

## BROILER LITTER AS A NITROGEN SOURCE FOR COTTON

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**ABSTRACT:** Chicken broiler litter and its value as a fertilizer, especially as a nitrogen source for cotton has increased in importance over the past several years. Several ongoing studies are underway evaluating chicken litter as a nitrogen source for cotton within MAFES AND USDA-ARS research programs in Mississippi. Several producers within the state and region of north Mississippi have been applying chicken broiler litter for several years and reaping the benefits of N-P-K from the litter. In our study we only evaluated nitrogen from the chicken broiler litter annually. The phosphorus and potassium values are to be determined at the end of three years, when the project is terminated. In the first year when there was no carryover of nitrogen from the broiler litter and the inorganic nitrogen rates fit a regression curve with 80 lbs of inorganic nitrogen having the maximum yields and 3 tons of broiler litter having the maximum yield.

**CITATION:** Johnson, J. R., J. R. Saunders, and Hallie Tewodle. 2003. Broiler Litter as a Nitrogen Source for Cotton. Annual Report 2002 of the North Mississippi Research & Extension Center, Mississippi Agriculture, and Forestry Experiment Station Information Bulletin 398:147-149.

**KEYWORDS:** Cotton, Nitrogen, Broiler Litter

**MATERIALS AND METHODS:** In the fall of 2001, the corn stalks were disked under immediately after harvest. The plot area was re-disked in the spring of 2002. A commercial blend of fertilizer 0-78-90 was broadcast over the entire plot area in mid-April. Plots were hipped in mid April. The plot layout was a RCB. Plots were replicated four times. A plot consisted of eight rows spaced 38 inches apart and fifty feet long. Broiler litter was spread on plots at rates of 1, 2, 2.5, 3, 4.5, and 6 tons per acre and nitrogen at rates of 0, 30, 60, 90, 120, and 150 lb/ac. Sure-Grow 215 BG/RR cotton seed was planted the first week of May at the rate of four seeds per foot of row spaced on 38 in centers. Terrachlor Super X 18.8G (Pentachloronitrobenzene) 1.5 lb ai/ac + Temik 15G (aldicarb) 0.75lb ai/ac was applied as granules in furrow at planting. Cotoran (fluometuron)) at 1.0 lb ai/ac was broadcast sprayed over the entire plot area behind the planter. Bidrin (dicotophos) 0.2 lb ai/ac was applied at 2 and 4 weeks after planting. Roundup at 1.0 lb/ai/ac was sprayed over the entire plot area two weeks after emergence. Staple (pyrithiobac) at 1.02 oz ai/ac mixed in 20 gallons of water was sprayed broadcast over the entire plot area six weeks after planting. CyPro (cyanazine) at 0.75 ai/ac was directed sprayed over the plot area as a lay by treatment the last week of June. Cotton was defoliated the first week of October using Prep (ethephon) 1.5 lb ai/ac + Def 6 (tribufos) 1.5 lb ai/ac. Harvest was completed in late October. Harvest rows were 4 and 5 of each plot. Destructive plant sampling on the above ground portion of the plants was made at first bloom, full bloom, and cut out. Plants samples were taken from rows 3 and 6 on each plot. Plants were portioned into stems, fruit and leaves and oven dried at 110<sup>0</sup> C for 3 days to determine dry weight of each component part of the

plants. Plant parts were ground in a Wiley Mill using a 25-mesh screen. Chemical analyses are to be conducted on the component plant parts by the USDA-ARS Waste Management Unit in Starkville, MS. At the time of this report the chemical analyses were not complete.

**RESULTS AND DISCUSSION:** The year 2002 was an extraordinary growing season with a cool wet spring followed by an extended period of drought when the plants were fruiting and then ending with a cool wet summer and fall. Water stood on several spots of the plot area more than a day at several different times during May. These wet spots caused some root damage and resulted in shorter plants in these areas but there was no adverse yield reaction to the shorter plants. Yield data for the nitrogen and litter rates are shown in (Figures 1 and 2.)

**FIGURES:**

Figure 1. Cotton yield response to nitrogen rates

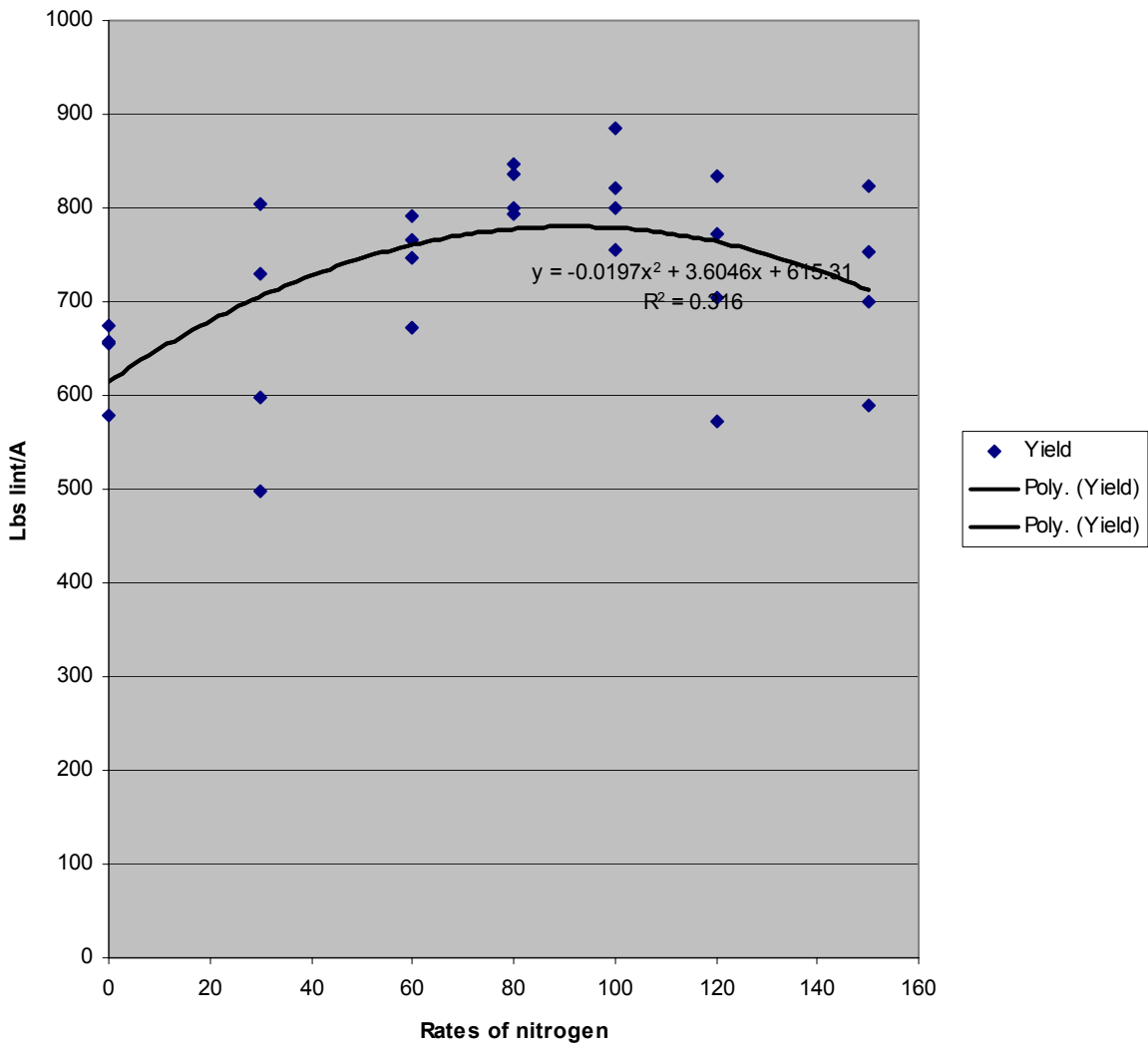


Figure 2. Cotton yield response to broiler litter

