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**Evaluation of genetic parameters and varietal
performance of ginger (*Zingiber officinale* Rosc.)
under Ranchi condition**

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Abstract

A field experiment on ginger (*Zingiber officinale* Rosc.) was conducted at Ranchi agriculture college, Birsra Agricultural University, Ranchi during kharif 2017 to study and evaluate the vegetative growth parameters and yield and yield attributing parameters conducted in RBD with three replications. There were nine varieties namely V1 (Suruchi), V2 (Mahima), V3 (Vardhwan), V4 (Mizoram local), V5 (Suprabha), V6 (GCP-5), V7 (Himgiri), V8 (Ranchi local), V9 (Nadia (check)). Among nine varieties of ginger evaluated maximum plant height (34.8cm) and rhizome yield per hectare (tonnes) 16.9t/ha was recorded in variety Mahima.

Keywords: Ginger, *Zingiber officinale* Rosc. evaluation, yield

Introduction

Ginger is one of the most important and ancient spice crops in India (Vastrad *et al.*, 2006) [7]. It belongs to family Zingiberaceae. It is a tropical and sub-tropical perennial herb with underground stem called rhizomes. It is native of South East Asia. India is largest producer of this important Spice in the World. Ginger plays important role in earning foreign exchange for the country.

Ginger is mainly grown in India. China, Taiwan, Sierra Leone, Nigeria, Fiji, Mauritius, Indonesia, Brazil, Costa Rica and Thailand. An annual production of 6.55 L tonnes in an area of about 1.33 L hectares in India. Contributing approximately 65% of world production. Ginger production share among the spices in India is 11.89 % (NHB Database 2015-2016).

Ginger grows in warm and humid climatic areas and is cultivated from sea level to an altitude of 1500 m above sea level. Ginger can be grown both under rainfed and irrigated conditions. A friable loamy soil rich in humus is ideal for ginger cultivation. Ginger is vegetatively propagated crop and the hybridization is practiced rarely in areas where flowering occurs. The scope of improvement depends upon the magnitude of genetic variability present in available germplasm. Greater the variability in the available germplasm better would the chances of selecting superior genotypes. (Simmonds. 1962) [6]. Wide genetic variability exists in this crop improvement through selection of superior types with high yield. So, there is great need of screening ginger germplasm to select elite genotypes with higher yield and improved quality for direct selection.

Material and Methods

A field experiment was conducted to evaluate the genetic parameters and varietal performance of ginger (*Zingiber officinale* Rosc.) under Ranchi condition and was carried out during Kharif 2017-2018 in experimental farm of Department of Horticulture. Birsra Agricultural University, Ranchi. Planting was done in month of June and rhizomes were harvested in month of March. Nine genotypes *viz.* V1 (Suruchi), V2 (Mahima), V3 (Vardhwan), V4 (Mizoram local), V5 (Suprabha), V6 (GCP-5), V7 (Himgiri), V8 (Ranchi local), V9 (Nadia (check)). Experiment was laid out in a Randomized Block Design with three replication.

Result and Discussion

The data on growth parameters showed significant variation among genotypes (Table 1). The plant height varied from 20.5- 34.8cm. Maximum plant height was recorded in Mahima (34.8cm) and 4 genotypes viz. Ranchi local (33.4cm), Suruchi (32cm), Nadia (31.9cm) and Vardhwan (31.8cm) was statistically at par with Mahima. The results of present findings are in line with those reported by Mohanty *et al.* (1990) [2], Rajyalakshmi and Umajyoti (2002).

All the yield contributing characters varied significantly among the ginger genotypes (Table 2).

Fresh rhizome yield per hectare ranged from 9.94t/ha-16.9t/ha. Maximum yield per hectare was observed in Mahima (16.9 t). Which differed significantly from all other genotypes, whereas. Minimum was recorded in Mizoram local (9.94 t). Three genotypes were found significantly higher in yield per hectare than the check cultivar Nadia (14.36 t). Jyotsana *et al.* reported highest rhizome yield in Bhaisey (20.46t/ha) under Imphal condition. Sasikumar *et al.* reported highest fresh rhizome yield in Mahima (23.20t/ha) followed by Rejatha (22.40 t/ha) while lowest was reported in Manipur local (20.46 t/ha).

Table 1: Evaluation of different genotypes of ginger related to plant height (Cm)

Variety	plant ht.(cm)
Ranchi local	33.4
Nadia (check)	31.9
Suruchi	32
Mahima	34.8
Vardhwan	31.8
Suprabha	25.80
GCP-5	26.50
Himgiri	23.60
Mizoram local	20.50
SE(m)±	1.73
CV	10.37
CD (5%)	5.19

Table 2: Mean Performance of Ginger Genotypes for Rhizome Yield

Variety	Yield per hectare(t) PLOT (Kg)
Ranchi Local	15.6
Suruchi	15.02
Mahima	16.9
Vardhwan	13.03
Suprabha	13.01
GCP-5	11.50
Himgiri	11.10
Mizoram Local	9.94
Nadia (check)	14.36
Mean	13.38
SE(m)±	4.26
CD (5%)	0.64

Conclusion

From the present investigation it is inferred that plant height is a major trait affecting yield potential in ginger. Thus, plant height was recorded maximum in genotype Mahima (34.8cm). While, for rhizome yield per hectare (Tonnes) genotype Mahima (16.9t/ha) was superior over all other genotypes evaluated including check Nadia (14.36t/ha) Hence, genotype Mahima was found most suitable for cultivation under Ranchi condition.

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