

Performance of Pedigree, Modified Bulk and Single Seed Descent Breeding Methods in F₄, F₅ and F₆ Generations in Cowpea (*Vigna unguiculata*(L). Walp) Improvement

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ABSTRACT: Effectiveness of different breeding methods in crop improvement is important to breeders. Effectiveness of three breeding methods namely pedigree, single seed descent and modified bulk, was compared by a trial conducted using two cowpea crosses CP 19 x Waruni and CP 20 x CP 22 at the Grain Legumes and Oil Crops Research and Development Center, Angunakolapellessa. The three breeding methods were started from the F₂ populations of two crosses during 2011 Yala, and F₃, F₄ and F₅ populations for each method were established during 2012/12 Maha, 2012 Yala and 2012/13 Maha, respectively. Ten best lines from each method were selected at F₅ generation and advanced to F₆ generation. The selected 30 lines from three breeding methods, two parents and three standard checks were tested in a Randomized Complete Block Design for each cross during 2013 Yala. Data were recorded on plant height at maturity, number of peduncles per plant, number of pods per plant, number of seeds per pod, average length of pod, hundred seed weight and yield per plant in F₄, F₅ and F₆ generations. Lines/method was found to be significant for all the characteristics studied at F₆ generation, except number of pods per plant and pod length in CP 19 x Waruni and seed per pod in CP 20 x Cp 22. Mean sum of squares of days to maturity in CP 19 x Waruni and seed per pod in both crosses were found to be significantly different among three breeding methods but for other characteristics, methods were found to be not significantly different. Pods per plant and hundred seed weight recorded attractive narrow sense heritability values and significant intergeneration correlations. Positive phenotypic correlations were recorded between seed yield and pods per plant in F₄, F₅ and F₆ generations. Accordingly, in cowpea improvement, comparable results could be obtained among pedigree, single seed descent and modified bulk methods. Also, indirect selection for higher number of pods per plant and hundred seed weight could increase seed yield.

Key words: Breeding methods, cowpea improvement, correlation, heritability

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