The third study was conducted from 2005 through 2007 and determined the response of three rice varieties to three application timings and two formulations of pendimethalin in a stale seedbed rice production system. The rice varieties Cocodrie, Lemont, and Wells were planted in a stale seedbed rice production system. Two formulations of pendimethalin, an emulsifiable concentrate (Prowl EC) and a capsule suspension (Prowl H2O) were applied at 1 lb ai/A. These rates corresponded to 2.4 pt/A for Prowl EC and 2.1 pt/A for Prowl H2O. Pendimethalin treatments were applied 0, 3, and 7 days after planting. No visual injury was detected for any variety. Seedling density, days to 50% heading, and rice yield were not impacted by pendimethalin formulation or application timing. The practice of planting varieties with excellent seedling vigor into non-disturbed soils with greater available moisture may provide an opportunity to use pendimethalin as a preemergence herbicide for rice production.

Research with other areas of rice production have demonstrated that rice yields in a reduced tillage system are similar to those in a conventional tillage system when growing conditions are favorable, particularly during the early parts of the season. Based on results of the current research, herbicide performance is not diminished when rice is grown in a stale seedbed production system.

Evaluation Of Conventional And Reduced Tillage Practices On Optimum Seeding Rate, Nitrogen Fertilization Rate, And Yield Components

Presented by Dr. Dustin L. Harrell
Assistant Professor, LSU AgCenter-Rice Research Center

Conventional tillage is currently the most common tillage system used in drill-seeded Louisiana rice. However, reduced tillage systems have become increasingly more common every year. Early estimates from the 2007 growing season in Louisiana indicate that approximately 42% of the planted acreage was planted using some form of reduced tillage. Reduced tillage systems, such as no-till, spring, and fall stale seedbeds, have several benefits over conventional tilled rice seedbeds, which make them more desirable. Most notably is the ability to reduce overall production costs, speed planting of drill-seeded rice by reducing seedbed preparation time, and minimizing soil and nutrient losses associated with draining rice fields. Nonetheless, only limited research is available that focuses on seeding and nitrogen (N) fertilization rate differences, which may exist between conventional and reduced tillage systems of currently used rice cultivars. The primary objectives of the study are threefold: 1) to evaluate the seeding rate differences that may occur between a fall stale and conventionally tilled seedbed for drill-seeded rice; 2) evaluate N fertilization requirement differences between the two tillage systems; and 3) to determine if a less than optimum stand or N fertilization rate can be compensated for by increasing the N rate or seeding rate, respectively.

Two studies were conducted in 2007 and 2008 at the LSU AgCenter's Rice Research Station South Farm located just south of Crowley, Louisiana. The first study evaluated 'Jupiter,' a high yielding semidwarf medium- grain cultivar, while the second evaluated 'Cheniere,' a high yielding semidwarf long-grain cultivar. Two tillage treatments (conventional and fall stale seedbed), four seeding rates (161, 323, 484, and 646 seed m-2), and four N rates (101, 134, 168, and 202 kg ha-1) were used in each study. Treatments were arranged in a randomized complete block with a factorial arrangement of treatments with four replications. Both trials were drill seeded into a Crowley silt loam soil (fine, smectitic, thermic Typic Albaqualfs). Data obtained from the studies included days to 50% heading, plant height, yield, total and whole milling percentage, stand density, and

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