

Acting Sub Lt. Tanapat Sirisanyaluk, 2012: Path Analysis and Estimation of Gene Action on Some Agricultural Characteristics, Yield and Yield Components in Yard Long Bean. Master of Science (Agriculture), Major Field: Horticulture, Department of Horticulture. Thesis Advisor: Assistant Professor Pramote Saridnirun, Dr. Ing. 118 pages.

Some agricultural characteristics as yield and yield components of nine pure line yard long bean were analyzed using path analysis and genetic inheritance estimation. All cultivars were generated to be seven crosses that were P_1 , P_2 , F_1 , F_2 , (BC_1-F_2/P_1) and (BC_1-F_2/P_2) . The experiments were conducted in RCBD with 4 replications. Path analysis on yield showed positive direct effects from leaf area, stem length, peduncle length and flowering (0.342 1.371 0.762 and 0.077, respectively). Yield component characteristics presented in pod weight and pod per stem with positive effect which were 0.629 and 1.342. Total effects on all characteristics had positive indirect effect except the pod length (negative) which was indirect effects between the leaf area, peduncle length, stem length, flowering date, pod weight and pod per stem. Leaf area was positive correlations with leaves thickness (0.888), stem length (0.849), peduncle length (0.752) and flowering (0.872). Genetic analysis using backcross design, indicated that 1) agricultural characteristics including of leaves thickness, wide leaf, peduncle length and flowering and 2) yield and yield component pod length, pod weight, pod per peduncle and peduncle per stem were significant additive gene effects. The dominance gene effects significant were found on leaf area, stem length, distance of peduncle and yield per stem. The estimated narrow-sense heritability was high value in leaf area, leaves thickness, flowering date and yield per stem, moderate value in wide leaf, leaf length, peduncle length, distance of peduncle, peduncle per stem, pod length and pod per stem and low value in pod weight and pod per peduncle. The narrow sense heritability was different in each cross.

Student's signature

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