
69	SDF 2286 + Surf.	1.8 lb.
58	SDF 2286 + Surf.	.9 lb.
53	SDF 2286 + Surf.	.45 lb.
31	Check	-

* Surfactant X-77 @ .1% v/v on all treatments. ^{1/}Only 2 reps

ETHREL TEST

Percentage Leaf-Drop	Chemicals	Rate per Acre
64 a ^{1/}	DEF + Surf.*	1 1/2 pts.
59 a	ETHREL + Surf.	4 qts.
58 a	ETHREL + Surf.	2 qts.
31 b	Check	-

* Surfactant X-77 @ .1% v/v on all treatments.

C.V. Leaf-Drop: 21.6%

^{1/} Values followed by the same letter are not significantly different at the .05 level by the Student-Newman-Keul's Test

1982 Harvest-Aid Chemical Research at Yuma

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Commercially available harvest-aid chemicals often do not perform up to their expectations in defoliation of cotton fields. Second applications of harvest-aid chemicals are commonly necessary in cotton produced under irrigation in Arizona.

Research is being continued to study the response of chemical adjuvants for enhancing the performance of harvest-aid chemicals. In 1982, 14 experiments were conducted at the University of Arizona Yuma Valley Experiment Station. A total of 36 different chemical adjuvants were tested alone and in various combinations. Testing began on 10 Sept. 1982 with chemicals applied to the last experiment on 8 November 1982. The range of weather involved over this period resulted in a good set of conditions to retest promising chemicals or combinations.

Several chemicals have been very effective in enhancing defoliation. This research will be continued in 1983. Additional chemicals will be screened and compared with the best adjuvants or combinations tested in 1982.