

► Farmer Adaptation Of Intermittent Flooding To A Commercial Rice Production System In Mississippi: Water Use, Grain Yield And Milling Quality And Nitrogen Response

Presented by Dr. Joseph Massey

Associate Professor, Mississippi State University

Contributing Authors:

Tim Walker & Cade Smith, *Mississippi State University*

Merle Anders, *University of Arkansas*

Use of intermittent rice flooding is increasing in Asia, but its adoption in the U.S. is limited owing to a number of agronomic and scalability concerns. This study used replicated trials established in producer-managed fields to determine if the practice is compatible with commercial rice production practices used in Mississippi. When intermittent flooding was coupled with multiple-inlet irrigation, the quantities and qualities of rice yields were maintained, relative to continuously-flooded controls, for five commercial rice varieties and one hybrid. Only one variety exhibited a decrease in total head rice when milled, this after being subjected to five or more wetting-drying cycles over ~80 day flood periods. Water savings over the three year study averaged 32% above that of comparable systems not using intermittent flooding and were on par with zero-grade, traditionally the most efficient rice irrigation system used in Mississippi. The positive yield responses of CL162 to intermittent flooding and pre-flood urea-nitrogen rates, particularly the zero-nitrogen controls, support research showing that rice tolerates well, and may actually benefit from, properly-timed wetting and drying periods. Our results further suggest that when rice is grown on clay soils, 24 A-in of applied irrigation is a realistic target under most production settings in Mississippi. Even partial adoption of intermittent flooding to improve rainfall capture could reduce demand for rice irrigation and, thus, help to alleviate overdraft of the Mississippi River Valley Alluvial aquifer, a resource of national and international significance.