

Sukhumaporn Sriphadet 2010: Effect of Leaflet Size and Number on Agronomical and Physiological Characters of Mungbean (*Vigna radiata* (L.) Wilczek). Doctor of Philosophy (Tropical Agriculture), Major Field: Tropical Agriculture, Interdisciplinary Graduate Program. Thesis Advisor: Professor Peerasak Srinives, Ph.D. 99 pages.

Mungbean average yield is still low due to indeterminate growth habit, photoperiod sensitivity, non-synchronous maturity, susceptibility to lodging, etc. Physiological studies revealed that mungbean yield bears a close relationship to the duration and rate of photosynthesis. Mungbean lines with more leaflets per leaf produce greater leaf area which can intercept more sunlight and thus possibly give greater yield. So this work was designed to compare agronomical and physiological characters among isogenic lines carrying different leaflet size and number. The population was derived from a cross between small- and large-multiple leaflet types. The parental lines were different in pod length, number of pods, clusters, and branches per plant, number of seeds per pod, 100 seed weight, seed yield and leaf area. While the isogenic lines were different in pod length, number of clusters, branches, and pods per plant, number of pods per cluster, number of seeds per pod, 100 seed weight, seed yield, LI, and leaf area. The isogenic lines carrying different leaf types in each family were significantly different in most traits. Seed weight showed positive correlation with number of pods per cluster, number of seeds per pod, pod size, and seed yield but showed negative correlation with number of leaflets, branches, clusters and pods per plant. Leaf area positively correlated with yield and pod length while LI positively correlated with plant height. Leaflet size correlated to more traits than number of leaflets did. Small-multiple leaflet lines gave higher number of clusters, branches, and pods per plant, and the extinction coefficient but less pods per cluster, seeds per pod, pod size, seed weight, seed yield, leaf area, leaf area index and light interception than large-multiple leaflet ones. Considering number of leaflets in each size, nine-small multiple leaflet lines produced more superior traits than five-, seven- and eleven-leaflet lines. Among the large-multiple leaflet lines, there was no different in agronomic characters. Leaflet size was more important trait than leaflet number in relation to agronomical and physiological characters.

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