

**BROILER LITTER USE WITH CONSERVATION  
TILLAGE ON DOTHAN SANDY LOAM SOILS**

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**Abstract**

Waste disposal of broiler litter and utilizing it as a fertilizer source with conservation tillage on Dothan Sandy Loam soils has been a success for the poultry producers as well as the cotton producers.

**Introduction**

Broiler litter has been used as a fertilizer source for several years. With the wide adaptation of roundup ready cotton, conservation tillage has become commonplace with cotton growers. This research was done to determine the amount of broiler litter needed to effectively produce cotton with this tillage method on a Dothan Sandy loam soil. In addition to this, residual effects from the litter were observed the following year of application on cotton production.

**Materials and Methods**

A Dothan Sandy loam soil was selected on the Wiregrass Research and Extension Center in Headland, Alabama. This has been a three year study (99-01) to determine the recommended rate of broiler litter and what residual effects were available from the litter on the following year's production. There were six different treatments. (1) Commercial fertilizer (120-90-90), (2) No Nitrogen check (0-90-90), (3) X - rate of broiler litter (equivalent to 120 lb/A N), (4) 1.5 X rate of litter (180 lb/A N), (5) 2.0 X rate of litter (240 lb/A N) & (6) 2.5 X rate of litter (300 lb/A N) - this rate was used only in 00 - 01. (Figure 1). The residual effects from the broiler litter were studied on the following year's crop with no fertilizer being applied to those test plots. All test plots were 24 feet in width and 30 feet in length. Each treatment was replicated four times randomly. The harvest rows were the two center rows of the 8 row plot. (Figure 2). A cover crop of oats was planted each year in the fall preceding the cotton crop. A burn down application of roundup was made three weeks before planting. Broadcast treatments of the broiler was applied one to two weeks before strip tillage and planting. The broiler litter plots did not receive any other fertilizer. The commercial fertilizer plots received 20-90-90 in lbs/Acre of NP-K at the time the litter was applied. Sidedress application of 100-0-0-20 (lb/A of N-P-K-S) was applied at early squaring of the cotton. 0-90-90 lbs/A of N-P-K was applied to the no nitrogen treatment check. This treatment did not receive any other fertilizer. All treatments received irrigation during the growing season. The residual treatments received no fertilizer or broiler litter, just residual from the previous year's litter treatment. All yields were calculated on relative yield with the commercial fertilizer being 100 percent. (Figure 3). A litter analysis was done each year to determine the fertilizer value and this affected the rate / Acre of litter applied to achieve the X rate. (figure 1).

**Reference**

S - 04- 97 Broiler litter as a source of N for cotton, Charles Mitchell, Extension Agronomist - Soils & Professor.

S - 03 - 92 Broiler litter on Cotton, 1990 & 1991 test demonstration results, C.C. Burmester, C.W. Wood and K.L. Edmisten.

**RATE OF LITTER APPLICATION  
(Tons/A)**

Litter Analysis (% Nitrogen)

<b>1999</b>	<b>2000</b>	<b>2001</b>
<b>0.0269</b>	<b>0.0303</b>	<b>0.0265</b>
<b>Tons/A of Litter</b>		

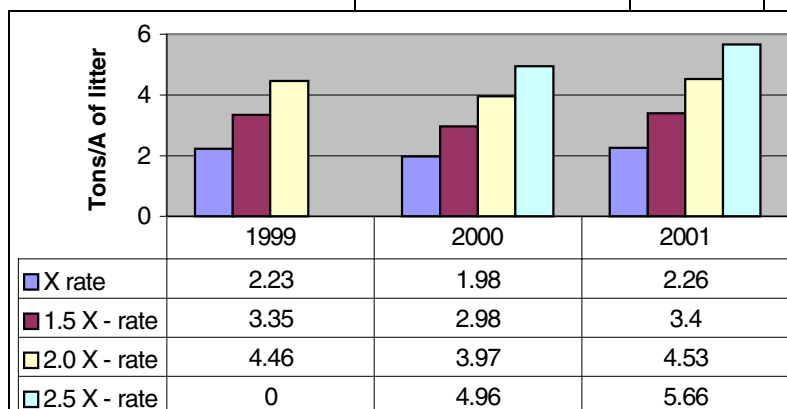


Figure 1.

Treatment	Yield, pounds lint per acre				Mean Relative Yield (%)**
	1999*	2000*	2001*	Mean*	
Check	580 b	570 e	470 f	540 g	50 f
Commerical Fertilizer, 120-90-90	1080 a	1010 a	1170 ab	1080 a	100 a
BL x	950 a	840 cd	940 bcd	910 bc	84 bc
BL 1.5x	950 a	860 bc	860 cd	890 cd	82 bcd
BL 2x	1130 a	980 ab	980 abc	1030 ab	95 ab
BL 2.5x	--	1050 a	1230 a	1140 a	104 a
Residual BL x	--	710 d	540 ef	630 fg	58 ef
Residual BL 1.5x	--	710 d	700 def	700 ef	65 ef
Residual BL 2x	--	830 cd	690 def	760 def	71 cde
Residual BL 2.5x	--	--	800 cde	800 cde	68 del

\* Means different at P<0.10

\*\* Means different at P<0.05

Figure 2. Broiler Litter on Cotton Wiregrass R&E Center 1999-2001.

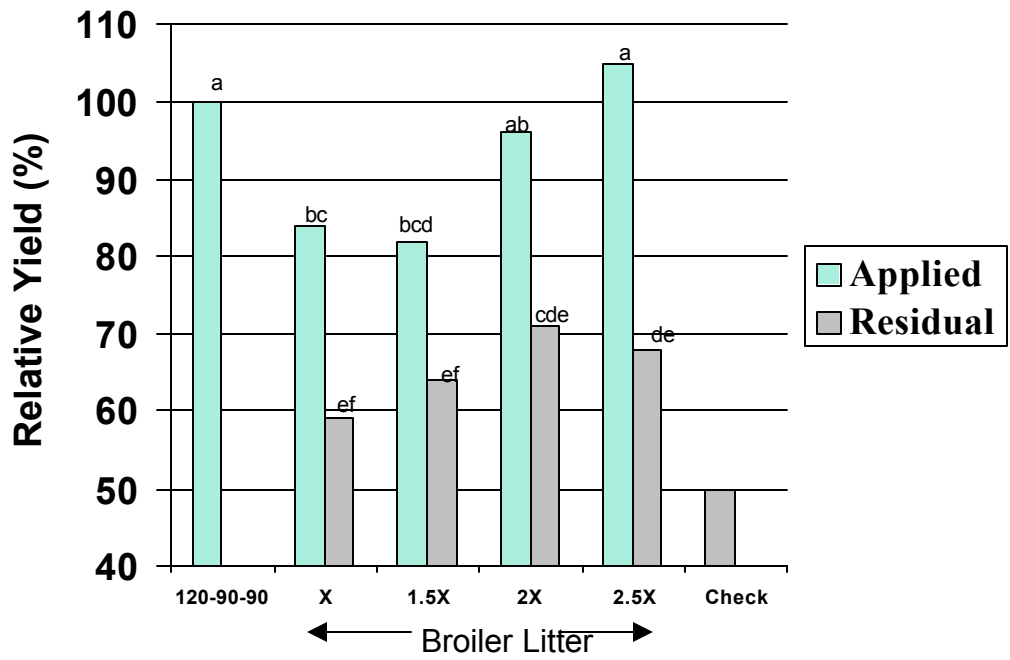


Figure 3. Broiler Litter on Cotton, Dothan s.l. 1999-2001