

## CHARACTERIZATION OF FIFTEEN ADVANCED LINES OF *Brassica rapa*

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### Executive Summary

A field study was conducted to evaluate fifteen advanced populations of *Brassica rapa* to estimate the magnitude of variation, heritability, genetic advance, correlation, and direct and indirect effect of different yield and yield contributing characters on seed yield of *B. rapa*. The experiment was executed following Randomized Complete Block Design with three replications at Sher-e-Bangla Agricultural University, Dhaka-1207, from November 2018 to March 2019. The objectives were to characterize the morphological traits among the advanced lines of *Brassica rapa*, estimate correlation and path coefficient of different yield traits, compare advanced lines for short duration and yield contributing characters and to select the best promising lines for future use. Significant differences were exhibited among the existing genotypes for all traits used in this experiment. The phenotypic variance was higher than the genotypic variance for every character. The yield and yield contributing parameters such as days to first flowering, days to 50% flowering, days to maturity, root length, number of primary branches per plant, number of secondary branches per plant, length of siliqua, number of seeds per siliqua, thousand seed weight and seed yield per plant showed least phenotypic and genotypic variance except for plant height and number of siliquae per plant. Days to first flowering, days to 50% flowering, days to maturity, and length of siliqua showed the low genotypic, and phenotypic coefficient of variation and number of primary branches per plant and number secondary branches per plant revealed the highest phenotypic and genotypic coefficient of variation. High heritability with low genetic advance and genetic advance in percentage of mean were found with days to first flowering, days to 50% flowering, days to maturity, the number of primary branches per plant and number of secondary branches per plant while moderate heritability with high genetic advance and genetic advance in percentage of the mean were found in the number of siliquae per plant. However, the root length showed low heritability (15.86). Correlation coefficient analysis revealed that seed yield per plant had a significant positive association with days to maturity ( $r_g=0.540$ ,  $r_p=0.356$ ), plant height ( $r_g=0.517$ ,  $r_p=0.394$ ), number of siliquae per plant ( $r_g=0.395$ ,  $r_p=0.372$ ), length of siliqua ( $r_g=0.571$ ,  $r_p=0.558$ ), and thousand seed weight ( $r_g=0.823$ ,  $r_p=0.584$ ). Seed yield per plant had a direct positive impact on days to first flowering, days to maturity, plant height, root length, number of secondary branches per plant, number of seeds per siliqua and thousand seed weight. The finding of the study revealed that SAU 2 × BARI 6 (F<sub>7</sub>S<sub>4</sub>, Yellow), BARI 9 × BARI 6 (F<sub>7</sub>, Yellow) and SAU 1 × BARI 15 (F<sub>8</sub>, 75 days) was performed the best among the studied genotypes and selected as a potential candidate for releasing a new mustard variety in Bangladesh.

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