

Variability, Heritability and Genetic Advance in Sesame



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Abstract

Sesame is one important oil crop of India, it also grown at Chhatarpur district in kharif crop. Sesame oil is oily stable compared to other edible oil due to having antioxidant property, sesaminal, sesaminol with high level saturated fatty acid, which has a reducing effect on the plasma, cholesterol.

In the present work eight diverse genotypic characters estimated by R.B.D. replication Variability, Heritability and Genetic advance have been shown by using 14 characters Days to 50% flowering, Days to maturates, plant height, number of branches/plant, number of fruiting nodes, number of capsule on main stem, number of capsule on branches, number of seed/capsule, capsule length, 1000 seed weight, oil content, seed yield and oil yield have been done.

Keywords: Sesame, Heritability, Genetic advance.

Introduction

Sesame is one of the important oil seed crop in India. Sesame contains about 50% seed oil which is of superior quality nearly mothering olive oil. Sesame oil is oily stable compared to other edible oil mainly due to present of antioxidants like sesame, sesaminol, sesaminol this oil also content high level of saturated fatty acid, which has a reducing effect on the plasma, cholesterol. The major function of heritability is to provide information on transmission of traits from the parent to the progeny. Such estimate facilities the evaluation of the genetic and environmental effect, there by adding in selection estimate of heritability can be use to predict genetic advance under selection, so that the breeder can't anticipate from different types and intensities of selection. Information of estimates of heritability and genetic advance on seed yield and other traits in sesame is very limited.

Aim of the Study

1. To identify the gene action activity of sesamum.
2. Indicum L by single cross and reciprocal on eight species of sesamum.
3. Indicum L (TKG 22, JTS 8, TKG 306, RT 54, JLT 7, GT 2, N 32, RT 125).

Material and Methods

The object of this work was to estimates the parameter for several important characters in eight diverse genotype of sesame. The eight genotype where grown in a R.B.D with replication, each plot consisted of single row of four meter long space 30 cm apart, with a plant to plant distance of 10 cm. Observation where recorded on 10 plant from each replication, the variance and the coefficient of variance where estimated according to Burton 1952, the heritability and the genetic advance where estimated following Lush 1952 and Johnson et al 1955 respectively.

Result and Discussion

The analysis revealed the significant differences among the genotype for all the character study the high genotypic and phenotypic coefficients of variation for number of capsule on main stem, oil yield, number of capsule on branches, number of fruiting node/plant and seed yield/plant, High heritability were recorded number of fruiting nodes/plant, oil content, number of capsule on branches, number of capsule on main stem and seed yield. High genetic advance was recorded number of fruiting nodes/plant, number of capsule on branches, number of capsule on main stem, number of capsule/plant, on the other hand number of capsule on branches/plant /1000 seed weight, oil yield and seed yield had low value of genetic advance. High heritability associate high genetic advance was observed for number of capsule on branches, number of fruiting node/plant, number of capsule on main stem suggesting the presents of additive gene action in the expression of these characters high heritability with medium genetic advance was observed for plant

height number of seed/capsule, day's to 50% flowering and day's to maturity. Low heritability with low genetic advance was observed for number of branches/plant, capsule length, oil yield its means that characters are governed by non additive gene action. The highest G.C.V. number of capsule on main stem, number of capsule on branches and number of fruiting nodes/plant suggesting the possibility of improvement through simple selection.

Conclusion

During study period it is to be shown the gene action of *sesamum indicum* L by single cross and reciprocal method the result revealed Day's to maturity and number of seed/capsule was more than to exhibited over dominance two suggesting preponderance of dominant gene with the number if effective factor showing dominance as measured by the ratio h^2/H_2 where nearing unit for day to 50% flowering, morphological characters can be charged by environmental and nutritional factors.

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Table - 1
Estimates of Genetic Parameters for Seed Yield and Its Component in Sesame

	σ_g^2	σ^2P	G.V.C	P.V.C.	Heritability	G.A.
Days to 50% flowering	7.452	8.868	6.215	6.78	84.03	5.12
Days to maturity	20.505	22.736	5.262	5.541	90.187	8.815
Plant height(cm)	111.375	133.891	8.525	9.347	83.183	19.73
No. of branches/plant	0.012	0.298	4.549	13	4.026	0.045
No. of fruiting nodes/plant	509.135	521.606	57.161	57.857	97.609	45.69
No. of capsules on main stem	252.393	256.881	75.058	75.722	98.252	32.84
No. of capsules on branches	579.52	596.554	62.256	63.162	97.145	48.64
No.of capsules /plant	218.386	236.834	24.683	25.705	92.21	29.09
No of seeds capsule	32.164	37.643	8.6138	9.3186	85.44	10.74
Capsule length (cm)	0.0108	0.0345	4.1469	7.4118	31.304	0.119
1000 seed weight(g)	0.1234	0.1575	17.549	19.823	78.349	0.564
Oil content %	17.185	17.869	8.485	8.65	96.172	8.333
Seed yield /plant (g)	3.0595	3.33163	31.767	33.15	91.831	3.463
Oil yield /plant(g)	1.4057	5.8864	36.935	75.582	23.88	1.1877