

**DETERMINING OPTIMUM SIDEDRESS NITROGEN REQUIREMENTS FOR CORN
RECEIVING A PREPLANT APPLICATION OF BROILER LITTER IN 2008**

Tim Reed and Warren Griffith - Summary of Results – Feb. 3, 2008

Methods and Materials: An irrigated and a non-irrigated study were conducted in the same field located in Hamilton, AL in Marion county. Plots in both studies were arranged in a RCB design with 4 replications per sidedress (SD) nitrogen (N) rate in the non-irrigated test and 5 reps per SD N rate in the irrigated study. Plot size ranged from 0.28 acres to 0.42 acres in the irrigated test and from 0.21 to 0.26 acres in the non-irrigated study. Poultry litter was applied 3/10 at the rate of 2.25 tons/acre to the irrigated plots and 1.9 tons/acre to the non-irrigated plots. Litter applied equaled a 3-5-3 fertilizer blend. The litter was disked in immediately after application. Pioneer 31G71 corn was planted 3/31 using a 30 inch row spacing. SD N applied on 5/23. Stand counts were taken on 5/29 and the non-irrigated and irrigated tests averaged 1.66 and 1.57 plants/row foot, respectively. Water was applied at the rate of 2 inches per week in the irrigated study. Collected soil samples June 2. Collected leaf samples for tissue analysis June 25. Plots were harvested using a weigh wagon on 9/12 and yields expressed at 15.5% moisture.

Results: Yields obtained in the irrigated and non-irrigated studies are presented in table 1.

Table 1. Yield in irrigated and non-irrigated corn fertilized preplant with broiler litter and sidedressed with varying rates of commercial nitrogen fertilizer.

Sidedress nitrogen rate (lbs./acre)	Mean number of bushels per acre	
	Irrigated	Non-irrigated
150	195.7 A	-----
100	188.4 AB	138.3 A
50	169.7 B	123.1 A
0	-----	98.7 B
	Pr>F= 0.0965	Pr>F=.0227
	LSD (0.10) = 19.8	LSD (0.10) = 19.9

% N in leaf tissue in the irrigated study was 2.23, 2.2 and 2.03 in the 150, 100, and 50 lbs. N SD rates, respectively with no significant differences (Pr>F=0.35). % N in leaf tissue in the non-irrigated study was significantly different (Pr>F=0.008) at each SD N rate (LSD (0.10) = 0.27). %N was 2.48, 2.20 and 1.79 at the 100, 50 and 0 lbs. of N SD rates, respectively. Mean pH values were not significantly different in plots receiving different amounts of SD N in either study and ranged from 5.8 to 6.1. Soil test P and K levels were similar for different SD N rates within each test and were well above required levels for maximum yields.