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Research paper

Estimation of Genetic Variability, Heritability, Genetic Advance and Correlation for Yield and Some Quantitative Traits in Irrigated Faba bean (*Vicia faba* L.) Genotypes in Northern Sudan

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ABSTRACT

Faba bean, a grain legume, is an important crop which provides rich protein nutrition for human and animal. The study was carried out at Merowe Research Station Farm, Sudan during the two winter seasons of 2016/17 and 2017/18. The objectives of this study were to estimate the genetic variability, heritability, genetic advance and correlation among some quantitative traits with seed yield in 14 Faba bean genotypes. Growth parameters investigated included days to 50% flowering, days to 90% maturity, plant height (cm), number of pods per plant, number of seeds per plant, number of seeds per pod, 100 – seed weight (g), seed yield per plant (g) and seed yield (kg ha^{-1}). Analysis of variance showed significant variation among the genotypes for all tested characters. The results indicated that the entries no. 2, 6, 4, 1 and 10 out – yielded the second check SM – L in seed yield, with average yield advantages amounting to 16.8, 14.6, 11.6, 5.9 and 4.2%, respectively. 100 – seed weight showed the highest genotypic and phenotypic variances (186.76 and 1063.09) whereas number of pods per plant showed the lowest ones (0.24 and 2.65). Also, the highest heritability was recorded on 100 – seed weight, days to 50% flowering, days to 90% maturity and number of seeds per pod, while the lowest was for number of pods per plant (9.05%). Genetic advance was higher for 100 – seed weight (11.80) and seed yield per plant (6.37). Therefore, this research suggests that 100-seed weight and number of seeds per pod can be good selection criteria for improving seed yield in Faba bean. Positive and highly significant correlation was observed for seed yield with seed yield per plant, number of pods per plant and number of seeds per pod. These characters could be used as selection criteria in Faba bean breeding program.

Keywords: Faba bean, characters, genetic variability, heritability, correlation, seed yield.