Cover Crops and Tillage Practices; Second Year Impacts on Soil Characteristics and Sweetpotato Yield in North Mississippi.

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Sweetpotato is a high value, high input crop, with an estimated production value of over 478 million dollars in 2010 (USDA, National Agricultural Statistics Service). Mississippi production of sweetpotato has increased from 13,000 acres, in 2000 to 23,000 acres, in 2010. Sweetpotato fields are generally left bare after mechanical harvest, allowing soil erosion and overwintering sites for insect and rodent pests in culled roots. In 2009, studies of cover crops and tillage were begun at Mississippi State University's Pontotoc Branch Experiment Station, Pontotoc County Miss. Cover crops included brassica, legume and grass species. Tillage included conventional tillage and stale beds formed prior to cover crop initiation. In both years the conventional till area cover crops were destroyed by mowing then disk incorporated prior to bed formation. While cover crop destruction in the stale bed system was by roundup then flail mowing the crop. Little change has been noted in soil organic matter in 2010 or 2011, possible due to the history of long term no-till soybean and corn production prior to the initiation of this study. Nitrate nitrogen ranged from 9 to 91 ppm and 28 to 147 ppm for convential till and stale bed treatments, respectively, in 2011. In 2010, issues with plant stand due to an unsuitable planter for no till work negated efforts to compare stale bed and standard production. In 2011, modifications including a sub-soiling shank were made to a mechanical transplanter to facilitate planting into the stale bed. Total marketable sweetpotato yield for convential tillage in 2011, ranged from 346 to 535 boxes/acre for wheat and mustard cover crops, respectively. Total marketable yield for stale bed treatments ranged from 308 to 553 boxes/ac for hairy vetch and wheat, respectively. With modifications to currently used machinery stale bed production in connection with winter cover crops can have positive impact on sweetpotato production by reducing erosion and allowing earlier planting. In 2011, sweetpotato yields were comparable between stale beds and conventional tillage. Nitrogen levels were increased in the stale beds in 2011compared to conventional tillage.