Tanaporn Kajonphol 2012: Map Construction and Identification of Major Agronomic Traits in Mungbean (*Vigna radiata* (L.) Wilczek). Doctor of Philosophy (Plant Breeding), Major Field: Plant Breeding, Interdisciplinary Graduate Program. Thesis Advisor: Professor Peerasak Srinives, Ph.D. 56 pages.

Mungbean (*Vigna radiata*) is an important annual legume in Asia. It is widely grown in South and Southeast Asia. The aim of this research was to use SSR markers to identify chromosome regions controlling agronomic traits. The first mungbean genetic linkage map was successfully constructed from 186 F_2 plants, derived from a cross between an annual cultivated mungbean line 'KUML29-1-3' (*Vigna radiata* var. *radiata*) and an Australian wild perennial mungbean accession 'W021' (*Vigna radiata* var. *sublobata*). A total of 150 SSR primers were composted into 11 linkage groups, each containing at least 5 markers. The map spans 1,019.1 cM with the average distance between markers of 7.4 cM. QTLs controlling major agronomic characters, viz. days to first flowering (D_1), days to first pod maturity (D_2), days to harvesting (D_3), 100-seed weight (100sw), number of seeds per pod (Sp), number of pods per plant (Pp), pod length (Pl), pod width (Pw) and seed yield per plant (Yp) were mapped onto this map. Fifty three QTLs associated with these traits were identified in which each QTL explained 0.8% to 29.6% of the phenotypic variation of the traits. The amount of phenotypic variation explained by QTLs of each trait ranged from 8.0% to 60.3%.

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