ARKANSAS CORN and GRAIN SORGHUM BOARD
Progress Report November 2008

Title:	**Site-specific determination of in-season corn (Zea *mays* L.) nutrient and pH variability under Arkansas growing conditions.**
Investigators:	Dharmendra Saraswat, Extension Engineer- Spatial Technologies Leo Espinoza, Extension Agronomist- Soils Specialist Terry Griffin, Extension Economist
Cooperators:	Jason Kelley, Wheat and Feed Grains Specialist
Crop:	**Corn**
Status:	**Started in 2008**

Progress:

Objective 1. To evaluate pattern of change in active remote sensor data collected at various growth stages under different tillage regimes.

Corn was planted under conventional, stale seed bed, and no tillage system at the Lon Mann Research station and Southeast Research and Extension Center (SEREC), Rowher. Each plot consisted of four, 38-inch wide by 30 ft long rows with four replications. Data from the GreenSeeker active optical sensor was collected at V4/V6, V8, and V10 corn growth stages. The data is being analyzed and shall be presented on December 3, 3008.

Objective 2. To assess the ability of active remote sensing data to be used as the basis for site-specific application of nitrogen to corn under different tillage regimes.

The experiments laid out in Objective 1 had different fertilizer application rates equivalent to 0, 50, 100, 150, 200, 250, and 300 lb N/acre in a 3-way split, with the 3rd split dose applied before tasseling. Plot wise yield and grain moisture data has been collected. The data is being analyzed for determining relationships between the spectral profile/vegetation indices from each collection date and the harvested yield.

Objective 3. To evaluate the potential use of a newly developed soil pH sensor to characterize the variability in soil pH. We will compare the efficacy of precision and conventional soil sampling methodologies on characterizing soil pH variability.

When the attempts to hire the pH sensor failed, the Division of Agriculture stepped in and provided sufficient funding to help procure the unit. So far, it has been used in Lee and Jefferson Counties. The efforts to determine variable application rates for nutrients and lime have been aided by procurement of a spreader unit. The PIs for this project are involved in assembling a system that will provide full control on functional capabilities of the spreader using a verifiable mechanism.