Progress Report
Cotton Fertilization Studies - 1954
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Following are the results of the cotton fertilizer trials in Fresno County. These data are from the third years work. Results from the 1952 and 1953 trials may be obtained from the University of California, Agricultural Extension Service, 1720 South Maple Ave., Fresno, California.

Trial No. I

This trial was designed to study the need of various rates of nitrogen alone and in combination with phosphorus and potash.

Cooperator:	William Hixson, Navelencia
Location:	S.W. ¼, S.W. ¼, Sec. 20, T 14S, R 24E
Soil type:	San Joaquin loam, leveled phase
Crop history:	1952 - cotton 1953 - cotton 1954 - cotton (test year)
Cotton planted:	May 5, 1954 - on the flat
Fertilizer applied:	June 15, 1954
Method of application:	Side-dressed 2 sides, 7 inches from row, 5 inches deep.
Date of harvest:	November 13, 14, 1954
Materials used:	(1) Ammonium sulfate (2) 16-20-0 (3) 10-12-10
Plot site:	Each treatment 4 rows wide, 800 feet long. Center two rows of each treatment harvested by hand and weighed.
Replications:	Each treatment replicated 5 times in a randomized block.

Trial No. I - NPK Studies 1954

Treatment	Pounds Per Acre			Average Wt. Seed cotton Per acre (Lbs.)	Lint * Per acre	Cost of Treatment/ Acre **	Lint Increase Over check (Lbs./acre)	% Gain Over Check
	Nitrogen	Phosphate	Potash					
A	0	0	0	1754	614	0	-	-
B	50	0	0	2069	724	$6.75	110	17.9
C	100	0	0	2494	873	13.50	259	42.1
D	150	0	0	2720	952	20.25	338	55.0
E	100	120	0	2537	888	25.50	274	44.5
F	100	120	100	2823	988	32.00	374	60.9
G	150	188	0	2531	886	39.05	272	44.3

* Average gin turnout 35%

** Based on Nitrogen 13.5¢/lb.
Phosphorus 10¢/lb.
Potash 6.5¢/lb.

Conclusions and Discussion:

(1) 50 pounds of nitrogen was not significantly better than the check.

(2) 100 pounds of nitrogen was significantly better than either the 50 pound rate and the check.

(3) 150 pounds of nitrogen was not significantly better than 100 pounds of nitrogen per acre.

(4) The addition of phosphorus and potash did not affect the yields significantly.

Note: Treatments D and F seem to be considerably higher than the 100 pounds of nitrogen (treatment C) but because of the wide differences between replications there was no statistical significance between them at the 5 percent level. 144 pounds of lint was required to be statistically significant at the 5 percent level.

Trial No. II

These trials were designed to study the need for phosphorus where high rates of nitrogen were used.

Cooperator:	Calflax Ranch, Five Points
Location:	N.W. $\frac{1}{4}$, N.W.$\frac{1}{4}$, Sec. 36, T 18S, R 17E
Soil type:	Oxalis silty clay
Crop history:	1951 - cotton 1952 - fallow 1953 - barley 1954 - cotton (test year)
Cotton planted:	April 5, 1954
Fertilizer applied:	May 18, 1954
Date of harvest:	First pick Nov. 8, 1954 Second pick Feb. 11, 1955
Materials used:	(1) Ammonium sulfate (2) 16-5-0 (3) 16-10-0 (4) 16-20-0
Plot site:	Each treatment consisted of 4 rows 1150 feet long with the two center rows harvested by mechanical picker and weighed for yield.
Replications:	Each treatment replicated 5 times in a randomized block.

Trial No. II - 1954

Treatment	Lbs./Acre Nitrogen	Lbs./Acre Phosphorus	Seed Cotton Per Acre 1st Pick	Seed Cotton Per Acre 2nd Pick	Total Seed Cotton Per Acre	Lint * Per Acre	Cost of ** Treatment Per Acre
A	150	0	3266	270	3536	1132	$20.25
B	150	47	3238	265	3503	1121	24.95
C	150	94	3317	296	3613	1156	29.75
D	150	188	3249	301	3550	1136	39.05
E	200	0	3272	314	3586	1148	27.00
F	200	125	3294	323	3617	1157	39.50

* Average gin turnout: 32%

** Nitrogen at 13.5¢/lb.
Phosphate 10.0¢/lb.

Discussion and Conclusions:

(1) The addition of phosphate to the high rates of nitrogen did not increase yields.

(2) The addition of phosphates did not hasten maturity as shown by the yield of the first picking.

(3) The 200 pounds of nitrogen to the acre was not significantly better than 150 pounds per acre.

(4) The most economical fertilizer program used in this trial was treatment A (150 pounds of nitrogen per acre).

Trial No. III

This trial was designed to determine the most efficient placement of three sources of nitrogen fertilizer. Because the materials were put on by three different operators it is not possible to fairly appraise the relative values of each source. All nitrogen was supposed to have been applied at 100 pounds of nitrogen per acre but the Agriculture Extension Service had control only on the ammonium sulfate. The ammonium sulfate was applied accurately at 100 pounds per acre.

This trial was in the same field as Trial No. II described above.

Trial No. III - 1954

Treatments	Nitrogen (Lbs/Acre)	Material Used	Distance from Plant row	Seed cotton * Per Acre	Lint** Per Acre
J	100	Ammonium sulfate	7"	3067	981
K	100	" "	14"	3181	1018
L	100	Aqua ammonia	7"	2749	880
M	100	" "	14"	2749	880
O	0	No fertilizer	-	1568	502
P	100	Anhydrous ammonia	14"	3204	1025
Q	100	" "	20"	3067	981

* First picking only - second picking very small.

** Average gin turnout 35%

Discussion and Conclusions:

(1) There is no significant difference between placing ammonium sulfate 7 or 14 inches from the plant row.

(2) There is no significant difference between placing Aqua ammonia 7 or 14 inches from the plant row.

(3) There is no significant difference between placing anhydrous ammonia (NH_3 gas) 14 or 20 inches from the plant row.

(4) All treatments were significantly better than the check.

(5) It may possibly be assumed that in this soil there is no significant difference between placing any of the sources tried either 7, 14, or 20 inches from the plant row.

Note: All three placements were not tried with all materials because of the limitations of the applicators used.