

Combined Breeding Strategies for Variability Evolution in Horse Gram (*Macrotyloma uniflorum* Lam. Verdc.)

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Horse gram (*Macrotyloma uniflorum* Lam. Verdc.) is known as the poor man's pulse crop of India and serves as ingredient in many traditional medicines. It is cultivated in marginal lands under rainfed situation for food and fodder. The yield of horsegram is reduced by its indeterminate growth habit and relatively long crop duration. Indeterminate growth produces green immature pods at harvest. Long duration exposes the crop to terminal drought at flowering/maturity phase. Therefore, this attempt was made to generate early maturing genotypes with determinate growth habit through classical breeding and combination of classical hybridization and induced mutagenesis. Two well adopted cultivars viz., PAIYUR 2 and CRIDA 1-18R, and two early maturing germplasm lines viz., PLS 6202 and PLS 6211, were used in generating genetic variation through classical and combined breeding approaches (*i.e.* classical + mutation breeding). Fifty percent of the true F_1 's were chemically mutated with 0.3 % EMS (Ethyl Methane Sulphonate). The F_1 's and F_1M_1 's were compared for yield attributing traits during *rabi* 2018. Of the two breeding methodologies employed, F_1M_1 's were found to be promising for yield related traits and earliness. Among the four F_1M_1 's, crosses involving the donor parent PLS 6211 were found to be hopeful for yield attributing traits as it had exhibited positive heterosis for earliness and yield. The mean values for single plant yield ranged from 19.58 g to 25.50 g and 18.45 g to 23.53 g in the F_1M_1 's involving donor parent PLS 6211. This yield patterns were significantly greater than the donor parent but lesser than the recipient parents (PAIYUR 2: 27.50 g; CRIDA 1-18 R: 24.27 g). Of the two breeding methodologies employed, combination of classical breeding and induced mutagenesis was found to be better for generating variability for duration and yield.

Keywords: Classical hybridization, Horsegram, Induced mutagenesis, Variability evolution