

## Phylogenetic study of indigenous pulses based on morphological and inter simple sequence repeat (ISSR) marker

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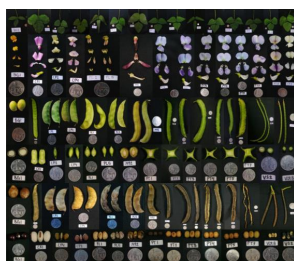
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**Statement of the Problem:** Pulses is one of the most common food consumed in Indonesia. The highest consumption rate of pulses only occurred in one single commodity, soybean. As one of the world's richest biodiversity country, Indonesia has a high genetic diversity in pulses but some of them are still unknown. The aims of this study were: (1) determine genetic diversity of potential pulses, (2) determine the relationships among pulses and (3) characterise some pulses.

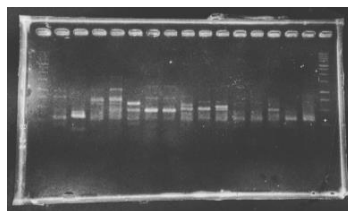
**Methodology & Theoretical Orientation:** The study was conducted using morphological and inter simple sequence repeat (ISSR) markers among 6 accessions of winged bean (*Psophocarpus tetragonolobus*), 2 accessions of lima bean (*Phaseolus lunatus L.*), 2 accessions of Egyptian bean (*Lablab purpureus*), 2 accessions of cowpea (*Vigna sinensis* and *Vigna unguiculata*), 1 accessions of bambara groundnut (*Vigna subterranean*), 1 accession of jack bean (*Canavalia ensiformis*), and 1 accession of velvet bean (*Mucuna pruriens*). Phylogenetic tree dendrogram was constructed using R program version 3.3.1.

**Findings:** The 15 indigenous pulses have been characterised with 45 morphological characters and 8 different ISSR primers to identify genetic relationships. From the number of amplified marker alleles using ISSR primers, there are 119 polymorphic bands and none monomorphic band.

**Conclusion and significance:** Based on morphological-molecular analysis and morphological analysis, the pulses were divided into 8 groups in dissimilarity of 20% and 32%. In molecular analysis, the pulses were divided into 7 groups in dissimilarity of 17.5%.



**Figure 1:** Morphological observation of mature leaf, flower, pod, pod shape, mature pod, and seed for all accessions.



**Figure 2:** ISSR fingerprint pattern of pulses using PKBT8 primer. From left-right: DNA size marker-BG1-CE1-LP2-LP4-MP2-PL1-PL5-PT1-PT2-PT3-PT4-PT5-PT7-VS2-VU8-DNA size marker.

### Biography

Filemon Yusuf is an undergraduate student at Bogor Agricultural University majoring in Agronomy and Horticulture. He has done some researches in the field of Plant Breeding. He has worked on "Effectiveness of Agrobacterium strains in transferring carotenoid gene on tobacco leaf", during his study in Tokyo University of Agriculture and Technology as an exchange student. He has also conducted a research about *in vitro* mutation induction in torch ginger using gamma irradiation. He is a member of Asian Youth Network of Agriculture as the Coordinator for country of Indonesia. His projects include: "Sugar Liquid and Organic Fertilizer from Cassava Peel" in Student Creativity Program 2014 and "Orchid Entrepreneurial Development Based on Local Resources" in Student Entrepreneurial Program 2015.

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