## THE EFFECT OF BRASSICA AND RYE COVER CROP PLANTING DESIGNS ON SOIL PROPERTIES, COVER CROP BIOMASS, AND SEEDCOTTON YIELD IN CENTRAL ALABAMA John L Snider Randy L Raper USDA, Agricultural Research Service Booneville, AR Eric B Schwab USDA, Natural Resources Conservation Service Auburn, AL

## <u>Abstract</u>

Deep-rooted cover crops (i.e. forage radish) are proposed to alleviate soil compaction problems and improve yields of certain row crops; however, the effect of radish cover crops on soil compaction and seedcotton yields is unknown. To address this knowledge gap, field plots in central Alabama were planted to the following winter cover crops in 2007 and 2008: 100% winter rye, 100% forage radish, and 60-40% rye-forage radish mix (radishes planted on each side of the row middle). In 2008 and 2009, measurements included soil compaction (cone index), % soil moisture, cover crop biomass yields, and seedcotton yields. For both 2008 and 2009 deep, in-row tillage lessened in-row soil compaction; however, none of the cover crop treatments were successful in decreasing soil compaction below levels observed in control plots. Only during fall 2008 was soil moisture significantly affected by cover crop, where monoculture rye and rye-radish mix had significantly higher soil moisture than a monoculture radish cover, which was comparable to the control. In 2008 cover crop biomass in 2009. Seedcotton yields were unaffected by cover crop in 2008. In 2009, the mixed and radish monoculture treatments produced the maximum seedcotton yields under in-row and no-till systems, respectively. These findings suggest that using radish cover crops may improve seedcotton yields. However, the yield improvements observed in this study do not appear to be associated with lower soil compaction or higher soil moisture content.