yield components (panicle density, filled grains panicle-1, and grain weight).

During 2007, days to 50% heading was increased by one day for both cultivars under conventional tillage compared with conventional tillage when pooled across all treatments. Yield was also significantly higher in the stale seedbed (8731 kg ha-1) compared with the conventional tilled seedbed (8412 kg ha-1) for Jupiter when pooled across all treatments. However, Cheniere yields were not significantly affected by tillage at the P = 0.05 level of confidence. Optimum plant densities of approximately 107 to 161 plants m-2 were achieved even at the lowest seeding rate for both cultivars. There was not a significant tillage by seeding rate interaction for either cultivar, suggesting that a modified seeding rate recommendation for reduced tillage systems may not be needed when properly managed. There was no significant N by tillage or N by seeding rate interaction in the Cheniere trial. When yield data were pooled across all treatments, optimum N fertilization was achieved at the 101 kg ha-1 rate. There was a significant tillage by N rate interaction for the Jupiter trial. Optimum N fertilization was achieved at 101 kg ha-1 under a conventionally tilled seedbed and at 134 kg ha-1 when managed under a stale seedbed system. Data suggest that higher N fertilization rates may be needed in a reduced tillage system for some rice cultivars. Data from 2008 is currently being tabulated and will be combined with 2007 data for statistical analysis.

Further research is needed to validate the current data. Applied research in the area of tillage system differences is paramount in order to provide end-users with optimal N and seeding rate recommendations in drill-seeded rice.

▸ 2008 Water Conservation Experiments Abstract

Presented by Greg Simpson

Development Rep. Class II, RiceTec Inc.

Maximizing water use efficiency for growing rice is a topic that continues to interest our customers and the public in general. The main reasons for this are:

1. Increasing costs of production
2. Limited resources
3. Increasing population
4. A desire to be good stewards of the resources we work with

As a result, 4 years ago we began to look at unconventional ways to irrigate rice, in an attempt to define new technology that can assist our customers in cutting costs and conserving this valuable resource. The treatments in these experiments came from input from our customers as well as the extension irrigation specialist across the southern U.S. In this study we soon began to see a pattern of differences between RiceTec hybrid rice and the self pollinated varieties. RiceTec hybrids have a higher water use efficiency than conventional varieties.

Materials and Methods 2008

-Location RiceTec Arkansas Business Center

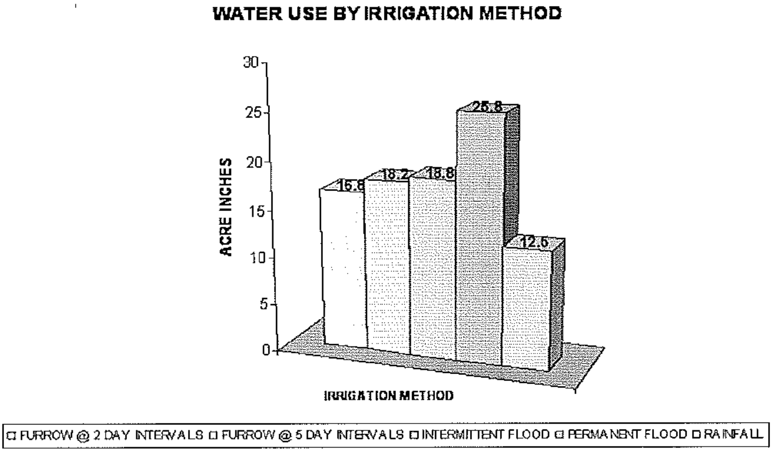
-Experiment design would be randomized strip split plot design with three replications per treatment

-The main treatments in this experiment will be irrigation application method/timing. Subplots will be genotypes

-Main plow treatments would include:

1. **permanent flood** control-Standard drill seeded delayed flood culture using Multiple Inlet Rice Irrigation BMP type flood irrigation with all necessary water used. Permanent flood would be applied at the 4 leaf growth stage of rice, maintain an uninterrupted flood and removed at 21 days after 50% heading. Water will be added weekly or as often as needed depending on rainfall. Flow meters will be used to measure water use over time.
2. **intermittent flood**. Flooded culture using less water. Flood applied at 4 to 5 leaf

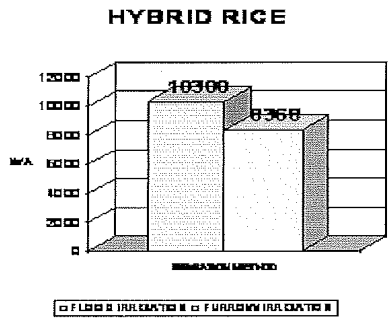
growth stage.
Water applied after that focusing on keeping plants from stress **not** permanent flood, sometimes under flood sometimes diminished flood (wet/dry soil). Water will be added every 10 days intermittent flood maintained until 21 days after 50% heading.
3. **furrow irrigation Non flood culture** - flush using poly pipe as necessary to irrigate in furrows at **5 day intervals** unless a sufficient rain event occurs will be used to maintain crop growth and limit plant stress or as needed depending on rainfall. Duration of furrow irrigation will be from emergence until 21 days after 50% heading. Furrow irrigation block must be located near field drain to allow proper treatment irrigation and drainage
4. **sprinkler irrigation** - rice variety tests at 2 locations (Weona AR and Delaplaine AR) to be irrigated using water application rates and timing specified by our cooperators. With a goal of 15 to 20 inches of water applied through the irrigation system. RiceTec will maintain weed control through use of herbicides.
-Subplot treatments would include available RiceTec conventional and Clearfield hybrids with appropriate variety checks: CLXL729, CLXL745, CLXP746, CL171AR, and CL161, conventional XL723, XP750 with hybrids seeded at 600,000 seeds per acre, Wells and Cocodrie in the midsouth and Cocodrie and Cheniere in the Gulf Coast with varieties seeded at 1,300,000 seeds per acre (10 Genotypes total)
-Environments
1. Langulle river watershed (RTABC), a known impaired watershed with a declining aquifer.
2. Chocolate Bayou watershed in Texas at the RiceTec research farm at Alvin, TX. RiceTec Alvin will not include furrow irrigation treatments due to irrigation arrangement at the Alvin Farm.
- Data collected would be: water used per main plot treatment in gallons and acre/inches using irrigation flow meters, irrigation timing and irrigation water used by event and rice growth stage, rice hybrid or cultivar v weed competition rating, disease pressure, maturity date, grain retention, grain yield, harvest moisture, lodging incidence and severity, and milling yield.

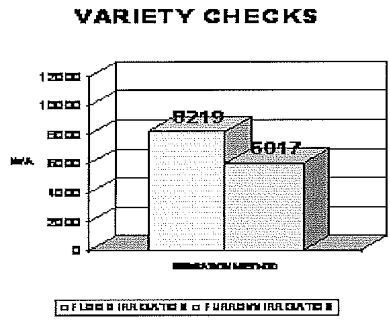


Notes: ______________________________

2 Year Mean grain yield of RiceTec Hybrid Rice (Left) and recommended cultivars (Right) when water was limited.

FLOOD IRRIGATION vs FURROW IRRIGATION





We have not achieved the same yields with furrow irrigated rice that we normally achieve with flooded rice culture. However we believe that we can recover most of the yield potential through research into refined management practices for furrow irrigated rice and sprinkler irrigated rice.

The advantage to adopting these conservation systems is not increased yield potential, but reduced input costs for water labor and fuel and water conservation. If input costs for diesel fuel, fertilizer and water continue to increase these systems can become cost effective.

▸ Managing Nitrogen In Rice With Precision: Is It Possible?

Presented by Dr. Timothy W. Walker
Associate Agronomist, Mississippi State University – Delta Research and Extension Center
Presented by Jason M. Satterfield
Mississippi State University – Delta Research and Extension Center

Introduction

In recent years, nitrogen (N) fertilizer and its application has gained more attention due to exponential price increases in fertilizer and fuel. Means by which N can be applied more precisely would result in economical and environmental benefits. Currently, no soil- or plant-based test exists to predetermine N need, rather, recommendations are made based on results from N-fertilizer response studies that are conducted across a broad landscape of soils representative of the major rice growing area. Research has shown that one of the most effective means to manage N for optimum uptake and utilization efficiency is to apply a large percentage of the needed N immediately prior to flood establishment followed by the remaining N being applied near the onset of reproductive growth (panicle differentiation). Nitrogen uptake differences are likely to occur due to numerous factors including but not limited to soil type, native N availability, and N-loss mechanisms. The objective of this research was to evaluate crop canopy reflectance as a potential tool to determine N nutrition needs at panicle differentiation (PD). If successful, this technology could provide an opportunity to apply top-dress N with greater precision rather than predetermined blanket applications.

Materials and Methods

Field studies were conducted at the Delta Research and Extension Center in 2007 and 2008. Three rice cultivars ('Cocodrie', 'Wells', and 'XL723') chosen to represent the