The Use of Strip Tillage to Increase Yield in Peanut.

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In the past decade in the southeastern US, summer rains have become less frequent and inconsistent, causing many growers to have inadequate soil moisture to grow a peanut crop. Soil moisture can be conserved by using cover crop residues and reduced tillage methods. In both non-irrigated and irrigated systems, maintaining winter crop residues during the growing season has been shown to decrease evaporative losses from the soil (Miguez and Bollero, 2005). The crop residues decrease the soil temperature under the residue and act as a barrier to evaporation. They also increase the organic matter content of the soil over time which increases the water holding capacity. A common way to plant into heavy crop residues is to use strip tillage. Strip tillage into crop residues has been shown to decrease tomato spotted wilt virus and increase yield in peanut (Baldwin and Hook, 1998; Brown et al., 2003; Tubbs & Gallaher 2005; Hurt et al., 2006). Reducing tillage also has other benefits such as decreasing wind and rain erosion, decreasing weed emergence, and improving soil structure. The objective of this study was to test a management system that uses strip tillage in peanut in irrigated and non-irrigated peanut production. The experiment is a replicated, randomized strip plot design with two varieties of peanut (Florida 07 and Tifguard) grown under conventional and strip tillage treatments combined with 100% evapotranspiration replacement irrigation and non-irrigated treatments. Measurements of soil moisture, root architecture, leaf area index, reproductive development, yield and grade were taken. In 2011 we found that strip tillage had a significant yield increase compared to conservation tillage in both irrigated and non-irrigated, with the greatest increase being in the non-irrigated. This was due increased soil moisture throughout the season. The second year of this study will be completed in 2012.