

Genetic Variability in Advanced Derivatives of Interspecific Hybrids in Brassica

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Abstract : The present study was conducted to estimate the genetic variability, heritability and genetic advance in six parental lines and their 56 genotypes derived from five introgressed brassica populations on the basis of morphological and biochemical traits. The experiment was laid out in a randomized complete block design with two replications at The University of Agriculture Peshawar-Pakistan during growing season of 2015-2016. The ANOVA of all traits of F5:6 populations showed highly significant differences ($P \leq 0.01$) for all morphological and biochemical traits. Among F5:6 populations, the genotype 2(526) was earlier in flowering (108.65 days), and genotype 14(485) was earlier in maturity (170 days). Tallest plants (182.5 cm), largest main raceme (91.5 cm) and maximum number of pods (80.5) on main raceme were recorded for genotype 17(34). Maximum primary branches plant⁻¹(6.2) and longest pods (10.26 cm) were recorded for genotype 15, while genotype 16(171) had more seeds pod⁻¹ (22) and gave maximum yield plant⁻¹ (30.22 g). The maximum 100-seed weight (0.60 g) was observed for genotype 10(506) while high protein content (22.61%) was recorded for genotype 4(99). Maximum oil content (54.08 %) and low linoleic acid (7.07 %) were produced by genotype (12(138) and low glucosinolate (59.01 μMg^{-1}) was recorded for genotype 21(113). The genotype 27(303) having high oleic acid content (51.73 %) and genotype 1(209) gave low erucic acid (35.97 %). Among the F5:6 populations moderate to high heritability observed for all morphological and biochemical traits coupled with high genetic advance. Cluster analysis grouped the 56 F5:6 populations along their parental lines into seven different groups. Each group was different from the other group on the basis of morphological and biochemical traits. Moreover all the F5:6 populations showed sufficient variability. Genotypes 10(506) and 16(171) were superior for high seed yield⁻¹, 100-seeds weight, and seed pod⁻¹ and are recommended for future breeding program.

Keywords : Brassicaceae, biochemical characterization, introgression, morphological characterization

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