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	Cotton Annually	Fallow Cotton	Cotton Manure	Sesbania Cotton
		1960		
	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	

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Nitrogen Applied Lbs./A	Cotton Annually	Fallow Cotton	Cotton Manure	Sesbania Cotton
	pounds per plot			
A-44-10	1963			
0	13.2 a	16.6 a	20.7 b	11.7 a
50	15.9 b	17.1 a	19.1 ab	15.6 b
100	17.9 b	17.3 a	19.0 ab	16.5 b
150	16.9 b	17.6 a	17.6 a	16.1 b
Pima S-2				
0	8.5 a	8.2 a	12.3 a	8.2 a
50	9.6 ab	10.8 b	14.3 b	11.6 b
100	10.5 b	11.1 b	13.9 ab	11.8 b
150	9.8 ab	11.9 b	12.4 a	11.6 b

Nutritional Requirements of Cotton as Influenced by Crop Sequence

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

In the fifth year of a six year crop sequence, it was possible to compare cotton yields on five of the seven cropping programs. In 1965 all borders will be planted to cotton and the effect of the previous crop history can be evaluated. This experiment is located in field D-4 at the Cotton Research Center.

The data in table 1 show the effect of N and crop history on seed cotton yields in 1964. Phosphorous did not influence yields significantly in this experiment. Little if any increase in yields resulted from the application of N at rates greater than 50 pounds per acre. In all cases the 50 pound N rate resulted in a yield increase over the control. Differences due to crop history were shown. When cotton followed grain sorghum and three years of alfalfa, the cotton yields were about 25 percent greater than for any other crop sequence. The continuous cotton and SCCS crop history resulted in the lowest yields. The residual N was greatest when alfalfa had preceded cotton as indicated by the yield on the control treatment. Thus, with an increased soil supply of N and a corresponding increase in the maximum yield possible the N fertilizer requirement the second year after alfalfa remained at essentially the same level as for the other cropping programs. Less N carry over was indicated when cotton had followed alfalfa than when grain sorghum was grown. Also cotton yields were lower the second year after alfalfa. This was the first year in which crop history had influenced yields in this study.

Data in table 2 indicate previous cropping history had not influenced yields or the fertilizer requirement in the earlier years of this study. The N fertilizer requirement appeared to be independent of crop history also. No significant response to P fertilizer was shown in the earlier years of the experiment.