U.S. Department of Agriculture
Work Unit Description AD-416
U.S. Dept. of Agriculture, State Agricultural Experiment Stations and Other Institutions

Date (Month/Day/Year): 05/09/2012

1. Accession No.	Agency Identifiers		5. Work Unit/Project No.	6. Status
	2. NIFA	3. LA.B	LAB94140	A = New Project

7. Title
Investigation of Nutrient and Cultural Management Practices in Louisiana Rice and Variety Testing of Rice Rotational Crops

8. Performing Organization 8190 - 2010
Rice Research Station
Agricultural Experiment Sta, Louisiana State Univ

9. Cooperating Departments within State Performing Institution

10. Multistate Project No.

11. Cooperating States

12. Investigator Name(s) Last Name and Intitials)
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14. Project Type	15. Contract/Grant/Agreement No.	16. Amount	17. FY
Hatch			

18. Award Date (Month/Day/Year)	19. Start Date (Month/Day/Year)	20. Termination Date (Month/Day/Year)
	06/01/2012	05/31/2016

Goals/Objectives/Expected Outputs

1) Evaluate nitrogen (N) management practices for improved efficiency and productivity in rice production systems. 2) Evaluate cultural management practices on rice main and ratoon crops. 3) Evaluate performance of soybean, grain sorghum, and wheat varieties, hybrids and experimental lines in southwest Louisiana. Expected outputs include publication of results in Rice Research Station Annual Report, newsletters, peer reviewed journals, and popular press articles. In addition, research results will be shared at multiple grower meetings, field days, and professional scientific meetings.

Methods

Multiple studies evaluating N application rates and timings needed to produce optimum rice grain yields will be conducted for newly developed rice cultivars, advanced experimental lines, and hybrids. A minimum of three locations across the state will be used in these trials yearly. Rice varieties and hybrids will be tested using a drill-seeded delayed flood cultural system for one to three years. Sites will be prepared according to the off-station cooperator preference and at the Rice Research Station using a fall-stale seedbed. Rice will be drilled at the rate of 430 seed m-2 using an Almaco no-till research grain drill equipped with a belt-driven cone, double-disk openers, and press wheels on 20-cm rows. Individual plots will consist of seven drill rows measuring 4.86 m in length. Plots will be permanently flooded to a depth of 6 to 10 cm approximately 1 month following seedling emergence. Rice will be managed according to recommendations found in the Rice Varieties and Management Tips publication. Nitrogen (46-0-0) will be applied in single or split applications with initial applications made prior to establishment of the permanent flood (PF). These applications will be followed by applications at panicle differentiation (PD). PF nitrogen will be applied at 0, 34, 67, 101, 134, 168, 202, 235, or 269 kg ha-1. Four treatments will be included to represent split N applications between PF and PD. Nitrogen will always be applied at PD at 50 kg ha-1, representing the rate normally applied aerially by Louisiana producers, preceded by PF applications of 50, 84, 118, and 151 kg ha-1. Lodging, maturity, mature plant height, grain moisture, and grain yield will be determined. Yield and grain moisture will be determined with a Wintersteiger Delta small plot combine equipped with a 5.6 m header. Lodging rate will range from 1 to 5 and will represent rice standing perpendicular and parallel to the soil surface, respectively. Lodging severity will be based on a scale of 0 (no lodging) to 100% (all plants lodged). Maturity will be determined by documenting the number of days from seeding until 50% of the panicles in a plot emerge from the leaf sheaths. Plant height will be recorded prior to harvest and will be measured from the soil surface to the tip of an extended panicle. Experiments at the Rice Research Station and in Vermilion Parish will be ratoon cropped. Treatments in each experiment will be

arranged as a randomized complete block experimental design with four replications. Data from each experiment will initially be analyzed using PROC MIXED in SAS with fertilizer treatment as a fixed effect and year, replications (nested within year), and all interactions containing either of these as random effects. In addition, grain yields over a 3-year period and N fertilization rates will be fit to linear-plateau, quadratic, and quadratic-plateau models in SAS analyzed using PROC NLIN. Economical optimal N rates using current cost estimates of N and sales price of rice will be determined.

23. Non-Technical Summary

Rice is an important crop in the Midsouthern United States. Cultural and nutrient management practices can greatly influence rice grain yields. This project will examine many rice cultural and nutrient management practices that may positively or negatively influence rice yields, profitability, and sustainability in Louisiana and throughout the Midsouthern United States.

24. Keywords

Rice; Fertility; Nitrogen; Seeding rate; Volatilization; Ratoon ; Tillage; Soil; Yield

****** The Original signed document is on file at this institution. ******

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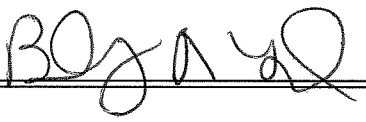
Dept: Admin: 	*Associate Director*	