An interesting corollary of the experiment were the differences observed in the fiber quality factors between the first and second picking which may be seen in Table 2.

Table 2
Relationship of Fiber Quality Factors
Between First and Second Picking

Fiber Quality Factor	First Picking*	Second Picking*	Calculated** t Value
Length (UHM)	1.16	1.08	7.62**
Strength	3.59	3.44	0.86 N.S.
Micronaire	3.40	2.58	4.26**

* Values are means of nine observations.

** t (0.01) with eight degrees of freedom = 3.36.

Significant differences in length and micronaire at the 99 percent confidence level were found between the first and second picking.

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EFFECTS OF MANAGEMENT PROGRAMS AND FERTILIZATION UPON UPLAND COTTON YIELDS

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Management and nitrogen fertilization effects were studied in two field experiments concluded at the Cotton Research Farm in 1968. Results are summarized here in terms of averages for seasons in which the data are valid for these comparisons.

Figure 1 shows averages for four years for five management systems involving manure usage, at three nitrogen levels on each management treatment: (1) only commercial N; (2) annual application of manure at 10 tons per acre; (3) ten tons of manure per acre the first and alternate years; (4) ten tons of manure per acre the first year only; and (5) ten tons of manure per acre the first year and five tons annually thereafter.

Without manure, nitrogen at 75 lb./A. increased cotton yield by 23%. Annual applications of ten tons of manure per acre supplied adequate nutrition for a 65% yield increase over the control; there was no response to additional nitrogen. Yields equal to the annual manure application were produced in the third and fourth treatments, when 75 pounds of nitrogen was side-dressed. Yields for the fifth treatment, ten tons of manure per acre, followed by annual applications of five tons, appear to be unrepresentative for the treatment, probably because of physical conditions in the field. In brief, the use of manure (not necessarily applied each year) can prove profitable when nitrogen is side-dressed as needed. Petiole analyses can be very helpful in making this decision.

Figure 2 summarizes a long-term experiment conducted in the field adjacent to the experiment above. Border-size management treatments, upon which four levels of nitrogen were superimposed, were: (1) continuous cotton; (2) cotton grown in alternate years with fallow; (3) continuous cotton, with annual applications of ten tons of manure per acre; and (4) cotton grown in alternate years with sesbania plowed under as green manure. Data for the years 1961, 1963, and 1968 are averaged in this comparison, these being years in which cotton followed fallow and sesbania. These data were not affected by Verticillium wilt, which made the data for 1965 unreliable. Manure and high nitrogen treatments were severely limited by the disease because Verticillium-susceptible A-44-10 was the variety grown until 1965. Oats were grown without fertilizer on the field in 1966. Yields for Hopicala, a variety resistant to Verticillium wilt, did not appear affected by the disease in 1967 and 1968; although incidence of the disease was again high in plots which had received manure and heavy nitrogen applications.

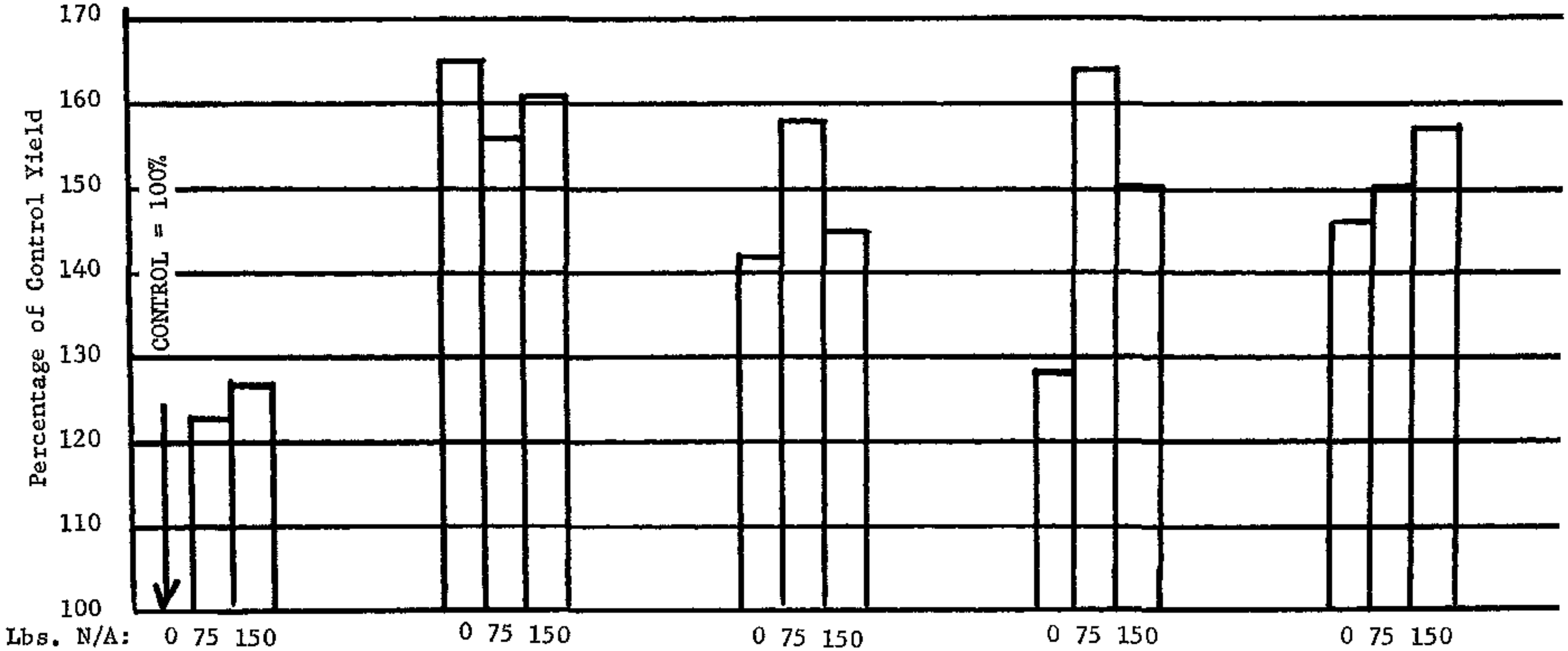
A significant response to 50 lb. N/A. was found for all management treatments except the manure treatment. Manure without N produced as much cotton as was grown on the continuous cotton with 150 lb. N/A. Yield was only slightly increased on manured plots by nitrogen up to 150 pounds per acre.

Cotton following fallow, and following sesbania responded significantly to the 50 pound N rate, equal to the 100 lb. N/A. yield for continuous cotton, but the fallowed cotton without nitrogen was equal to the continuous cotton yield with 50 lb. N/A.

Apparent inconsistencies in the comparison between unmanured and manured cotton in the two experiments may be explained by the different seasons included in the respective summaries. Last year's report pointed out the effects of seasonal variations, particularly that of soil temperature prevailing in the spring and early summer. Low soil temperature affects the absorption of soil phosphorus, and this appears to influence the amount of cotton a particular crop can produce--and the advantage to manured soil.

Yield of Control, Pounds Seed Cotton Per Acre:

1965	2,100
1966	1,800
1967	1,500
(All) = 100%	1,790



MANURE,
T/A. in:

1965	0	10	10	10	10
1966	0	10	0	0	5
1967	0	10	10	0	5
1968	0	12	0	0	6

Figure 1. Effects of Manure and Nitrogen on Yield of Hopicala Cotton for Five Management Systems, Three Nitrogen Levels, 4-year Averages

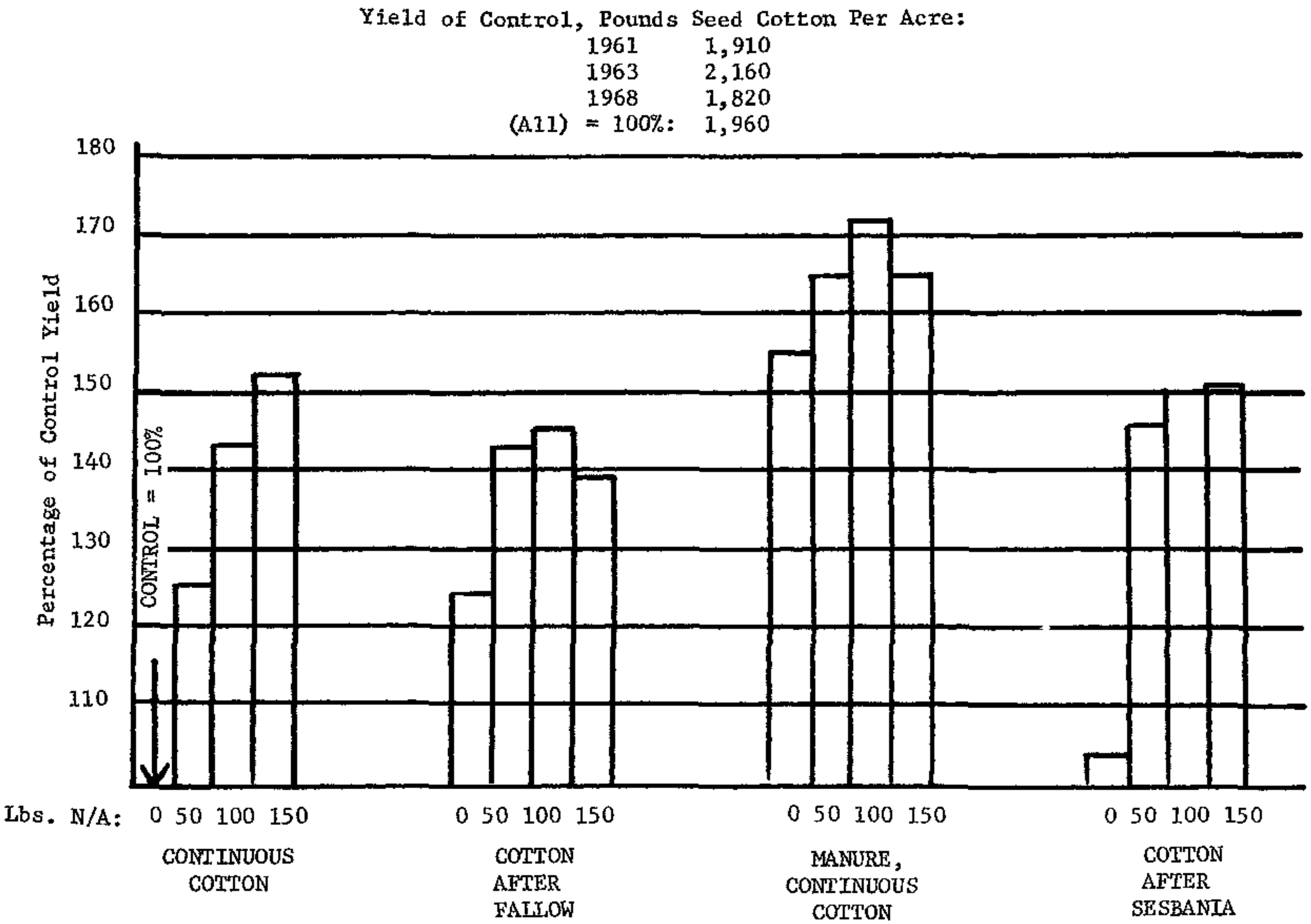


Figure 2. Effects of Four Management Systems and Nitrogen on Yield of Upland Cotton, Four Nitrogen Levels, Averages of Three Crops