

Planting Seed

Seedling Emergence Studies on Upland Cotton in Arizona in 1984

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Summary

Eighteen cotton varieties were planted early at Maricopa, Marana, and Safford. Soil conditions were unfavorable and seedling emergence was low. Seedling emergence of DPL 70 was low in all tests, DPL 41 second low, DPL 150 and McNair 235 had high emergence in all tests. Four years of such tests show DPL 41 to be consistently lower in emergence than other varieties. DPL 150 and McNair 235 had higher emergence than other varieties in the low emergence years.

These tests are a continuation of studies on cotton seed quality that have been conducted in Arizona for several years. Conditions for germination and emergence of cotton seed were poor during late March and early April of 1984. Therefore, differences between the several varieties and seed lots in seedling emergence and stand were greater than they have been in more favorable springs.

Seed of fifteen upland cotton varieties and three experimental strains were planted early in the season at Maricopa, Marana, and Safford, Arizona. One hundred seeds/row of each variety were planted with eight replications in each test. A single stand count was made from 31 to 43 days after the planting.

Stand counts (percentage) for the three locations and their mean are given in Table 1. Comparative stands of varieties were fairly consistent across tests. The test by variety interaction was not significant in the combined analysis. DPL 150 and McNair 235 had the greatest stand in all tests. DPL 70 had the lowest stand in two tests and was among the lowest in the third test.

Unfavorable conditions for emergence also occurred in 1983. Fourteen varieties were common to both years. Average emergence for 1983 and average stand for 1984 were compared for the 14 varieties by correlation (Fig. 1). The correlation coefficient was 0.93 and was significant at the 0.01 level. This indicates that the varieties performed similarly each year. This, in turn, suggests that the relative emergence we obtained may be genetically controlled, and not the result of good or bad seed lots. To further check these results, we compared the mean 1983-84 seedling emergence of nine varieties (average emergence of 22%) with the mean 1981-82 seedling emergence

(average emergence of 60%) (Fig. 2). Seven of the nine varieties performed about proportionally as well for the two periods. DPL 41 had the lowest emergence, DPL 61 was next, and five varieties, which differed to some extent during the stress years of 1983 and 1984, were clustered during the good years. DPL 70 was much better in 1981 and 1982 than in 1983 and 1984. McNair 235 was average in the early years, but excellent the last two years. Differences in seed lots between periods is the most logical explanation of deviations in performance by these two varieties. These results strongly suggest that DPL 41 is low in seedling vigor and DPL 61 is below average in vigor.

Table 1. Stand counts of 18 lots of Upland cotton seed 31 to 43 days after early planting at three locations in Arizona in 1984.

Variety	Test Location and Planting Date and Days to Final Count			Mean
	Maricopa 3/28/84 (43 days)	Marana 4/2/84 (31 days)	Safford 4/4/84 (37 days)	
	----- % Stand -----			
DPL 150	50.9 a*	17.9 a	43.4 ab	37.4 a
McNair 235	43.0 b	15.1 ab	49.4 a	35.8 ab
Stoneville 506	41.6 b	12.0 bcde	40.4 abc	31.3 abc
DPL 62	38.0 bcd	13.6 abcd	35.1 bcde	28.9 abcd
Stoneville 825	38.5 bc	11.8 bcde	36.3 bcd	28.8 abcd
DPL 90	40.5 b	13.1 abcd	31.3 bcdef	28.3 abcd
DPL 90Y	40.0 b	13.1 abcd	31.6 bcdef	28.3 abcd
McNair 220	38.8 bc	14.8 abc	28.0 cdef	27.2 abcd
DPL 61	36.9 bcd	11.4 bcdef	25.6 defg	24.6 abcd
DPL 55	36.1 bcde	12.0 bcde	24.8 defg	24.3 abcd
DPL 120	31.6 cdef	6.0 fg	29.3 cdef	23.0 abcd
Stoneville 213	29.5 def	8.4 defg	25.1 defg	21.0 bcd
DPL 41	27.0 f	9.5 cdefg	19.9 fgh	18.8 cd
DPL 70-974	28.4 ef	6.1 fg	19.6 fgh	18.0 cd
DPL NSL	25.9 f	6.0 fg	22.0 efgh	17.8 cd
Coker 3131	25.8 f	5.3 g	20.6 fgh	17.2 cd
DPL 775	28.1 ef	5.6 g	13.2 gh	15.9 cd
DPL 70	24.5 f	6.8 efg	8.9 h	13.4 d
Mean	34.7	10.5	28.3	24.5
CV	23%	46%	40%	94%

*Means within a column followed by the same letter are not significantly different at the 0.05 confidence level according to Duncan's Multiple Range Test.

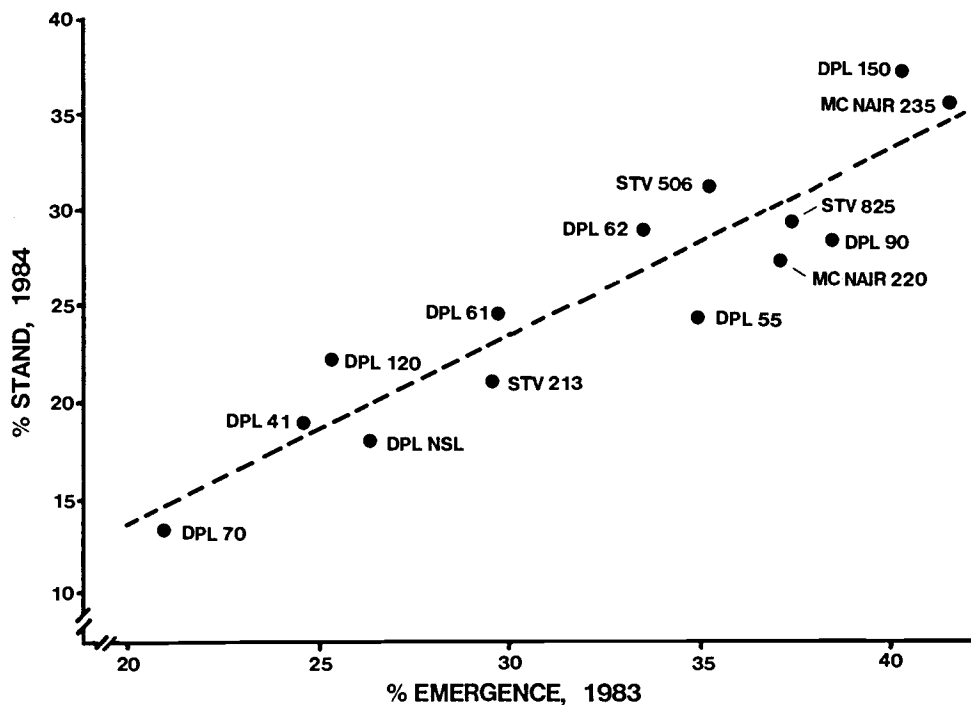


Figure 1. Comparison of average percentage emergence in 1983 and average percentage stand in 1984 of 14 commercial upland cotton varieties planted early at Maricopa, Marana and Safford each year.

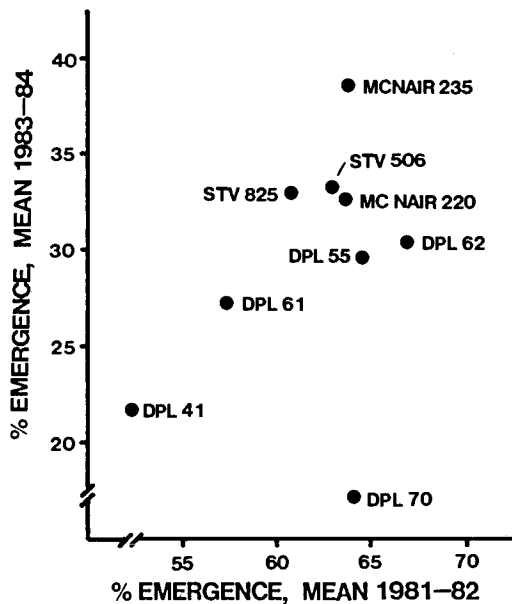


Figure 2. Comparison of average percentage emergence of nine upland cotton varieties with early season planting for the average of 1983 and 1984 vs. 1981 and 1982.