inch and 10 to 12-inch) formed in 2005. The 4-year (2006-2009) average plant height at maturity indicated no-till and the 5 to 6-inch beds formed in 2005 were equal but both were shorter in height than all other bed height treatments. The 8 to 9-inch beds formed in 2005 were 4-inches tall in 2009, and the yield was higher than both no-till and 5 to 6-inch beds formed in 2005. Bed heights in 2009 for no-till and the 5 to 6-inch bed height formed in 2005 was 2.9 inches. In summary, these results indicate that a minimum bed height of about 4 inches is necessary to maintain high yields for both corn and soybeans. Therefore, the no-till cropping system can be used on bottomland silty clay loam soils for about 4 years on 8 to 9-inch initial bed heights without yield losses.

Program 3CR-2

▸ On-Farm Nitrogen Calibration In Irrigated Corn

Presented by Dr. John S. Kruse

Assistant Professor, Cotton and Feedgrain Specialist, LSU AgCenter

Nitrogen (N) is a critical component of corn production and represents a substantial portion of a corn producer's fertility budget. Nitrogen costs have remained stable in the recent past but many recall two and three years ago when N prices were well above historical averages. Corn producers strive to maximize farm profits by optimizing yields with judicious use of fertilizer inputs, including nitrogen. Growers face a dilemma about how much nitrogen to apply each year due to the lack of a reliable N test that can accurately predict crop N needs for a particular growing season. As a result, many producers will apply an amount of N that will ensure optimum yields regardless of weather and growing conditions. Many producers follow Extension recommendations for corn nitrogen inputs, yet some are concerned that these scientific recommendations are based on trials that may not represent their particular farm conditions or practices. On-farm nitrogen calibration is one method producers can use to more accurately quantify the optimal nitrogen needs of their particular crop and location.
A calibration trial was established on a farm located in Tensas Parish in the Louisiana Delta on center pivot-irrigated land with a predominantly silty clay loam texture. The corn hybrid Pioneer 31D59 with a population of approximately 30,000 live plants per acre was planted on March 5 and harvested on August 12, 2010. Soil tests prior to nitrogen fertilizer application indicated that all phosphorus, potassium, minor and micronutrients were adequate for optimal potential yields. Treatments were established as 12-row, field-length strips in a repeating order of 190, 220 and 250 pounds of nitrogen per acre and replicated three times. The field was examined in three zones – east, central and west – for purposes of evaluating potential soil differences within the trial. Nitrogen was sidedress-applied as a liquid urea-ammonium nitrate solution, knifed-in at crop stage V4. Parameters measured were pre-plant soil total nitrogen, crop yield, post harvest corn stalk nitrate content, and post harvest soil residual nitrate-nitrogen. Potential differences in crop yield between treatments and location within the field were examined by comparing the standard deviation of the means.
Soil total nitrogen prior to the N sidedress-application was consistent across zones at 0.12%. Crop yields differed numerically by N rate, but differences within treatments were greater than differences between treatments (Figure 1). The mean corn grain yield on the 190 lbs. N/acre treatment was 170.2 bushels per acre. The yield on the treatment with 220 lbs. N/acre was almost identical at 172.3 bushels per acre. The mean yield for the 250 lbs. N/acre treatment was numerically the lowest at 168.6 bushels per acre. Stalk nitrate samples did not differentiate greatly between N rates* although the high N rate treatment had the fewest number of samples below 250 ppm (Table 1). Post-harvest soil residual nitrate-nitrogen levels did not differ greatly between N rates at 41.3, 41.8 and 44.7 lbs of nitrate-N per acre for the 190, 220, and 250 pounds of N applied, respectively. These levels demonstrated that a substantial portion of nitrogen was available in the nitrate form at the end of the season, and yet had not been utilized by the crop. These data indicate in aggregate that for this growing season, the optimal nitrogen rate appeared to be 220 pounds of N per acre, although the lower rate of 190

pounds of N per acre was similar in total yield, as well as stalk nitrate levels and soil residual nitrate nitrogen levels. Two years of data are preferred before producers decide the optimal N rate for a corn crop for their farm location.

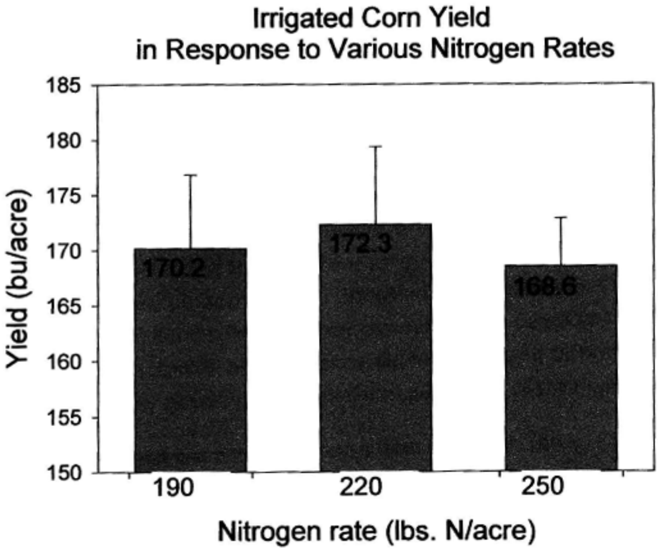

Figure 1. Corn yields for irrigated corn in the Louisiana Delta at 190, 220 and 250 pounds of nitrogen per acre applied at V4. Error bars indicate the standard deviation of the means.

Nitrogen rate (lbs/acre)	----------Stalk Nitrate Category ----------			
	Low	Marginal	Optimal	Excess
190	3	2	3	1
220	2	3	4	0
250	0	2	6	1

Table 1. Number of stalk nitrate samples measured that were below 250 ppm (low), between 250 and 700 ppm (marginal), between 700 and 2000 ppm (optimum), and above 2000 ppm (excess).

*Blackmer, A.M., and A.P. Mallarino. 1996. Cornstalk testing to evaluate nitrogen management. Iowa State University Extension Publication PM 1584.

Program 2CR-2

▸ Limitations For Corn Production In The Mid-South

Presented by Dr. Erick Larson

Grain Crops Agronomist, MSU

Farmers are always looking for keys which may improve productivity and profitability. Corn is a crop known to be quite responsive to numerous inputs including crop rotation, early planting, plant population, nitrogen fertilizer, irrigation water and others. However, once