

Genetic variability in radish

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ABSTRACT

Highly significant differences were observed along the 24 diverse radish genotypes for different characters. The highest genotypic coefficient of variation as well as phenotypic coefficient of variation was observed for fresh weight of leaves. Almost all the character exhibited high heritability recorded (31.42 to 99.58%). Highest genetic advance was also observed for the characters diameter of root. However, it ranged from 3.04 to 91.12 % for all the characters.

Key words : Variability, Heritability, Expected genetic advance, Radish

Radish (*Raphanus sativus* L.) is popular root vegetable crop suitable for both tropical and temperate climate. Also, roots are rich source of Vitamin C (ascorbic acid), calcium, phosphorus and minerals. However, the selection indices for production breeding of this crop are not yet perfected and the available information is meagre and inadequate. Genetic variability plays an important role in a crop in selecting the best genotypes for making rapid improvement in yield and other desirable characters as well as to select the potential parent of hybridization programmes. Heritability is an index for calculating the relative influence of environment of expression of genotypes. It become very difficult to judge how much of the variability is heritable and how much is non-heritable. Therefore, the present investigation was carried out to study the genetic variability for quantitative traits in radish.

MATERIALS AND METHODS

The experiment was conducted at farm of College of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during winter season 2007-08 with twenty-four genotypes of radish. Experiment was laid out in Randomized Block Design (RBD) with three replications. Radish seeds were sown at a distance of 45 cm apart in row and maintaining a distance of 10 cm between plants. All the recommended cultural practices were followed under irrigated conditions. The observations were recorded on five randomly selected plants per replication for each genotype on seventeen important characters.

The analysis of variance were carried out as suggested by Panse and Sukhateme (1954). Phenotypic

and genotypic coefficients of variation were obtained by the method suggested by Burton (1952). Heritability in broad sense and expected genetic advance were estimated as per formulae described by Johnson *et al.* (1955).

RESULTS AND DISCUSSION

The extent of variability present in the radish genotypes was measured in terms of range, mean, phenotypic coefficient of variation (PCV), genotypic coefficient of variation (GCV), heritability (broad sense) and expected genetic advance as per cent of mean (Table 2).

All the genotypes differed significantly with respect to different characters studied. A wide range of variation was observed in all the characters. A range of variation was observed in plant height from 25.97 (Hill queen) to 36.98 cm (IC-144463), number of leaves per plant at harvest ranged from 11.66 (IC-144494) to 19.53 (EXL-11), leaf area from 108.18 (Hill queen) to 153.31 cm² (EC-117074), fresh weight of leaves 93.71 (IC-144489) to 245.82 g (IC-144477), per cent dry weight of leaves 5.52 (IC-144458) to 12.34 per cent (IC-144477), root length ranged from 11.44 (IC-144463) to 27.43 cm (EXL-11), root diameter varied from 2.80 (EX-11) to 4.34 cm (IC-143946), root yield per plant from 55.85 (IC-144458) to 130.22 g (Japanese white), per cent dry weight of root ranged from 4.03 (EXL-11) to 8.18 per cent (IC-144459), leaves root ratio ranged from 1.40 (Hill queen) to 2.65 (IC-144477), per cent forked root from 7.02 per cent (Pusa Chetaki) to 22.68 per cent (IC-144456), chlorophyll content to leaves ranged from 2.78 (IC-144490) to 3.06 mg/g (S-55), ascorbic acid content root ranged from 15.30