Genetic variablity in ginger (*Zingiber officinale* Rosc.)

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Abstract

The coefficient of variation, heritability and expected genetic advance for 18 important horticultural traits was estimated in 26 accessions of ginger (*Zingiber officinale*) at Raigarh District, Madhya Pradesh. The genotypic coefficient of variation was high for length and weight of secondary rhizome, weight of primary rhizome, number of secondary and primary rhizomes and rhizome yield per plant. High heritability coupled with high genetic advance as percentage of mean was observed for plant height, leaf length, suckers per plant, number of mother and secondary rhizomes, weight of primary rhizome and rhizome yield per plant indicating that desirable improvement in these traits can be brought about through straight selection.

Key words : ginger, variability, *Zingiber officinale*.

Ginger (*Zingiber officinale* Rosc.) is an imporant rhizomatous spice grown in many parts of Madhya Pradesh. This paper reports the results of studies undertaken to estimate variablity, heritability and genetic advance for important horticultural traits to improve rhizome yield and other traits in ginger.

Twenty six collections of ginger were grown during June 1997 in a Randomised Block Design with two replications at Regional Agricultural Research Station, Boirdadar, Raigarh, Madhya Pradesh. The plot size was 1.5 m x 0.5 m consisting of five rows of two plants each spaced 30 cm x 25 cm apart. Recommended package of practices were followed to raise the crop. Observations on three randomly selected plants were recorded

for the characters listed in Table 1. The mean, heritability, coefficient of variation and expected genetic advance were calculated by standard methods.

The phenotypic coefficient of variation (PCV) was in higher magnitude than the corresponding genotypic coefficient of variation (GCV) for length and weight of secondary rhizome, weight of primary rhizome, number of secondary and primary rhizomes and rhizome yield per plant indicating presence of wide range of variablity for these traits. Medium heritability (broad sense) was observed for length of primary and secondary rhizomes suggesting that selection would be more meaningful if genetic advance is also taken into consideration

Table 1. Genetic parameters for yield and its components in ginger

Character	Mean	Variance			GCV	PCV	Heritability (B) (%)	GA as % of mean
		Genotypic	Phenotypic	Environ-mental				
Days to maturity	241.9	3.2	12.3	9.1	0.7	1.4	26.2	0.8
Plant height	42.7	161.0	171.8	10.8	29.7	30.7	93.7	59.2
Leaves / clump	14.7	13.7	33.1	19.4	25.0	38.9	41.2	33.1
Leaf length	13.7	17.3	21.2	4.0	30.3	33.7	90.1	62.5
Suckers / plant	3.4	2.3	2.8	0.5	44.3	48.8	82.3	82.8
No. of mother rhizomes	3.4	2.3	2.8	0.5	44.3	48.8	82.3	82.4
Length of mother rhizome	3.2	0.1	0.8	0.7	10.8	27.7	15.2	8.7
Thickness of mother rhizome	2.4	0.2	0.3	0.1	22.1	24.6	19.9	10.1
Weight of mother rhizome	38.7	666.8	673.8	6.4	66.5	66.8	99.0	91.2
No. of primary rhizomes	8.4	34.4	37.2	2.7	71.9	71.9	92.4	137.1
Length of primary rhizome	3.3	1.0	1.6	0.5	31.3	49.4	65.6	51.9
Thickness of primary rhizome	2.4	0.3	0.3	0.1	23.3	25.7	81.4	43.3
Weight of primary rhizome	60.2	2913.2	2919.1	5.8	89.5	89.6	99.7	184.2
No. of secondary rhizomes	12.5	91.6	95.2	3.6	76.2	77.7	96.2	154.0
Length of secondary rhizome	1.6	2.5	4.1	1.6	99.4	127.1	61.1	160.1
Thickness of secondary rhizome	1.6	0.2	0.3	0.1	32.3	38.2	71.5	56.3
Weight of secondary rhizome	32.4	985.5	1002.2	16.7	96.7	97.5	98.3	197.6
Rhizome yield / plant	129.2	8485.7	8628.1	143.3	71.2	71.8	98.3	145.6

GCV = Genotypic coefficient of variation

PCV = Phenotypic coefficient of variation

GA = Genetic Advance

simultaneously. High heratiblity coupled with high genetic advance was exhibited for plant height, leaf length, number of primary and secondary rhixomes, weight of primary rhixome and rhizome yield per plant indicating the desirable improvement in these traits can be brought about through straight selection. High heritability coupled with high genetic advance for rhizome yield per plant in ginger was also reported by Maity *et al.* (1989) and Pandey & Dobhal (1993).

References

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