## EVALUATION OF POULTRY LITTER AS A NITROGEN SOURCE FOR COTTON

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## SUMMARY

Expansion of broiler production in South Central Mississippi has leveled off in the past years. This is partially due to state mandates for nutrient management planning, where application rates of litter are restricted to the level of crop or forage removal. New land areas and data for crop response to litter applications are needed in order for the broiler industry to continue expanding in Mississippi. The objective of our study was to evaluate chicken litter as a nitrogen source on cotton.

The study was conducted on the North Mississippi Branch Experiment Station at Holly Springs, Mississippi. Topography of the land is an upland with 3 to 5 percent slope. Soils are a Grenada silt loam (fine silty, mixed thermic Glossic fragidualf). Plot area was fertilized according to soil test recommendations with P and K in late March. Fragipan depths ranged from 12 to 14 inches within the study area. The experimental design was a split plot in a randomized complete block with three replications. Main plots consisted of two tillage types (conventionaltill and no-till), with subplots having five nitrogen rates. Row widths were 38 inches and plot lengths were 50 feet. Plots consisted of four rows. Plots were planted the first week of May in a Roundup Ready variety of cotton with a four-row planter equipped for no-till planting. No-till plots were sprayed with a burndown in early April. Tillage for conventional-till plots was made the same day as the burndown application. Roundup (glyphosphate) was sprayed postemergence for weed control three weeks after planting. A second application of Roundup sprayed post direct at the base of the plant was made in the last week of June. Five application rates were studied consisting of chicken litter at two tons per acre and ammonia nitrate at 0, 30, 60, and 90 pounds per acre applied the first week of June. The litter and the inorganic nitrogen were left undisturbed on the soil surface of the no-till plots. In the conventional-till plots a cultivation was made after litter and nitrogen application.

Petiole sap analysis was significantly higher in the chicken litter plots than the 0 and 30 pound level in the inorganic nitrogen plots the first week of bloom. Petiole sap analysis was made using a hand held Minolta No3-N meter. In the fourth week of bloom the petiole sap analysis for the litter treatment was higher than the 0 and 90 pound level in the inorganic nitrogen plots.

Leaf fluorescence at the first and fourth week of bloom was higher for the litter than the 0 level on inorganic nitrogen. Yields were higher for the litter treatment than the 0 and 30 pound level of inorganic nitrogen.