



Genetic variability in carrot (*Daucus carrota* L.)

Y.P. JAIN, V.N. DOD, P.K. NAGARE AND V.S. KALE

See end of the article for authors' affiliations

Correspondence to :

V.N. DOD

Department of Horticulture,
Dr. Panjabrao Deshmukh
Krishi Vidyapeeth, AKOLA
(M.S.) INDIA

ABSTRACT

Highly significant difference were observed along the 20 diverse genotype for different character. The highest genotypic coefficient of variation as well as phenotypic coefficient of variation was observed for root weight. Almost all the characters exhibited high heritability recorded (60.77 to 94.80 %). Highest range for genetic advance was also observed form 2.41 to 66.50 % for all the characters.

Jain, Y.P., Dod, V.N., Nagare, P.K. and Kale, V.S. (2010). Genetic variability in carrot (*Daucus carrota* L.), *Asian J. Hort.*, 5 (2) : 514-516.

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

Carrot (*Daucus carrota* L.) is popular root vegetable crop suitable for tropical and temperate climate. Carrot is rich source of α and β carotene. Carrot is highly cross pollinated crop due to protandry nature of flower. Genetic variability plays an important role in a crop in selecting the best genotypes for making rapid improvement in yield and other desirable character 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 carrot.

MATERIALS AND METHODS

The present investigation was undertaken to estimate variability in twenty carrot genotype during *Rabi* 2008-09 at college of Horticulture Experimental farm, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. The experiment was laid out in Randomized Block Design with three replications. Inter and intra spacing were 45×10 cm. Observation were recorded on fresh root weight, root length, root diameter, flesh thickness of root, core diameter leaves root ratio coefficient of variation was calculated according to the method of Burton (1952). Heritability in broad sense and genetic advance at 5 % selection intensity ($k = 2.06$), were calculated as suggested by Lush (1949). The method described by

Johnson *et. al.* (1959). was used to calculated the genetic gain.

RESULTS AND DISCUSSION

The extent of variability present in the carrot 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.

Analysis of variance showed significant differences among all the characters. Mean range and coefficient of variation in general revealed wide variation for almost all the characters (Table 1). High range was obtained for all the character under study. The range for genotypic coefficient of variation was 1.50 to 30.19 per cent. It was maximum for the character root weight (30.19%) followed by root length (17.51%), core diameter (17.45%), root diameter (14.80%), chlorophyll content of leave (13.73%), flesh thickness of root (11.16%), leaf area (10.75%), root yield per hectare (10.47%), total plant weight (9.73%), leaves root ratio (7.73%), fresh weight of leaves (6.90%), days required to harvest (1.50%).

Range for phenotypic coefficient of variation was 1.92 to 32.52 per cent. It was maximum for the character root weight (32.52%) followed by root length (24.96%), core diameter (22.13%), root diameter (17.19%), chlorophyll content of leave (15.89%), flesh thickness of root (13.39%), root yield per hectare (12.32%), total plant weight (11.25%), leaf area (11.90%), leaves root ratio