# **Phosphorus Nutrition of Rice as Affected by Time and Rate of Fertilizer Application. (S04-slaton204725-Oral)**

#### Authors:

- N.A.Slaton University of Arkansas
- J.B.McGee *Cullum Seed*
- R.E.DeLong University of Arkansas
- C.E.Wilson University of Arkansas

• R.J.Norman - University of Arkansas

## Abstract:

Phosphorus must be applied to rice by the midtillering stage to avoid yield loss on P deficient soils. Our objective was to evaluate the time and rate of P fertilizer application on P uptake by rice. A study was conducted during 2001 on a Calloway silt loam (pH = 8.0). Phosphorus was broadcast preemerge (PE), preflood (PF), panicle differentiation (PD), and at the late boot (LB) stage at rates of 0 to 50 kg P/ha. Plant samples were taken every 14 days from PE, PF, and control plots to monitor P uptake. Yield and plant samples were taken from all treatments at maturity. Total P uptake was significantly affected only by application time and sample date. Total P uptake, averaged across application rates and sample dates, was 24% greater for PF (18.6 kg P/ha) applications than PE and 42% greater than the control. Rice P concentration was routinely higher for PF than PE applications. Yields, averaged across P rates, were not different between PF and PE applications, but only PF applied P produced significantly higher yields than the control. The PD and LB P applications produced yields similar to the control. Data suggests that P applied at the onset of tillering results in more efficient fertilizer P use by rice.

#### Corresponding Author Information:

Nathan Slaton University of Arkansas 1366 W Altheimer Drive Fayetteville, AR 72704-6898 USA phone: 479-575-3910 fax: 479-575-3975 e-mail: nslaton@uark.edu

### **Presentation Information:**

Presentation Date: Tuesday, November 12, 2002 Presentation Time: 3:30 pm

# **Keywords:**

Phosphorus nutrition, Rice, Fertilizer, Seasonal nutrient uptake