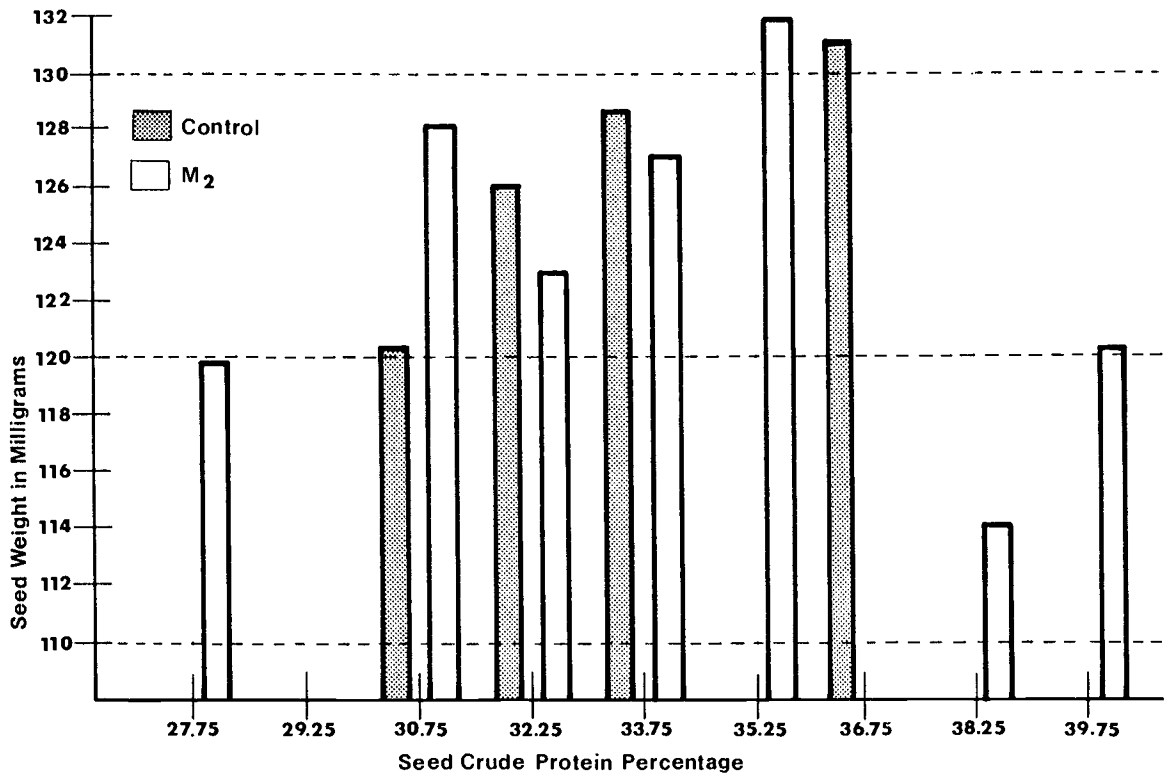
FIGURE 1. The distribution of seed weight and seed protein percentage in control and M_2 generation cotton.



Long Staple Cotton Variety Comparisons

Jim Armstrong, Pima County Extension Agent

Strain P-34 has performed well over several years of testing. Indications were that if its performance in 1982 was comparable to previous years it might be introduced as a variety for 1983 planting. These tests were established to provide additional performance data upon which the release decision could be made.

Both tests were identical in design except for the randomization sequence. They compared P-34 with S-5 on a randomized four replication design. Results of these tests are reported below.

Long Staple Variety Comparison

5T Farms, Tom Clark, Marana

Variety	Seed Cotton Per Plot Rep 1	Rep 2	Rep 3	Rep 4	Total Seed Cotton	Lint/1/2 Per Acre
P-34	1540	1470	1380	1360	5750	921 a
S-5	1360	1300	1220	1460	5340	855 a

/1 Values followed by the same letter not significantly different at .05 level by Student - Newman - Keul's test.

/2 Yields for First Pick Only on 11/23/82

Long Staple Variety Comparison

Evco Farms, Art Pacheco, Marana

Variety	Seed Cotton Per Plot Rep 1	Rep 2	Rep 3	Rep 4	Second Pick	Total Seed Cotton	Lint/1 Per Acre
P-34	855	750	870	815	410	3700	781 a
S-5	660	695	685	625	320	2985	631 b

/1 Values followed by the same letter not significantly different at .05 level by Student - Newman - Keul's test.

The data presented here supports earlier comparisons indicating that a yield increase for P-34 over S-5 is in the range of 10-20%. If P-34 provides similar quality to that of S-5 then an increase in returns of similar magnitude can be anticipated.

Field observations have suggested that P-34 is about two weeks earlier maturing than S-5 and to obtain best quality harvesting should occur two weeks earlier than for S-5. Delays in harvesting P-34 tend to contribute in lower quality.

SOIL AND PLANT NUTRIENT STATUS IN ARIZONA COTTON

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Summary

Soil and cotton tissue from cotton fields in the major cotton production areas of Arizona were analyzed for plant nutrients and results are reported. Population distributions for soil nitrate and phosphorus and tissue nitrogen, phosphorus, magnesium and iron are given. Correlations between soil tests for nitrate-nitrogen (NO_3-N) and petiole NO_3-N were poor but correlations between CO_2 extractable (McGeorge, 1940) phosphate and total leaf P were significant.

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Guidelines for interpreting cotton tissue and soil test results have been established for only a few nutrients. As an aid in planning future plant nutrition studies, a field survey of soil and tissue levels of several nutrients was conducted in 1982. One hundred and ten fields in five major production areas of Arizona were sampled at about first flower and again at peak flower. Soil, petiole, and leaf samples were collected at first flower and petiole and leaf samples only were collected at peak flower. Due to differences in planting dates fields had to be sampled at different, calendar dates in order to approximate uniform physiological development. Soil samples were analyzed for soluble NO_3-N and CO_2 (McGeorge, 1940) extractable P. Petioles were analyzed for soluble NO_3-N and leaf blades were analyzed for total content of P and micronutrients.

Results of NO_3-N analysis for first flower and peak flower are given in Figures 1 and 2, respectively. Neither population displays a notably normal distribution. Also the means and standard deviations indicate that less meaningful conclusions influencing crop management can be drawn from the peak flowering period because of a high coefficient of variation.

A histogram of soil NO_3-N is given in Figure 3. Again the population is not normally distributed. Correlation analysis of soil NO_3-N and petiole NO_3-N from the first sampling showed 95% significant negative ($r = 0.184$) correlation. Similar correlation analysis between soluble NO_3-N extracted from soil samples collected at first flowering and soluble NO_3-N of peak flowering petioles showed a significant 99% positive ($R = 0.337$) correlation. Although these correlations are significant only a very small amount of petiole variability can be accounted for with soil variability.

Population frequency histograms for total leaf blade phosphorus from first flower and CO_2 extractable PO_4-P are given in Figures 4 and 5. Leaf blade P displays a more normal distribution than soil PO_4-P but a 99% significant positive correlation was found for the first flower sampling ($r = 0.502$) and the peak flower sampling ($r = 0.260$) and soil PO_4-P.