

## **GROWTH AND MORPHOLOGICAL DIVERSITY OF SELECTED RICE VARIETIES IN RELATION TO PHOSPHORUS NUTRITION**

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Phosphorus (P) is one of the most limiting, essential nutrients for plant growth and its availability for crop production decreases rapidly. Therefore, it is very important to identify rice varieties with higher levels of P-uptake rate (PUR- mg P g<sup>-1</sup> root dry weight) and P-use efficiency (PUE- g plant dry weight mg<sup>-1</sup> P) when cultivate in P deficient soils. A hydroponic experiment was conducted with two levels of P supply (5 and 50 µM). Six Sri Lankan and six introduced rice varieties each, showing vigorous and poor growth in low-P soils were used. Harvesting was done at 15, 30, 60 days after crop establishment. For the harvest made at 30 days, the least percentage growth reduction at low-P supply compared with that at high-P supply was observed for Bg352 and IRRI20. Varieties Bg360 and IRRI20 had the highest PUR and varieties Bg400-1, Bg406, IRRI28 and IRRI29 had the highest PUE at low-P supply. Least percentage reductions in shoot height, shoot dry weight, root dry weight and total biomass at low-P supply were observed for IRRI20 and local variety Bg360. The least percentage P uptake reduction by a plant, PUR reduction, and tissue P concentration reduction at low-P supply compared with those at high-P supply were reported for IRRI14, IRRI20 and BG360 while Bg400-1 and Bg406 had the highest percentage reductions of above characteristics at low-P supply. Similar results were obtained when harvest was done at 15 and 60 days after crop establishment. Growth, PUR and PUE characteristics of varieties Bg358, Bg369, IRRI1 and IRRI5 were not prominent. Therefore, local rice varieties; Bg352, Bg360, Bg400-1 & Bg406 and introduced varieties; IRRI14, IRRI20, IRRI28 & IRRI29 show promise to be used in future experiments when studying underlying mechanisms for contrasting P efficiency.

**Keywords:** Hydroponic experiment, Phosphorus, Phosphorus use efficiency, Phosphorus uptake rate