

Variability Analysis of Underutilized Nutritive Vegetable Kartoli: Indian collection

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Abstract: Experiment was conducted to screen the *Momordica diacia* Roxb (kartoli) germplasm lines for high yield and fruit characters. Exploration and collection of kartoli germplasm was done from main growing areas of country. Total of twenty four diverse germplasm of vegetable was grown in randomized block design with three replications during 2002. The widest range was recorded for fruit length, while narrowest range was observed for days to female flower anthesis. The characters like days to female flower anthesis, fruit set to edible maturity, plant height, fruit diameter, fruit length, number of fruits/plant and yield/plant expressed maximum variability at phenotypic and genotypic level. Estimates of genetic advance were high for yield/plant and number of branches/plant. The germplasm DR/05-08-02 with maximum yield was considered as a promising line, whereas DR/NKV-02-06-01 for smaller fruit size.

Horticultural crops are gaining importance throughout the world not only as food or economic crops but also for their importance as raw material for value-added products and industrial uses. Minor cucurbitaceous vegetables are very nutritious with high vitamins and minerals matter. The specific medicinal and curative properties are very well appreciated. Kartoli is one of the important members of the family cucurbitaceae(1). This priced vegetable is available in Northeastern states, UP, Bihar, Maharashtra, MP, Kerala, WB and Andman Island of the country (3). The delicious young tender fruits are used as vegetables. Spine gourd (*Momordica dioica* Roxb) is protein rich vegetable. The pots of female and male plants in a ratio of 9:1 provide 8-

100 fruits (2). The cost of fruits varies from Rs 10 to 20 per kg for culinary purpose. Nutritional value of Kartoli per 100 gm edible part : moisture 84.1 %, protein 3.1 gm, fat 1.0 gm, fibre 3.0 gm, carbohydrate 7.7 gm, calcium 33 mg, phosphorus 42 mg, iron 4-6 mg, carotein 162 mg, thiomine 0.05 mg, riboflavin 0.18 mg and niacin 0.06 mg etc. Fruits are used in ulcers, piles, sores and obstruction of liver and spleen. It possesses several medicinal properties and is said to be good for those suffering from cough, bile and other digestive problems. The unripe fruits work as appetizer astringent in barrels. The seeds are used for chest problems and simulate urinary discharge.

Material and Methods: Spine gourd shows a wide range of genetic diversity in shape and size of the leaf, fruit shape and colour. However, a good spine gourd should have medium sized fruits (10-15 g), dark green in colour, tough and false spines, and quick edible maturity 30-35 days after flowering, resistant to epilachana beetle, fruit borer and good yield(4). The present investigation was carried out to measure the extent of variability, expected genetic advance, etc among 24 diverse genotypes of Kartoli in randomized block design with three replications at research farm of IIVR Varanasi. Observations were recorded on reproductive and vegetative viz number of days to female flower anthesis, flowerer to fruit set fruit set to maturity, flower to seed maturity, number of branches per plant, plant height, fruit diameter, individual fruit weight, number of seeds/fruit, number of fruits/plant, fruit length, fruit colour, skin surface of fruit etc. Except the fruit colour and fruit skin surface, the mean data were analysed statistically.

Results and Discussion: The widest range was recorded for fruit length, while narrowest range was observed for days to female flower anthesis. The characters like days to female flower anthesis, fruit set to edible maturity, plant height, fruit diameter, fruit length, number of fruits/plant and yield/plant expressed maximum variability at phenotypic and genotypic level. Estimates of genetic advance were high for yield/plant and number of branches/plant. The medium gain was found for plant height, number of fruits/plant. The remaining characters were of low advance.

Kartoli are under utilized vegetable with high nutritional, medicinal and economic values. Its immature tender green fruits are consumed as vegetable, young leaves, flowers and seeds are also edible. The genetic improvement for higher yield could be achieved through clear understanding of

the type and amount of variability present in genetic stocks. Knowledge of genetic diversity allows the breeder to select the suitable genetic base and use them in breeding programme.

Literature cited

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Table 1: Variability in characters for evaluated genotypes

	Days to female flower anthesis	Fruit set to edible maturity	Flowers to seed maturity	Fruit Diameter (cm)	Fruit length (cm)	No of fruit per plant	Individual fruit weight(gm)
Average	34.86	19.2	29.9	3.00	5.72	61.62	13.64
Phenotypic variability	8.46	10.08	6.74	12.43	17.19	22.73	7.26
Genotypic variability	7.18	6.15	3.81	4.25	1.86	22.1	4.38
Genetic advance	4.37	1.49	1.29	0.09	0.02	27.29	0.74
Genetic advance as % of mean	12.54	7.76	4.31	3.00	0.35	44.29	5.43

Table 2: Variability in evaluated Genotypes of spine gourd

Character	Range	
Early plant vigour	Poor	Good
Plant growth	Short viny	Long viny
Flower colour	Light yellow	Yellow
Fruit shape	Spindle	Tapering
Fruit surface	Light tubercle	Deep tubercle
Blossom end fruit shape	Acute	Blunt
Fruit skin colour	Light green	Green