

ECONOMIC EVALUATION OF AN INTEGRATED CROPPING SYSTEM WITH COTTON**Vernon D. Lansford and Rebekka Martin****Texas Tech University****Lubbock, TX****Abstract**

Cotton (*Gossypium hirsutum* L.) is the primary crop in the Southern High Plains of Texas (SHPT). Twenty percent of the United States cotton crop is produced in this region. Cotton production has been bolstered by irrigation water pumped from the Ogallala aquifer. Irrigation levels above recharge levels have reduced the Ogallala aquifer water supplies. The reduced levels of the aquifer have led to an increased cost of producing cotton as depth of pumping increases over time, causing farmers to look for alternative crop production systems that reduce water demands from the Ogallala aquifer. This study addresses reduced irrigation water demands in areas with limited water supplies.

The economics of an integrated cotton/forage/livestock system designed to reduce irrigation needs compared to monoculture cotton were evaluated. The objectives of this paper were to (1) investigate the profitability of an integrated system compared to monoculture cotton production and (2) compare the net returns per acre inch of water used. The economic performance of each system (monoculture cotton v. integrated livestock/crop system) was evaluated using a biophysical crop growth model to simulate yields for 10 years. A model for the agronomic and economic aspects of an integrated crop/livestock system in the SHPT was used to estimate stochastic water use, yields, and profitability for the integrated system. Analysis based on the model and budget spreadsheets allowed researchers to predict the levels of profitability, water conservation, and uses and fates of other inputs for integrated systems and monoculture cotton. A sensitivity analysis for 3 price levels (high, average, and low) was used for cotton, cattle (*Bos taurus*), and WW-B. Dahl Old World bluestem grass (*Bothriochloa bladhii* [Retz] S.T. Blake) seed production to evaluate the sensitivity of the two systems to price changes.

Full Paper scheduled for publication in the Proceedings of the 2007 Beltwide Cotton Conferences