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## Study of genetic variability, heritability and genetic advance for yield and its components in Spine gourd (*Momordica dioica* Roxb.)

**RK Yadav****Abstract**

Thirty female clones of spine gourd were evaluated to estimate the variability, heritability and genetic advance in Augmented Design with two replications. The phenotypic coefficient of variation was higher than phenotypic coefficient of variation for all traits. High heritability coupled with high genetic advance as percentage of mean were observed for days to last fruit harvest, internode length, fruit yield per plant and days to first fruit harvest indicating that these traits were under the additive gene control and simple selection can be used for further improvement in these traits of spine gourd.

**Keywords:** Clones, variability, heritability, genetic advance, spine gourd, germplasm lines

**Introduction**

Spine gourd also known as teasle gourd, kankoda, kheksi, meetha karela, kantola and kakrola, is an underutilized, perennial, dioecious, cucurbitaceous fruit vegetable. It is widely cultivated in Odisha, Maharashtra, Bihar, West Bengal and Chhattisgarh. It possesses several medicinal and curative properties like decoction of leaves reduces fever, tuberous roots help in relieving headache, stone formation, migraine and green fruit is quite helpful in controlling blood sugar level and blood pressure. AS a crop, spine gourd has a number of problems including low yield, large number of hard seeds, low rate of rhizome production, low germination rate, seed and rhizome dormancy and unpredictable sex ratio in seedling progeny Ali *et al* (1991) <sup>[1]</sup>. Improvement in any crop depends upon the genetic variability coupled with high genetic advance are more useful for selection of desirable genotypes. Hence, an attempt was made to estimate variability, heritability and genetic advance in germplasm lines of spine gourd.

**Materials and Methods**

Thirty germplasm collections of spine gourd from different parts of Chhattisgarh state were grown during 2015 in Augmented Design with two replications. The plot size was 2 m. x 2 m. consisting of five plants. Recommended package of practices were followed to raise the crop. Observations on five plants randomly selected were recorded for the traits listed in Table 1. The mean data were subjected to statistical analysis of variance (Panse, 1957) <sup>[7]</sup>, coefficient of variation (Burton, 1952) <sup>[2]</sup>, heritability (Lush, 1949) <sup>[5]</sup> and genetic advance as percentage of mean (Johnson *et al.*, 1955) <sup>[4]</sup>, respectively.

**Results and Discussion**

The phenotypic coefficient of variation (PCV) was in higher magnitude than the corresponding genotypic coefficient of variation (GCV) for all traits indicating presence of wide range of variability (Table 1). The heritability estimates in broad sense were high (86.2 -99.2%) for majority of traits studied. The results are in partial agreement with those reported by Burton (1952) <sup>[2]</sup> and Hayes *et al.*, (1955) <sup>[3]</sup>. Though high heritability indicates the effectiveness of selection on the basis of phenotypic performance, it does not show any indication the amount of genetic progress for selecting the best individuals. Days to last fruit harvest, inter node length, fruit yield per plant and days to first fruit harvest showed high heritability coupled with high genetic advance as percentage of mean indicating that these traits were under the additive gene control and simple selection can be used for further improvement in these traits in spine gourd.

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These results was contrary for days to last fruit harvest, inter node length and days to first fruit harvest except fruit yield per plant with the findings of Prabhakar (2014) [6].

**Table 1:** Genetic variability, heritability and genetic advance for quantitative traits in spine gourd.

Traits	Mean	GCV%	PCV%	H 2 (bs) %	G.A. as percentage of mean
Fruit length(mm)	40.2	16.9	17.5	96.5	20.3
Fruit width(mm)	35.4	11.0	12.2	90.1	18.0
No. of fruits per plant	66	67.3	68.3	98.5	25.2
Inter node length (cm)	6.8	11.3	22.3	50.6	71.4
No. of branches per plant	4.0	48.4	56.1	86.2	33.1
Days to first flower initiation	30.7	23.3	23.7	98.0	32.0
Days to first fruit harvest	60.8	12.2	12.6	96.8	40.9
Days to last fruit harvest	110	16.56	16.7	99.1	75.5
Fruit yield per plant	250.7	41.1	41.4	99.2	52.4

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