

AGRONOMY

REVIEW OF RICE PHOSPHORUS RESEARCH IN MISSISSIPPI

Bobby Golden

PHOSPHORUS NUTRITION IS EXTREMELY IMPORTANT TO PRODUCING HIGH-YIELDING RICE ON OUR HIGH PH CLAY SOILS IN THE MISSISSIPPI DELTA.

Phosphorus (P) deficiency of rice seems to be a continual issue that sneaks up on us in the Mississippi Delta from year to year. In 2015, we experienced an above average amount of P deficiency-related issues. Many of these issues were brought to our attention as potential herbicide issues, however at the end of the day it was phosphorus. P deficiency in rice can be characterized by stunting and appear very dark green to almost bluish in color. The most distinctive characteristic of P deficient rice is erect spindly leaves with minimal tillers on the plant. Younger tissue may appear healthy while older tissue can turn brown and become necrotic in severe cases.

P research to correlate and calibrate soil tests to describe the relationship between rice grain yield and P was first conducted in 2002 and the program has been maintained with multiple trials placed across the Delta annually. These trials carry a small footprint but are very powerful in

helping establish proper P fertilization practices for rice grown in Mississippi.

Currently with 34 siteyears of data in the model, we still have some difficulties explaining rice grain yield response with soil test P data on low P testing soils. What we have observed over the last ten years is when P is needed, the timing of the P application is almost as important as the rate applied. In general, optimum P fertilization timing is somewhere between preplant and the 1-2 leaf stage of rice growth and development. Soil test data suggest that when Lancaster P is below 30 lb P/ac we have a greater chance of observing a yield response. When applying P, however,

in many instances even when soil test P < 10 lb P/ac, we have not observed responses. Coupling pH with soil test P data has helped, but more research evaluating P fertilization and alternative soil test extractants for rice is needed to produce more precise recommendations.

