IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)
e-ISSN: 2319-2380, p-ISSN: 2319-2372. Volume 8, Issue 7 Ver. III (July. 2015), PP 49-50
www.iosrjournals.org

Estimatation of Stability Parameter for Yield and Yield Contributing Characters in Sesame *(Sesamum indicum L.)*

R.D.Mali[1], S. V.Yamgar[2], M.R.Kharade[3] and M. K.Ghodake[4]
Department of Agricultural Botany, College of Agriculture, Latur-413512 Vasantrao Naik Marathwada Agricultural University, Parbhani-431 402 (M.S.)

Abstract: *Study of Genotype x Environment interaction of 30 genotype of sesame over one check JLT-8 were studied at Oil Seed Research Station Latur, The experimental material was evaluated in Randomized Block Design (R.B.D.) with 3 replications under different seasons during Summer 2013 , Kharif 2013, and Rabi 2013-2014. Stability analysis was carried out as per model of Eberhart and Russell (1966) for knowing causes of stability. The stability of 30 genotype of sesame for yield and yield components in sesame were significant for seeds yield per plant while number of capsule per plant, number of branches per plant also exhibit positive significantly association with seed yield per plant. Out of 30 genotype gt-02, rt-46 showed wide adaptability to all environments*

Keywords*: Sesame, stability, yield components, Genotype x Environment interaction.*

I. Introduction

Sesamum indicum L. (Syn. Sesamum orientale L.), which is known variously as sesamum, til, gingelly, simsim, gergelim etc. Sesame is a one of the World's oldest cultivated oilseed crop. Sesame is a self pollinated crop, which belongs to family pedaliaceae with having (2n = 26) chromosome number. It is cultivated in warm regions of the tropics and sub tropics.Sesame is better known as "Queen of oilseeds" by virtue of its quality edible oil and protein content. As it contains (44-63%) oil and (18-20%) protein. Sesame oil has long shelf life and rich in linoleic acid. Its protein is rich in sulphur containing amino acid (Methionine).Sesame is grown in India on an area of 17.06 Lakh hectare with a productivity of 332 kg / ha, which is far below than the world average of 389 kg / ha. It is widely cultivated in the states of Uttar Pradesh, Rajasthan, Orissa, Andhra Pradesh, Tamil Nadu, Karnataka, West Bengal, Bihar and Assam It is necessary to screen and identify phenotypically stable genotypes for yield which could perform more or less uniformly under different environmental conditions. It is an established fact that yield is complex character (Whitehouse et al.1958) and largely depend on its component character with an interaction with environment resulting into the ultimate product i.e. yield. So far breeding a stable variety it is necessary to get the information on the extent of Genotype x Environment interaction for yield and its component character. stability variance (Shukla, 1972), coefficient of determination (Pinthus, 1973), regression approach (Eberhart and Russell, 1966) etc. with suitable parameters are available to provide necessary criteria to rank varieties for stability. Eberhart and Russell's Model (1966) is the most popular.

.

II. Materials And Methods

The present investigation consist estimation the stability parameter for yield and yield components in Sesame (Sesamum indicum L.) over 30 varieties and one commercial check The experimental material was evaluated in Randomized Block Design (R.B.D.) with 3 replications under different seasons during Summer 2013 , Kharif 2013, and Rabi 2013-2014. at Oil Seed Research Station Latur, The sowing was carried out at the spacing of 30 cm and 10 cm between the rows and plants, respectively. The method of sowing followed was dibbling. One plant per hill was maintained by thinning 15 days after sowing. The recommended dose of fertilizer 30 kg N + 60 kg P_2O_5 + 30 kg K_2O per hectare was applied at time of sowing. All other cultural practices were undertaken to maintain healthy crop. Five plants were selected from each treatment randomly for recording observations were recorded on the characters vis. Days to 50 percent flowering, Days to maturity ,1000 Seed weight (g), Number of capsule / plant, Plant height(cm), Number of branches/plant, Length of capsule(cm), Number of seed/capsule, Oil content (%), Seed yield. Stability were carried out as per model of Eberhart and Russell (1966) for understanding stability Genotype X Environment. The analysis was carried out in computer using software WINDOSTAT

III. Results And Discussion

The experimental material consisted 30genotypes along with one checks viz. JLT-8 was evaluated during Summer 2013, Kharif 2013, and Rabi 2013-2014. The material was sown in Randomized Block Design with three replications. Observations were recorded on the characters vis. Days to 50 percent flowering, Days to maturity ,1000 Seed weight (g), Number of capsule / plant, Plant height(cm), Number of branches/plant, Length

of capsule(cm), Number of seed/capsule, Oil content (%), Seed yield. Stability were carried out as per model of Eberhart and Russell (1966) The studies on estimate of stability parameter revealed that none of the variety was stable for all characters, (Table -1 and Table-2) however the variety GT-02, GT-04, RT-46 for early 50 % flowering and GT-02, TKG-22, TMV-07 for days to maturity showed stable performance but identified as late variety, where the variety JLT-408 for number of branches per plant exhibit wider adaptability. The variety RT-46 observed with average stability was expected to perform better in all environments for 1000 seeds weight. The variety JLT-07, RT-46 observed with average stability and are expected to perform in all environments for number of capsule per plant. Regarding the most important character seed yield per plant the variety GT-02, RT-46 showed wide adaptability to all environments. The character association studies indicates that the improvement in componential character including days to 50% flowering , days to maturity, number of branches per plant and number of seeds per capsule through selection is expected to result improvement of seed yield per plant because association of this characters with seeds yield per plant were positive and highly significant while number of capsule per plant, number of branches per plant also exhibit positive significantly association with seed yield per plant.

Referances

[1]. Anuradha,T and Lakshmikanta Reddy,G.2005. Phenotypic stability of yield and yield attributes in sesame (Sesamum indicum L.). J .Oils .Res, 22(1):**25-28**.

[2]. D Kumar. 1988. Phenotypic stability for quantitative traits of sesame under rainfed conditions of arid environment. J. Oilseed Res. 5(1988) : **8-12**.

[3]. Jhansi rani, P.,P.V. Ramkumar (2013) Genetic parameters of yield and yield components pooled over environments in sesamum (sesamum indicum L.)Bio life 1(4):**231-234**

[4]. Kumaresan, D and Nadarajan,N 2010Genotype x environment interactions for seed yield and its components in sesame (Sesamum indicum L.). Electronic Journal of Plant Breeding, 1(4): **1126-1132 (July 2010).**

[5]. Velu, G. and Shunmugavalli, N. 2005. Genetic variation and genotypes x environment interaction in sesame (Sesamum indicum L.). J. Oils. Res. 22 (1): **178-179.**

Table 1: Analysis of variance for stability in sesame genotypes.

Sr. No	Source of variation	DF	Days to 50% flowering	Days to maturity	Plant height	No. of branches Per plant	Capsule length	No. of capsule per plant	No. of Seed per capsule	Oil contain	1000 Seed weight	Seed Yield per plant
					Mean sum	of squares						
1	Genotype	30	2.423**	7.017**	304.8**	0.129**	0.109**	284.9**	52.30**	14.47**	0.591**	19.41**
2	Environment+ (Genotype x Environment)	62	26.94**	22.63**	9.778**	0.040	0.005	5.148**	1.632	2.755**	0.006	2.220**
3	Environment (linear)	01	1641**	1304**	470.4**	0.371**	0.093**	66.76**	60.77**	14.58**	0.220**	94.62**
4	Genotype x Environment (linear)	30	0.436	0.709*	2.235	0.014	0.007	4.963**	0.599	3.875**	0.007	0.692*
5	Pooled deviation	31	0.500*	2.526**	2.217	0.055**	0.0008	3.339	0.723	1.289**	-0.001	0.719**
6	Pooled error	180	0.313	0.465	3.377	0.029	0.010	2.477	2.015	0.559	0.009	0.216

** Significant at 1% level

* Significant at 5% level

Table 2: Pooled analysis of variance for ten characters over seasons.

Sr. No.	Source of variation	dF	Days to 50% flowering	Days to maturity	Plant height(cm)	No. of branches / plant	No. of Capsules/ plant	Capsule Length (cm)	No. of Seeds / capsule	1000 Seed Weight(gm)	Oil Content (%)	Seed Yield /plant(gm)
			Mean sum of squares									
1.	Genotype	30	2.42390**	7.01721**	304.892**	0.12997**	284.915**	0.10948**	52.302**	0.591**	14.474**	19.41**
2.	Environment	2	820.9413**	652.006**	235.248**	0.18585**	33.381**	0.04688*	30.388**	0.110**	7.2946**	47.31**
3.	Genotype x Environment	60	0.47726*	1.66028**	2.26334	0.03579	4.2070**	0.00410	0.6734	0.00332	2.6037**	0.717**
4.	Pooled error	180	0.31326	0.46523	3.37774	0.029988	2.4776	0.01041	2.01573	0.00882	0.55910	0.21600

** Significant at 1% level

* Significant at 5% level