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.

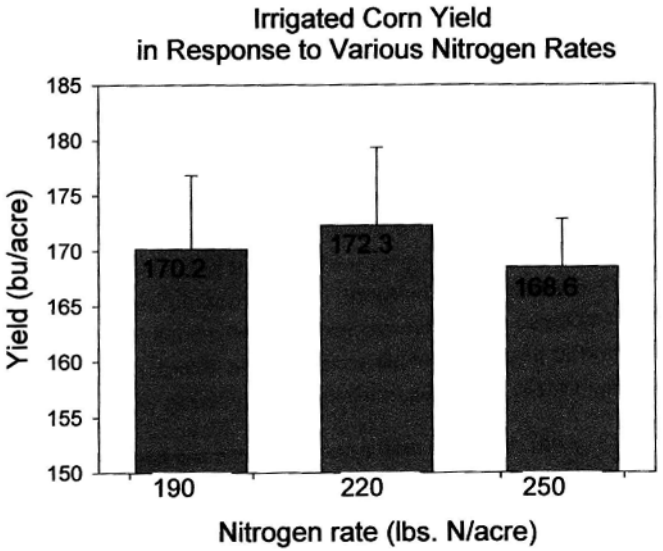


Figure 1. Corn yields for irrigated corn in the Louisiana Delta at 190, 220 and 250 pounds of nitrogen per acre applied at V4. Error bars indicate the standard deviation of the means.

| 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

these inputs are implemented or at acceptable levels, pushing the envelope with these variables produce diminishing returns. Therefore, production gains are more likely to come through incorporation of new technology or more efficient utilization of practices and/or inputs. Mississippi State University's Corn Verification program has identified several key limitations which often drastically reduce productivity in Mid-south corn fields.

Several factors involved in the planting process often create undesirable results. Soil temperature and soil moisture must be acceptable to germinate seeds and produce healthy, vigorous plants. Planter settings must be set for the specific seed size and weight, and seed depth and operation should be continuously monitored during the planting process. Growers should also be aware that seed treatments have shortfalls and either select appropriate products for anticipated pests, supplement the treatment rate, or use alternative pest control methods.

Utilization of corn in crop rotation systems can substantially reduce pest management issues, but proactive planning and thorough crop scouting can greatly improve results and profitability. For instance, you should be prepared to implement management changes to address pesticide resistance problems, not only for glyphosate resistant weeds, but other issues as well. Active management and scouting will also greatly improve performance and also often avoid unnecessary application expenses. Growers can make considerable improvements regarding irrigation scheduling relative to crop needs and environmental conditions.

**Program 7CR-2**

# Enhancement Of Nitrogen Fertilizer Efficiency For Corn Production On Mississippi River Alluvial Soils

**Presented by Dr. H.J. "Rick" Mascangi, Jr.**
*Professor, LSU AgCenter*

## Introduction

Nitrogen (N) fertilization is a critical cultural practice required for producing maximum corn yield. Many factors, including soil type and crop management systems, determine optimum N rates. Nitrogen is typically knifed-in soon after the crop has emerged and an adequate stand established. After fertilization, uncontrollable factors such as excessive or lack of rainfall, may produce soil conditions conducive to N fertilizer loss through denitrification and/or inefficient plant N uptake. Sometimes N applications are delayed or omitted due to inclement weather. While at other times, growers apply the recommended N rate for an expected yield potential; however, as the crop develops yield potential may be higher than expected and additional N may be required. In each of the above situations the question arises, how late can N fertilizer be applied and be effective? The objective of this trial was to evaluate the timing of supplemental N applications on Mississippi River alluvial soils.

## Procedures

Field experiments were conducted in 2008, 2009, and 2010 on Commerce silt loam and Sharkey clay at LSU AgCenter's Northeast Research Station near St. Joseph to evaluate the influence of N rate and timing on corn yield and N fertilizer use efficiency (NFUE). Conventional tillage was used in the Commerce study and a stale-seedbed tillage system was used in the Sharkey study. Early-season N rates (ESN) were injected at about the two-leaf growth stage as 30-0-0-2 solution at N rates of 0, 150, 180, 210, and 240 lb/acre on Commerce and 0, 180, 210, 240, and 270 lb/acre on Sharkey. Additionally, supplemental N rates were applied at about the 8-leaf, 12-leaf, and early silk growth stages at rates of 30 and 60 lb N/acre. The 8-leaf application was knifed-in, while the two later side-dress applications were applied by hand using a syringe simulating a dribble application. Furrow irrigation was also evaluated on Sharkey clay. Using the Arkansas Irrigation Scheduler, irrigations were triggered whenever the soil moisture deficit reached 1.5-inches. Planting dates for DynaGro DG58P59 were: March 28, 2008 (on Commerce and Sharkey); March 23, 2009 (Commerce) and April 17, 2009 (replant) (Sharkey); and April 1, 2010 (Commerce and Sharkey). Final