

Variability and character association analysis in Castor (*Ricinus communis* L.)

D.K. PATEL, Y. RAVINDRABABU AND D.B. PRAJAPATI

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SUMMARY

Ten castor inbred lines were evaluated for genetic diversity in respect of eleven characters during *Kharif*-2008. Analysis of variance revealed significant differences among genotypes for all the characters. High GCV, PCV, heritability and genetic advance as percentage of mean were observed for seed yield per plant (g), stem length, wilt incidence (%) and number of branches per plant. Moderate heritability coupled with low to moderate genetic advance recorded by number of capsule on primary spike and effective raceme length (cm). Days to 50% flowering was positive significantly correlated with days to 80% maturity and positive non significantly with oil content (%), wilt incidence (%) and stem length (cm), while negatively correlated with 100 seed weight and number of capsules on primary spike. 100 seed weight (g) and oil content (%) are negatively correlated. Number of branches per plant followed by effective raceme length (cm) and number of capsule on primary spike recorded highest positive direct effect on seed yield. Wilt incidence had a highest significant negative direct effect on seed yield.

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Castor is a important non-edible oilseed crop cultivated mainly for source of oil which has tremendous industrial use. The success of any crop improvement programme essentially depend upon the nature and presence of genetic magnitude of variability in the crop. The knowledge of nature and magnitude of genetic variability is of immense value to planning the efficient breeding programme to improve the yield potentiality of the genotype. The present investigation was carried out to collect information on variability, heritability and genetic advance in 10 inbred lines for eleven characters.

rows and 60cm. within the row. Five plants in each genotype were selected randomly for study and the data of all characters were recorded. Heritability in the broad sense was derived based on the formula given by Hanson *et al.* (1956). Genetic advance (GA) was obtained by the formula prescribed by Johnson *et al.* (1955). The method adopted by Burton (1953) was used to calculate phenotypic and genotypic coefficients of variation. The phenotypic and genotypic correlation coefficients were worked out by Al-Jibouri *et al.* (1958) and path coefficient analysis as suggested by Dewey and Lu (1959).

MATERIALS AND METHODS

The material comprised of 10 inbred lines selected from the germplasm for study. The experiment was conducted at Main Castor-Mustard Research Station, S.D.Agricultural University, Sardarkrushinagar (Gujarat) during *Kharif* 2008 in the Randomized Block Design with three replications. Each genotype was sown in one row with 6 m. length at a distance of 120 cm. between the

RESULTS AND DISCUSSION

The analysis of variance revealed significant differences among the genotypes for seed yield and its component characters indicating considerable amount of genetic variation in the material (Table 1). The phenotypic coefficient of variation (PCV) was greater than the genotypic coefficient of variation (GCV) for all the traits indicating the effect of environment on the expression of the traits (Table 2). The genotypes showed high GCV, PCV, heritability and genetic advance as percentage of mean for seed yield per plant (g), stem length and wilt incidence (%) indicating lesser influence of environment in the expression of these traits and prevalence of additive gene action for its inheritance, hence enable to simple selection. Similar results were reported by Bhatt and Reddy

Correspondence to:

D.K. PATEL, Main Castor-Mustard Research Station, S.D. Agricultural University, S.K. NAGAR (GUJARAT) INDIA

Authors' affiliations:

V. RAVINDRABABU AND D.B. PRAJAPATI, Main Castor-Mustard Research Station, S.D. Agricultural University, S.K. NAGAR (GUJARAT) INDIA