

## Effect of Phosphorus and Potassium Nutrition on Growth, Yield and Minerals Accumulation of Two Soybean Cultivars Differing in Phytate Contents

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**Abstract :** A pot experiment was conducted to investigate the effect of phosphorus (P) and potassium (K) nutrition on grain yield, phytic acid and grain quality of high-phytate (Akimaro) and low-phytate line. Phosphorus and potassium were applied as; P<sub>1</sub> (20 kg ha<sup>-1</sup>) and P<sub>2</sub> (100 kg ha<sup>-1</sup>), same as K<sub>1</sub> (20 kg ha<sup>-1</sup>) and K<sub>2</sub> (100 kg ha<sup>-1</sup>), respectively. Low-phytate soybean had the highest grain yield, and 75% increase was observed compared to the high-phytate under same treatments. Highly significant differences of seed phytate P were observed in both cultivars, and the phytate P in high-phytate was found 39% higher than low-phytate, whereas no significant differences observed in response to P and K treatment. Percentage of phytate P from total P in seeds was 28 to 35% in low-phytate and 72 to 81% in high-phytate in different treatments. The lipid content in low-phytate was found lowered compared to that of high-phytate. Crude protein in grains was also found significantly higher in PK combined. No significant difference was observed in seed calcium (Ca), magnesium (Mg), and Zinc (Zn) in different treatments, but high-phytate showed 87% increase in seed Ca and 76% of Mg compared to low-phytate; however, low-phytate showed 82% increase in Zn content over high-phytate. The result illustrates that low-phytate soybean achieved higher grain yield and grain Pi in response to increased P and K nutrition. To achieve higher yield and quality seeds from the low-phytate soybean, it is recommended that proper phosphorus and potassium nutrition to be applied suggested in this study.

**Keywords :** phytic acid, low-phytate soybean, high-phytate soybean, P and K nutrition, protein content, soybean

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