

**ARKANSAS CORN AND GRAIN SORGHUM PROMOTION BOARD  
2011 ANNUAL REPORT  
OPTIMIZING FERTILITY REQUIREMENTS OF CORN**

Leo Espinoza,  
University of Arkansas Soil Scientist

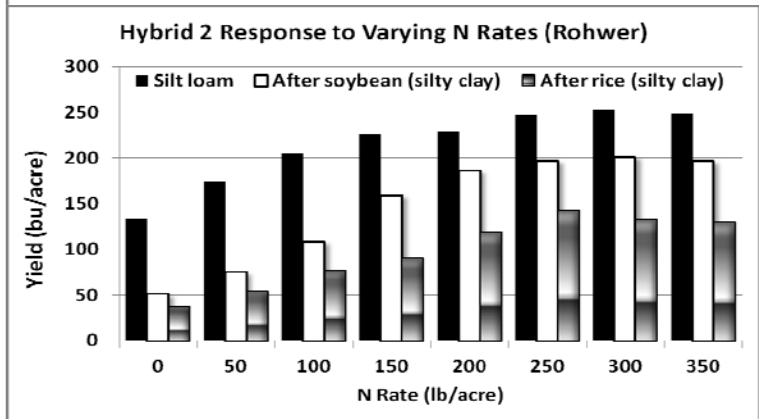
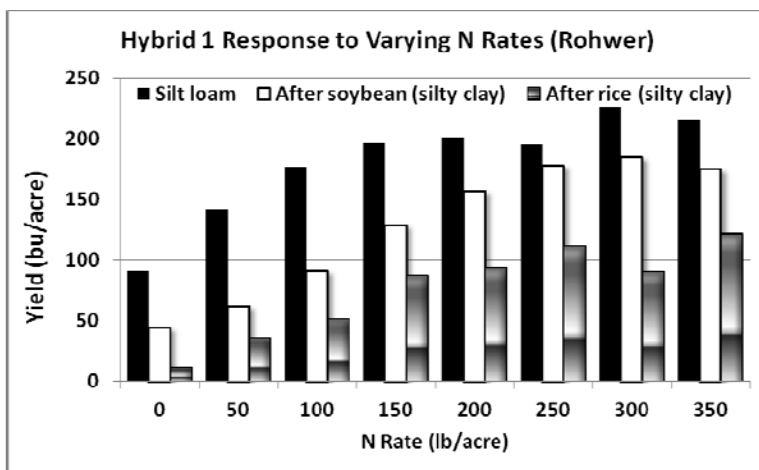
**PROCEDURES**

Research plots were established at the Northeast Research and Extension Center at Keiser (NEREC), and at the Southeast Research and Extension Center (SEREC). Treatments consisted of N rates equivalent to 0, 50, 100, 150, 200, 250, 300, and 350 lb N/acre. The intended plant population was 32,000 plants under irrigated conditions. Two corn hybrids were planted at each location. Tests were planted in rotation with soybean, cotton and rice depending on the location.

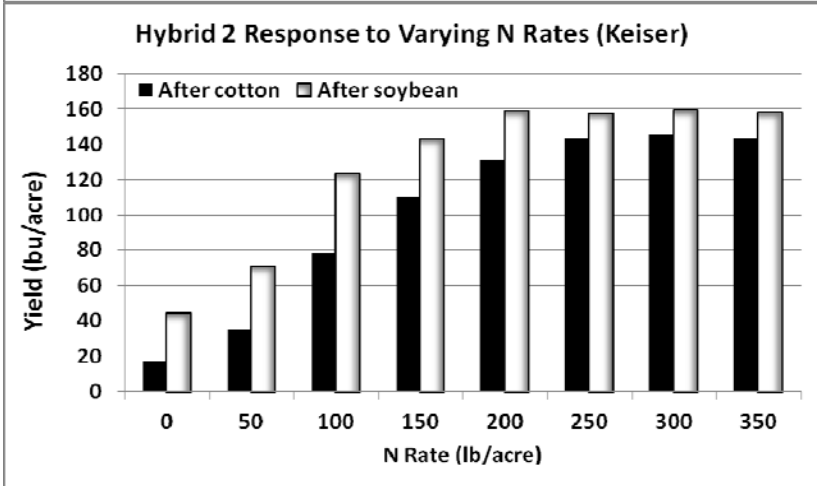
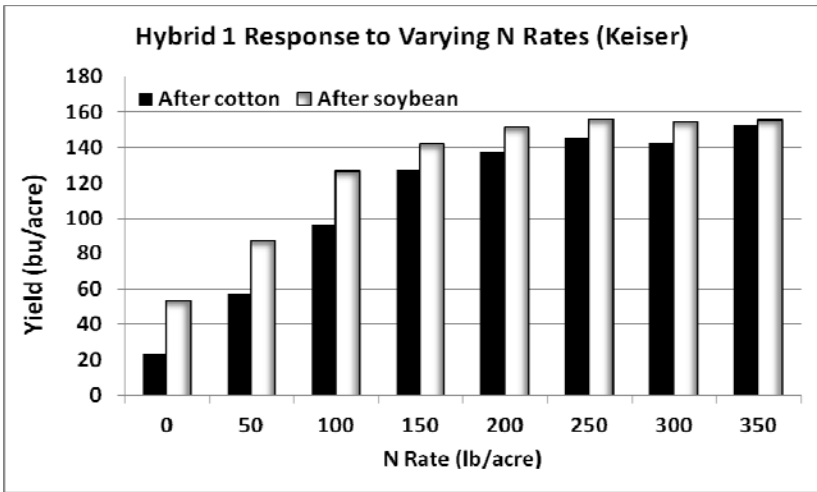
Each plot contained four 38-inch wide and 25-ft long rows with treatments arranged in a randomized complete block design and replicated five times. Nitrogen rates were applied in a 2-way split, with 50% of the total-N rate applied at emergence and the remaining N applied before the V6 stage, for treatments 0, 50, 100, and 150 lb N/acre. For treatments 200, 250, 300, and 350 lb N per acre, nitrogen was applied as described before, but included an additional application equivalent to 45 lb N per acre before tassel emergence.

**RESULTS**

At each location, the two middle rows were harvested with a plot combine equipped with a weigh-system and grain moisture meter. Yields were adjusted to 15.5% moisture content for statistical analysis.



The graphs represent the yield response of two corn hybrids to nitrogen rates in Southeast Arkansas during 2011. There were significant differences in yield responses, with yields on silt loam soils being the highest, following by corn yields in rotation with soybean (silty clay). Corn yields obtained in a rotation with rice were the lowest ones. There was also a significant difference in yield response between the two hybrids.



The graphs represent the corn yield response to two corn hybrids to varying nitrogen rates in Northeast Arkansas during 2011. There was a significant effect of crop rotation on yields, with corn yields being higher when rotated after soybeans, compared to a cotton rotation.



Funding from the Corn and Grain Sorghum Promotion Board has also facilitated assistance to corn and grain sorghum producers with irrigation scheduling, particularly under furrow conditions. Farmers are experimenting with the use of ET gages (picture attached) to help them decide the time of the next irrigation. Significant water savings have been achieved when implementing this practice.