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RESULTS OF NITROGEN APPLICATIONS ON OHIO RIVER OVERFLOW BOTTOM AREAS IN HENDERSON COUNTY IN 1967

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In cooperation with Stuart Brabant, Area Extension Agent in Henderson county, four field trials with nitrogen fertilization on corn were conducted in the Ohio River Bottom area. In two of the trials where corn was followed by corn, nitrogen was applied at the rates of 0, 50, 100, 150 and 200 pounds per acre, with each treatment replicated 4 times. In the two other trials, where corn was grown following soybeans, nitrogen rates of 0, 100 and 200 pounds per acre were replicated 4 times in one field and 3 times in the other.

Planting was delayed until early June in three of the tests, owing to a spring overflow. One area located on slightly higher ground was planted prior to the overflow and was not flooded. The nitrogen, applied in the form of ammonium nitrate, was applied broadcast on the proper plots June 30, 1967.

Yields calculated on the basis of 15.5 percent moisture along with stalk populations are shown in the following table.

NITROGEN RATE POUNDS PER ACRE	CORN FOLLOWING CORN				CORN FOLLOWING SOYBEANS			
	AVE. 4 REPS. EARLY CORN		AVE. 4 REPS. LATE CORN		AVE. 4 REPS. LATE CORN		AVE. 3 REPS. LATE CORN	
	BU.	STALKS	BU.	STALKS	BU.	STALKS	BU.	STALKS
0	123	14,700	127	15,700	112	11,200	81	11,100
50	120	13,200	114	13,800	---	-----	--	-----
100	118	14,700	124	15,200	114	11,800	93	11,400
150	118	14,700	117	14,200	---	-----	--	-----
200	126	15,100	120	15,100	118	11,100	96	10,800

In only one of the four trials was there a response to nitrogen on the particular soils where these tests were conducted (under the environmental conditions and above-normal rainfall during the 1967 growing season). In that one area, where corn was grown following soybeans, each of the three plots receiving 100 pounds of nitrogen per acre produced higher yields than the no nitrogen plots - an average yield increase of 12 bushels for the first 100 pounds of nitrogen. The 200-pound rate vs the 100-pound rate gave little additional response.

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Even though almost no response was obtained for nitrogen on the overflow soils where the trials were conducted this year, it should not be concluded that nitrogen fertilizer is not need River bottom soils. Past demonstration work by the University and farmers has shown good responses to nitrogen fertilization on some soils in this area in certain years. There are considerable variations in these soils which must influence the ability of the soil to supply nitrogen to the growing crop.

To produce yield levels obtained in these trials requires approximately 175 to 250 pounds of nitrogen for the grain, stover and roots. The fact that this amount of nitrogen is available in these soils without the addition of nitrogen fertilizer under intensive cropping is somewhat surprising. Probably there is enough nitrogen released from the decaying organic matter found throughout the soil profile to supply the crops needs. Studies are being intensified to determine if this is true. Attempts are also being made to determine how extensive these non-responsive soils are in the lower Ohio River bottoms.

In view of this variability, well-planned trials (with and without nitrogen over a several year period) should help the farmer determine whether or not nitrogen is needed in a particular area where he is growing corn.

Since most river bottom operators handle large acreages of corn, and since there is a cost to the use of nitrogen, this is an economic problem of great importance to them. A few dollars per acre saved, or a few more bushels per acre produced, can greatly affect their net income from corn production.