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Module 5.1-8 Application Timing of Phosphorus is Critical for Rice Yield in Southern U.S.

Phosphorus in rice is taken up slowly initially and then increases greatly at the onset of tillering. Applications of P should be made prior to this increased demand in order to maximize yield. A time of P application trial was conducted to illustrate the yield loss associated with delaying P fertilization in a drill-seeded, delayed flood rice production system common in the Mid-southern U.S. Soil test P was considered very limiting as Mehlich-3 extractable P concentration ranged from 2 to 7 ppm across the field. Time of P fertilizer application included: at planting, pre-flood (4- to 5-leaf rice), mid-tillering (2 weeks after flooding), green ring, and 50% heading. Maximum yield of 8,220 lb/A was observed when P fertilization occurred at planting (**Figure 1**). The lowest yield occurred when no P was applied (3,812 lb/A; a 54% reduction in yield). A 12% yield loss was observed when P fertilizer was applied with pre-flood application timing. Approximately 32% yield was lost when P fertilization was delayed until midtillering or green ring. A yield loss of 52% was observed when P fertilization did not occur until 50% heading.



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Trial showing response of different timings of P fertilizer application, LSU AgCenter - Rice Research Station.

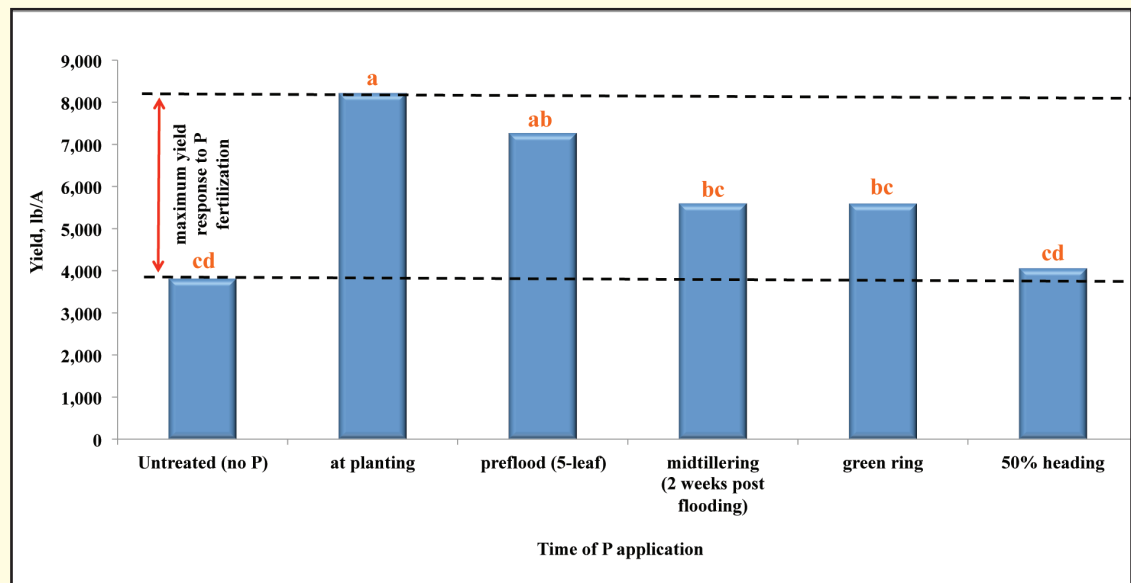


Figure 1. Effect of time of phosphorus fertilizer application on rice yield, Mamou, Louisiana 2013. **Source:** Harrell, D., 2014, Mid-South Fertility (2)1:2-3.

Submitted by Dr. Dustin Harrell, LSU AgCenter - Rice Research Station, USA, March 2014.

