



Amplification of Phosphorus Utilization Among Symbiotic N₂-Fixing Recombinant Inbred Lines of Common Bean (*Phaseolus vulgaris* L.) Under Fertigation Technique

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Abstract: Six common bean recombinant inbred lines (RIL) of the cross of BAT477 and DOR364 were inoculated with *Rhizobium tropici* CIAT 899 (originating from International Center of Tropical Agriculture, Colombia) and grown in sandy soil using three levels of phosphorus (0, 45, 90 kg ha⁻¹) injected through fertigation technique. The greatest records were noticed in RILs 75, 83 and 34, respectively. Vegetative growth characteristics were considerably amplified due to increasing phosphorus levels under fertigation technique. The RIL 75 gave high significant values for yield, and its components followed by RIL 104 and RIL 34 compared with the other three RILs of common bean plants. The high rate of P fertigation leads to higher mean values of seed, straw and biomass yield (Mg ha⁻¹) except for phosphorus use efficiency. The highest mean values of seed, straw and biomass yield were 6.78, 7.93 and 14.71 Mg ha⁻¹ occurred with RIL 75 injected 90 kg P₂O₅ ha⁻¹ through fertigation technique, respectively. While the fertigated RIL 75 had the highest fertigated phosphorus use efficiency (321.65kg biomass kg⁻¹P₂O₅) with the rate of 45kg P₂O₅ under fertigation technique. Lastly, the statistical test showed that there was a variation between different genotypes as a response of high and low P fertigation supply. A correlation between N and P concentrations in nodules was high ($r^2 = 0.959$) for RIL 75 under high P level and ($r^2 = 0.634$) for RIL 104 under low P level.

Key words: Fertigation; N₂-fixation; Nodulation; *Phaseolus vulgaris* L.; Phosphorus nutrition; Recombinant lines.