

COMPARISON OF BAND AND BROADCAST APPLICATION OF BROILER LITTER TO COTTON**Shalamar Armstrong and R. W. Taylor****USDA-ARS****Normal, AL****Haile Tewolde and D. Rowe****ARS-USDA****Mississippi State, MS****T. Way****USDA-ARS****Auburn, AL****K. Sistani****Western Kentucky University****Bowling Green, KY****Abstract**

Poultry litter (PL) contains nutrient compounds such as NH_3 that are vulnerable to volatilization loss when litter is surface-applied to fields as a fertilizer. Recently, researchers of the USDA-ARS at Auburn, AL designed and built a new implement that applies litter in bands under the soil surface. Field research was conducted at the North Farm of the Mississippi Agricultural and Forestry Experiment Station in Starkville, MS to compare the effect of the new subsurface band application to the conventional surface broadcast application of litter. Fertilizer treatments included an unfertilized control, a standard fertilization with 115 kg N ha^{-1} as a 32%N urea-ammonium-nitrate solution (UAN), pre-plant broadcast-applied broiler litter at 2.2, 6.7, 11.2 Mg ha^{-1} , and pre-plant or post-plant subsurface banded broiler litter at 6.7 Mg ha^{-1} . Responses measured were lint yield and N uptake. The data showed that post-plant subsurface banded litter consistently improved plant N uptake throughout the growing season compared with pre-plant broadcast or band application at 6.7 Mg litter ha^{-1} . Post-plant banding resulted in higher leaf N uptake on all sampling dates, higher N concentration in the stem on 3 of 4 sampling dates, and higher N concentration in reproductive parts on 2 of 4 dates compared with pre-plant broadcast or band application. The apparent N recovery of post-plant banded litter at 6.7 Mg ha^{-1} was greater than surface broadcast litter at 11.2 Mg ha^{-1} . Pre- or post-plant banding produced greater lint yield than surface broadcast at the same litter. These results suggest subsurface banding is a promising new method of applying poultry litter to cotton.