

EFFECT OF NITROGEN AND MANURE ON COTTON

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During the years 1960 through 1965, an experiment was conducted on Field D-1, CRC, in which rates of nitrogen were applied annually on continuous cotton with and without animal manure. Manure, when applied, was at the rate of 10 tons per year. The main nitrogen and manure effects are illustrated in the figure. The height of each bar is relative to the control treatment (no fertilizer) within each year. Control yields are given for each year.

In 1960, the yield was increased 28% by adding both nitrogen (N) and manure and some 16% over N alone. In 1961, N and manure increased yield 92% over the control and 36% over N alone. Adding N with manure added a 62% yield increase over manure alone.

The following year N alone increased yield 53% while manure alone increased yield 114%. Adding N in addition to manure resulted in a further yield increase.

In 1963, the manure effect was less pronounced with a 57% increase in yield over the control. Manure with N resulted in a lower yield than manure alone.

During these first three years, the incidence of Verticillium wilt had increased to almost 100% infestation according to studies by Dr. Lester Blank. In 1964 and 1965, the favorable effect of manure was reduced, probably due to the higher incidence of Verticillium wilt. In general, the higher the rate of N applied the more severe was the wilt, and most severely affected were the plots receiving both manure and high rates of N.

In all years, yields were higher on plots receiving manure than control plots and only in 1965 did N alone equal manure in terms of final yield.

A new experiment was initiated in 1965 in field D-2, CRC. In the first year, yields were increased 34% by manure and adding N with manure did not cause any significant change.

In 1966, N applied without manure increased yield 26% over the unfertilized control. Application of 10 T manure annually in 1965 and 1966 resulted in yields 80% greater than the control. Yields were not increased further by N application in addition to manure. However, when manure was not applied in 1966 following a 10 T application in 1965, a response to N was obtained. Yields were slightly higher with the annual manure application of 10 T per acre.

More information is needed in regard to duration of manure effects and management practices necessary to control the build-up of Verticillium wilt.

