

Table 1. Yield of seed cotton as influenced by nitrogen and phosphorus. Means of five replications.

Nitrogen lbs./A		Yield pounds seed cotton per plot	
		Residue Returned	Residue Removed
	No P		
0		29.8 a*	24.2 a
50		39.2 b	33.6 b
100		47.3 c	43.8 c
200		50.6 c	45.9 c
	with P		
0		27.5 a	26.7 a
50		51.0 b	48.3 b
100		48.8 b**	49.9 b
200		54.7 b	51.8 b

\* Means within a group followed by the same letter are not significantly different at the 0.05 level.

\*\* The highest yield was equal to 2.33 bales per acre.

#### Nitrogen and Manure Effects on Cotton

(T. C. Tucker, E. W. Carpenter, R. S. Rauschkolb, and J. L. Abbott)

In the fifth year of an experiment located on field D-1 at the Cotton Research Center, the effect of nitrogen and manure was studied on Acala 44-10 and Pima S-2 cotton. The results are presented in table 1.

Table 1. Yield of seed cotton as influenced by manure and nitrogen fertilizer application. Means of four replications.

Nitrogen lbs./A	Cotton annually	Cotton with 10T manure annually
	Pounds per plot	
	<u>Acala 44-10</u>	
0	11.0 a	17.2 a
50	15.1 b	15.8 a
100	15.1 b	15.9 a
150	14.7 b	15.2 a
	<u>Pima S-2</u>	
0	7.2 a	12.3 a
50	9.7 ab	11.9 a
100	10.4 b	11.7 a
150	9.9 ab	10.5 a

Nitrogen increased yield of the Acala variety when manure was not applied. With manure the trend was for lower yields with the application of nitrogen. The effect of Verticillium wilt in this experiment must be considered. Dr. Lester Blank, USDA plant pathologist, has studied wilt infestation in this experiment since 1960. Wilt build up during this period has been indicated by internal stalk discoloration at harvest time. The increase in wilt has

followed increased nitrogen application in the continuous cotton plots without manure and has reached the highest level when nitrogen was applied with manure. The degree of wilt infestation has been greater when manure was applied without nitrogen than when nitrogen was applied alone. However, the yields from the manure treatments continue to be higher than from nitrogen alone. It is not possible to separate the effect of wilt from the possible beneficial effects of manure on soil physical conditions and the resulting influence on yield.

During the first two years of this study yields were increased on the manure plots with application of 50 pounds of nitrogen per acre. Since that time yields have either been decreased or unaffected by nitrogen application. Responses on the continuous cotton plots without manure have been consistent. From 50 to 100 pounds of nitrogen has been adequate for maximum yield.

The yields of Pima S-2 followed a similar response pattern to Acala 44-10 and the results were similar to the previous year.

Effect of Fallow, Manure, and Green Manure on Soil Productivity and Nitrogen Fertilizer Requirements of Cotton

(T. C. Tucker, J. L. Abbott, and E. W. Carpenter)

In 1960 a long-term experiment was initiated at the Cotton Research Center on field D-1 in which four levels of nitrogen fertilizer were imposed on each of four main treatments. The main treatments of border size were: (1) Cotton annually, (2) alternate years of fallow and cotton, (3) cotton annually with 10 tons of dairy manure annually, and (4) alternate years of sesbania and cotton. The cotton variety, Acala 44, was used initially. In 1962 and 1963, Acala 44-10 has been used as well as Pima S-2 in 1963.

The results are summarized in terms of pounds of seed cotton per plot as follows:

Nitrogen Applied Lbs./A	1960			
	Cotton Annually	Fallow Cotton	Cotton Manure	Sesbania Cotton
	pounds per plot			
0	18.1 a	Fallow	19.4 a	Sesbania
50	18.0 a		23.1 b	
100	19.5 ab			
150	20.1 b			
1961				
0	11.7 a	13.0 a	15.2 a	12.9 a
50	11.9 a	15.7 ab	20.1 b	17.9 b
100	15.7 b	16.6 b	22.5 b	18.0 b
150	18.2 b	15.6 ab	22.3 b	17.1 b
1962				
0	9.3 a		19.9 a	
50	12.0 ab	Fallow	22.4 a	Sesbania
100	14.2 b		20.0 a	
150	13.7 b		22.1 a	