

Utumporn Sompong 2006: Inheritance of Phytic Acid Content in Seed of Mungbean (*Vigna radiata* (L.) Wilczek). Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Professor Peerasak Srinives, Ph.D. 84 pages.
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Phytic acid is the major storage organic form of phosphorus in plants and is mainly found in grain cereals and legumes. It is a strong inhibitor against the absorption of nutrients in monogastric animals. Objectives of this study were to determine a variation of phosphorus and phytic acid contents in seeds of mungbean germplasm and to investigate an inheritance of seed phosphorus and phytic acid contents. Total P content was assessed in seeds of 250 mungbean accessions and found that they were ranging between 2.34 - 5.75 mg.g⁻¹. Five accessions each with the highest and lowest total P contents were analyzed for inorganic P, phytate P and phytic acid contents, and were found ranging between 0.34 - 0.59 mg.g⁻¹, 1.67 - 5.03 mg.g⁻¹ and 5.94 - 17.87 mg.g⁻¹, respectively. The inheritance was studied in seeds of F₂ population derived from a cross between two accessions each with the lowest and highest phytic acid contents, viz V1658BBR and V1141BG. A segregation ratio of F₂ population followed a 9:7 high to low content of phytic acid indicated that the low content was controlled by recessive alleles at 2 independent loci showing duplicated recessive epistasis. Positive correlations were found between total P with phytic acid and inorganic P with only days to harvesting. The broad-sense heritability of total P, inorganic P, phytate P and phytic acid contents were 80.8, 78.6, 80.7, and 80.7, respectively.

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Thesis Advisor's signature

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