

Quality of Seed from Chemically Terminated Cotton

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We have known that certain chemical termination treatments can reduce germination and seedling emergence of seed from treated plants. These tests were undertaken to evaluate the effects of our four most promising treatments on Hopicala and Pima S-5 cotton on stand, plant growth, and lint yield in the field.

Seed cotton samples from 1977 tests (spindle picker) were cleaned and ginned. The seed cotton was acid delinted and light seed were skimmed off during the wash following delinting. After drying, seed were packeted with 188 seed/packet. A check of several seed packets showed an average of 30 insect damaged or mechanically damaged seed/packet.

The two tests, Hopicala and Pima S-5, were randomized blocks with 10 replications. Plots consisted of two rows 27 feet long with 188 seed planted per row. This gave six sound seed per foot of row. The tests were planted on April 27, the normal farm planting date for 1978.

Stands of Hopicala were reduced by the 2,4-D, dicamba, and silvex treatments (Table 1). The check and TD-1123 treatments had about four seedlings/foot from six sound seed/foot. Silvex treatment produced three seedlings/foot and 2,4-D and dicamba treatments produced just under two seedlings/foot. None of the treatments caused any abnormal growth of Hopicala plants, and none reduced lint yield.

TD-1123 and silvex treatments produced better stands (about 3 1/2 seedlings/foot) than the untreated check (about 2 1/2 seedlings/foot) for Pima S-5. The dicamba treatment had about the same stand as the check, and the 2,4-D treatment had less than one seedling/foot on the average. Only the 2,4-D treatment significantly reduced lint yield. No effects on plant growth were noted.

Greater stand than the check for TD-1123 and silvex treatments on Pima S-5 is probably the result of those treatments reducing the number of late maturing bolls, which usually produce seed of lower germination and lower seedling vigor. The approximately equal stand of the dicamba treatment and the check on Pima S-5 are probably the result of a combination of beneficial effects of reducing late bolls and of deleterious effects of dicamba on the seed.

These seed lots consisted of a mixture of seed from early maturing bolls that were completely unaffected by treatment and seed from later maturing bolls that were differentially affected by treatment, depending upon age of boll at time of treatment. Most commercial seed fields produce more early cotton and less late cotton than was the case from these tests. Therefore, damage to seed lots would be less in those fields. We have also seen in previous tests that the adverse effects from 2,4-D on seedling emergence, as compared to seed from untreated plants, are reduced as conditions for emergence become less favorable.

Table 1. Seedling stand 25 days after planting and lint yield of cotton of seed from plots treated with chemical termination treatments the previous fall. Tests were conducted at University of Arizona Cotton Research Center, Phoenix in 1978.

Treatment	Treatment rate Lb ai/acre	Stand after 25 days		Lint yield	
		Hopicala	Pima S-5	Hopicala	Pima S-5
		Seedlings/188 seed		pounds/acre	
Check		107 ab ^{1/}	74 b	869 a	799 a
TD-1123 + chlormequat	1.0 + 0.5	109 a	92 a	883 a	856 a
2,4-D + chlormequat	0.025 + 0.5	51 d	23 d	902 a	569 c
Dicamba + chlormequat	0.050 + 0.5	49 d	68 b	876 a	769 ab
Silvex + chlormequat	0.050 + 0.5	77 c	89 a	867 a	812 a
C.V.		12%	18%	9%	13%

^{1/} Means within a column followed by the same letter do not differ significantly at the 5-percent level, according to Duncan's multiple range test. Some treatments not shown in this table.