Conservation and Conventional Tillage Peanut Production Functions: Estimation, Elasticities, and Efficiency

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Summary: Peanut trial data was analyzed across six farms to estimate a production function for plot yield based on plot length. Other inputs for each farm were assumed constant. A quadratic production function was estimated for three models: all tillage types, conservation tillage, and conventional tillage. Elasticities of scale for each model were determined. A Chow test shows that there is a significant difference between conservation and conventional production functions. Further analysis was performed using a stochastic frontier specifying stochastic noise (attributable to the farm), and inefficiency (based on tillage type). Preliminary analysis shows significant inefficiency due to tillage type practice.