International Journal of Chemical Studies

P-ISSN: 2349–8528
E-ISSN: 2321–4902
www.chemijournal.com
IJCS 2021; 9(2): 742-746

Received: 15-01-2021
Accepted: 18-02-2021

Shelar AS
Department of Agricultural Botany MPKV, Rahuri, Maharashtra, India

Nanjan BR
Department of Agricultural Botany MPKV, Rahuri, Maharashtra, India

Totre AS
Department of Agricultural Botany MPKV, Rahuri, Maharashtra, India

Corresponding Author:
Shelar AS
Department of Agricultural Botany MPKV, Rahuri, Maharashtra, India

Stability analysis of sesame genotypes in *kharif* season

Shelar AS, Nanjan BR and Totre AS

DOI: https://doi.org/10.22271/chemi.2021.v9.i2k.11906

Abstract
The experimental material was evaluated in Randomized Block Design (R.B.D.) with three replications under three different sowing dates at Post Graduate Institute Research Farm, MPKV Rahuri. The 16 Promising genotypes of sesame were obtained from Oil Seed Research Station, Jalgaon. Including check variety JLT-408 and PT-1 were sown in three different Sowing Dates *viz.,* 16 June 2019, 1 July 2019 and 16 July 2019 in *Kharif* 2019. The observations were recorded on ten characters *viz.,* Days to 50 per cent flowering, Days to maturity, Plant height at maturity, Number of branches per plant, Number of capsules per plant, Number of seeds per capsule, Length of capsule, 1000 seed weight, Seed yield per plant and Oil content. It is revealed that an environment E_1 *i.e.,* sowing of sesamum in 3rd week of June was found most favourable for expression of most of the characters including seed yield. Linear and non-linear component of G x E interactions were found significant for all the characters under study. The genotypes under study showed differential stability performance for all the characters. Considering the mean yield performance, the genotype KMR-24 found suitable to grow under rich environment *i.e.,* 3rd week of June (E_1) and none of the other genotype were found suitable to grow under poor environment *i.e.,* 3rd week of July (E_3). The genotypes AT-255, JLS-07-05, RT-215, PT-1 and JLT-408 shows average stable performance for most of the characters.

Keywords: Stability, *Kharif,* sesamum

Introduction
Sesamum indicum L. (Syn. *Sesamum orientale* L.), which is known variously as sesamum, til, gingelly, simsim, gergelim etc. Sesame is one of the world's oldest cultivated oilseed crop. North Indian plains, Burma and Abyssinia including Somalia and Eritrea are the basic centers of origin with central Asia as yet another center of origin of sesame.
Sesame is a self-pollinated crop which belongs to family pedaliaceae 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. It contains 44-63% oil and 18-20% protein. Sesame oil has long shelf life and rich in linoleic acid. Agriculture is one of the most vulnerable sectors to anticipate climate change. Agriculture in India is extremely diverse in the range of crop grown. The predicted change in climate and their associated impacts are all likely to affect substantially the potential of agriculture. There is variation on adaptic and environmental conditions. Therefore, genotypes those are stable under fluctuating temperature and varied climatic conditions are desirable. Climate change phenomenon now-a-day has forced farmers to adjust or change the sowing time of the crops and sesamum is not an exception. To harvest the economic yield in changing environments, suitable genotypes are enable to such environments is the need of the day
Specific varieties can be suggested for specific environments so as to overcome failure of the crop. Therefore it is necessary to identify the genotype which response to different environments like sowing time or climate change, fertilizer doses etc., and should show stability and high yield potential. The phenotypic performance of a genotype differs in different environments, seasons and locations. The G X E interaction has assumed greater importance in plant breeding, as they affect stability of varieties under diverse environments Suvarna *et al.*, (2011).
It is an established fact that yield is complex character and largely depend on its component characters with an interaction with environment resulting into the ultimate product *i.e.,* yield.

So for 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. The phenotypic performance of a genotype differs in different environments, seasons and locations. The G x E interaction has assumed greater importance in plant breeding, as they affect stability of varieties under diverse environments.

Material and Methods

The experimental material was evaluated in Randomized Block Design (R.B.D.) with three replications under three different sowing dates at Post Graduate Institute Research Farm, MPKV, Rahuri. The 16 Promising genotypes of sesame were obtained from Oil Seed Research Station, Jalgaon. Including check variety JLT-408 and PT-1 were sown in three different Sowing Dates *viz.*, 16 June 2019, 1 July 2019 and 16 July 2019 in *Kharif* 2019. The sowing was carried out at the spacing of 30 cm and 15 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 observations were recorded on ten characters *viz.*, Days to 50 per cent flowering, Days to maturity, Plant height at maturity, Number of branches per plant, Number of capsules per plant, Number of seeds per capsule, Length of capsule, 1000 seed weight, Seed yield per plant and Oil content. The collected data was subjected for testing the genotypic differences (Panse and Sukhatme, 1967) [10]. Stability analysis was performed as per Eberhart and Russell (1966) [3] by considering three stability parameters to describe the performance of genotypes over different environments.

Results and Discussion

Analysis of variance for stability revealed significant differences among genotypes in individual as well as pooled environments for seed yield (Table 1). This indicated that the genotypes differed for seed yield. From, pooled analysis of variance, it was seen that environment effect was highly significant indicating the differential effect of each environment. The G x E interaction was also significant for seed yield, indicating the differential response of the genotypes for different environments and the relative merits of different genotypes changed with environments. Similar finding was recorded by Bhandarkar *et al.*, (2010) [1], Kumaresan *et al*., (2010) [6], Mekonnen *et al.*, (2009) [8], Mali *et al.*, (2015) [7] also observed significant differences among the genotypes, environments and G x E interaction for all the characters studied in sesamum. Mean performance of different genotypes over three environments indicated that the genotype EC-370840 was the earliest for days to 50% flowering (41.00 days) and genotype KMR-42-1 was the earliest for days to maturity (81.36 days). The genotype KMR-42-1 was the promising for plant height (104.69 cm) and the genotype KMR-24 recorded maximum number of branches (4.50), genotype RT-215 for number of capsules per plant (59.02), genotype KMR-24 recorded maximum length of capsule (4.13 cm) and genotype JLS-08-2 for highest oil content (52.62%).The genotype RT-215 produced maximum number of seeds per capsule (64.22) and genotype KMR-24 recorded highest 1000-seed weight (3.06 g).The genotype KMR-24 was good for seed yield per plant (10.93 g) (Table 2).

The stability parameters for yield and yield components are presented in (Table 3). The model used was Eberhart and Russell (1966) [3]. This model assumes that the G x E interaction is predominantly linear in function of the environmental mean. They defined both linear and non linear function of the G x E interaction in which G x E sum of squares is partitioned into (i) linear components of environment (ii) linear components of G x E interaction and (iii) deviation from regression. Eberhart and Russell (1966) [3] described an ideal variety as one which showed high yield over wide range of environments, a regression coefficient (bi) around unity and deviation from regression coefficient around zero. Accordingly, the genotypes were categorized as follows, if the regression coefficient (bi) around unity and the mean square deviation (S2d) does not significantly deviate from zero, the variety is said to be stable. If the regression coefficient (bi) is around zero and the variety said to be 'average stable' If the regression coefficient is significantly more than unit (b>1) and the mean square deviation (s2d) does not significantly deviate from zero, the genotypes could be considered as 'below average stable' and such varieties will perform well only in favourable/rich environments. The varieties with low regression coefficient (bi) mean square deviation (S2d) does not significantly deviate from zero are 'above average stable' and are adapted specifically to poor/unfavourable environments. In the present investigation, there was presence of significance for linearity for environment. This implies that the assumption for the differences among the linear response to environment is valid. However, the pooled deviation from regression was also significant when tested against the pooled error, there by indicating the presence of non-linearity for seed yield.

The environment E_1 (3rd week of June) was favourable for most of the characters under study (except days to 50% and days to maturity) *viz.*, branches per plant, capsules per plant, length of capsule, seeds per capsule, 1000-seed weight, seed yield per plant and oil content. Environment E_2 (1st week of July) was favourable for the characters *viz*., days to maturity, plant height, branches per plant, capsules per plant seed yield per plant, and oil content. Environment E_3 (3rd week of July) was unfavourable for most of the characters (except days to 50% flowering and days to maturity). In general environment E_1 (3rd week of June) was the most favourable for seed yield and yield contributing characters.

The genotypes RT-215, RSS-106, IS-196, AT-222, EC-370840 and PT-1 recorded average stability for days to 50% flowering. The genotype KMR-42, KMR-42-1, AT-222, KMR-24, JLS-05-03 and PT-1 exhibited average stability for days to maturity. The genotype IS-196, AT-255, KMR-42-1, JLSG-905 and JLT-408 exhibited average stability for plant height and genotype RT-215, RSS-106, EC-370840, JLS-08-2, JLS-07-05 and JLT-408 for branches per plant. The genotypes AT-255, AT-222, KMR-24, JLS-05-03, PT-1 and JLT-408 were recorded average stability for length of capsule (Table 3).

Table 1: ANOVA for stability as per Eberhart and Russell Model (1966) [3] in Sesamum

S. No.	Sources	G	E	E + G x E	G x E	E (L)	G x E (L)	P.D. (Pooled deviation)	P.E. (Pooled error)
1	Days to 50% flowering	$2.88^{++*\#\#}$	$41.37^{++**\#\#}$	$3.50^{++**\#\#}$	$0.98^{\#\#}$	$82.74^{**\#\#}$	$0.88^{\#\#}$	$1.01^{\#\#}$	0.344
2	Days to maturity	$10.42^{++**\#\#}$	$63.75^{++**\#\#}$	$4.61^{++**\#\#}$	$0.67^{\#\#}$	$127.50^{**\#\#}$	$1.01*^{\#\#}$	$0.31^{\#\#}$	0.402
3	Plant height at maturity (cm)	$50.05^{++**\#\#}$	$629.87^{++**\#\#}$	$49.49^{++**\#\#}$	$10.79^{\#\#}$	$1259.74^{**\#\#}$	$8.869^{\#\#}$	$11.93^{\#\#}$	1.799
4	Number of branches per plant	$0.23^{++**\#\#}$	$0.890.23^{++**\#\#}$	$0.09^{++**\#\#}$	$0.03^{\#\#}$	$1.79^{**\#\#}$	$0.04^{\#\#}$	$0.02^{\#\#}$	0.011
5	Number of capsules per plant	$75.42^{++**\#\#}$	$195.25^{++**\#\#}$	$17.77^{++**\#\#}$	$5.93^{\#\#}$	$390.51^{**\#\#}$	$3.42^{\#\#}$	$7.92^{\#\#}$	1.492
6	Number of seed per capsule	$21.64^{++**\#\#}$	$290.79^{++**\#\#}$	$21.97^{++**\#\#}$	$4.05^{\#\#}$	$581.58^{**\#\#}$	$5.60^{\#\#}$	$2.33^{\#\#}$	0.763
7	Length of capsule (cm)	$0.03^{++\#\#}$	$1.11^{++**\#\#}$	$0.08^{++**\#\#}$	$0.01^{\#\#}$	$2.21^{**\#\#}$	$0.01^{\#\#}$	$0.02^{\#\#}$	0.007
8	1000 seed weight (g)	$0.09^{++**\#\#}$	$0.43^{++**\#\#}$	$0.04^{++**\#\#}$	$0.01^{\#\#}$	$0.85^{**\#\#}$	$0.02^{\#\#}$	$0.01^{\#\#}$	0.003
9	Seed yield per plant (g)	$3.15^{++**\#\#}$	$15.86^{++**\#\#}$	$1.17^{++**\#\#}$	$0.19^{\#\#}$	$31.72^{**\#\#}$	$0.27^{\#\#}$	$0.10^{\#\#}$	0.033
10	Oil content (%)	$21.32^{++**\#\#}$	$3.50^{++**\#\#}$	$0.46^{++**\#\#}$	$0.26^{\#\#}$	$6.99^{**\#\#}$	$0.21^{\#\#}$	$0.29^{\#\#}$	0.03

+, ++ : Significant at 5 and 1% level of significance, respectively against G x E

*, ** : Significant at 5 and 1% level of significance, respectively against the pooled deviation (PD)

#, ## : Significant at 5 and 1% level of significance, respectively against the pooled error (PE)

Table 2: Mean performance of ten characters in sesamum over the three different sowing dates

S. No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height at maturity (cm)	Number of branches per plant	Number of capsules per plant	Number of seed per capsule	Length of capsule (cm)	1000 seed weight (g)	Seed yield per plant (g)	Oil content (%)
1	RT-215	42.57	86.44	97.98	4.22	59.02	64.22	3.87	2.87	9.89	48.81
2	KMR-42	44.10	84.80	102.45	4.24	57.94	63.49	3.87	2.86	10.14	47.13
3	RSS-106	41.97	84.02	95.71	4.14	47.66	58.57	3.87	2.62	8.02	47.61
4	IS-196	42.71	87.60	99.72	3.74	43.93	57.03	3.89	2.52	8.32	44.74
5	AT-255	42.95	85.46	100.47	3.52	55.58	61.22	3.98	2.71	9.20	43.83
6	KMR- 42-1	42.65	81.36	104.69	3.66	45.93	58.29	3.87	2.59	8.14	46.66
7	AT-222	41.95	84.98	96.18	3.84	50.96	58.20	4.00	2.93	9.70	45.19
8	KMR-24	43.22	83.49	91.60	4.50	57.76	61.29	4.13	3.06	10.93	49.51
9	EC-370840	41.00	87.07	92.04	4.36	46.60	57.21	3.91	2.81	8.11	51.73
10	JLS-05-03	43.55	82.46	98.98	4.10	51.69	57.57	3.96	2.92	8.93	43.42
11	JLS-08-2	44.02	82.65	96.69	4.26	48.56	56.91	4.07	2.59	8.18	52.62
12	JLS-07-05	41.80	85.60	102.72	4.08	52.10	59.91	3.82	3.03	8.96	45.40
13	JLSG-06-17	42.40	87.64	96.79	3.89	46.21	55.23	4.04	2.79	7.63	47.96
14	JLSG-905	44.06	86.18	102.40	4.00	47.59	56.67	3.73	2.82	7.54	44.89
15	PT-1	41.93	84.86	104.25	4.30	55.58	61.01	4.02	2.93	9.51	48.30
16	JLT-408	44.30	86.25	103.18	4.33	56.69	62.62	4.04	3.03	10.24	48.72
	Mean	42.89	85.05	99.10	4.07	51.48	59.34	3.94	2.82	8.96	47.28
	S.E.±	0.50	0.28	1.70	0.07	1.41	0.76	0.07	0.07	0.16	0.27
	CD at 5%	1.45	0.80	4.90	0.20	4.06	2.20	0.19	0.19	0.45	0.78

Table 3: Estimates of stability parameters for seed yield per plant (g) and its contributing characters

S. No.	Genotypes	Days to 50% flowering			Days to maturity			Plant height at maturity (cm)		
		1			2			3		
		$\bar{X}$	bi	S^2di	$\bar{X}$	bi	S^2di	$\bar{X}$	bi	S^2di
1.	RT-215	42.58	0.47	-0.32	86.44	1.09	-0.41	97.98	1.67	6.43*
2.	KMR-42	44.11	0.69	1.43*	84.80	0.56	-0.41	102.44	1.32	7.11*
3.	RSS-106	41.98	0.60	0.53	84.02	0.81	1.96**	95.71	0.27	30.65**
4.	IS-196	42.72	1.24	-0.20	87.60	0.38	-0.40	99.72	1.07	-0.12
5.	AT-255	42.96	1.74	2.84**	85.47	0.87	-0.31	100.47	1.19	0.27
6.	KMR-42-1	42.66	1.80	1.56*	81.36	1.10	-0.15	104.69	1.09	2.73
7.	AT-222	41.96	1.20	-0.25	84.98	1.18	-0.11	96.18	1.08	7.93*
8.	KMR-24	43.22	1.14	2.25**	83.49	0.88	-0.24	91.60	0.59	79.39**
9.	EC-370840	41.00	1.18	-0.27	87.07	0.52	-0.26	92.04	0.67	22.18**
10.	JLS-05-03	43.56	0.73	2.55**	82.47	1.10	-0.36	98.98	0.89	-1.31
11.	JLS-08-2	44.02	0.93	0.00	82.64	1.83*	-0.27	96.69	0.75	7.05*
12.	JLS-07-05	41.80	1.40*	-0.27	85.60	1.20	-0.10	102.72	1.26*	-1.74
13.	JLSG-06-17	42.40	0.46	-0.17	87.64	1.07	-0.17	96.79	0.87	3.67
14.	JLSG-905	44.07	0.90	0.42	86.18	1.29	0.38	102.40	1.04	-1.64
15.	PT-1	41.93	0.65	0.68	84.87	0.80	-0.27	104.24	1.32*	5.93*
16.	JLT-408	44.30	0.89	0.20	86.24	1.32*	-0.39	103.18	0.91	4.43
17.	Mean	42.83			85.05			99.11		
18.	S.E.D±	0.71	0.44		0.39	0.20		0.10	0.43	
19.	RT-215	42.58	0.47	-0.32	86.44	1.09	-0.41	97.98	1.67	6.43*
20.	KMR-42	44.11	0.69	1.43*	84.80	0.56	-0.41	102.44	1.32	7.11*

Note: * Significant at 5% level of significance, ** Significant at 1% level of significance.

Contid…

S. No.	Genotypes	No. of branches per plant			No. of capsules per plant			No. of seed per capsule		
		4			5			6		
		X̄	bi	S^2di	X̄	bi	S^2di	X̄	bi	S^2di
1.	RT-215	4.22	0.78	-0.01	59.02	1.36**	-1.46	64.22	1.26	1.08
2.	KMR-42	4.24	1.62**	-0.01	57.94	1.41**	-1.26	63.49	1.25*	-0.41
3.	RSS-106	4.14	0.35	0.02	47.66	0.79	16.79**	58.57	0.60	6.35**
4.	IS-196	3.74	2.11	0.04*	43.93	0.92	4.43*	57.03	0.40	0.67
5.	AT-255	3.52	1.41	0.00	55.58	1.12	-0.36	61.22	0.97	-0.30
6.	KMR-42-1	3.66	1.69**	-0.01	45.93	0.78	8.21*	58.29	0.57	1.33
7.	AT-222	3.84	1.20	-0.01	50.96	0.20*	-1.46	58.20	1.00	0.48
8.	KMR-24	4.50	0.14	0.05*	57.76	0.99	0.51	61.29	1.78**	-0.66
9.	EC-370840	4.36	1.48	0.02	46.60	1.37	15.61**	57.21	0.88	7.18**
10.	JLS-05-03	4.10	0.85	0.05*	51.69	0.99	1.27	57.57	0.94	-0.71
11.	JLS-08-2	4.26	0.99	-0.01	48.56	1.42	0.75	56.91	0.67	1.37
12.	JLS-07-05	4.08	1.27	-0.01	52.10	1.22**	-1.40	59.91	1.22**	-0.74
13.	JLSG-06-17	3.89	-0.21	0.00	46.21	0.79	0.27	55.23	0.67	6.81**
14.	JLSG-905	4.00	0.85*	-0.01	47.59	0.26	61.42**	56.67	0.83	3.96*
15.	PT-1	4.30	0.84	0.05*	55.58	1.06	-0.21	61.01	1.26	-0.27
16.	JLT-408	4.33	0.63	-0.01	56.69	1.31	-0.05	62.62	1.69	-0.72
17.	Mean	4.07			51.49			59.34		
18.	S.E.D±	1.99	0.57		0.09	0.36		0.06	0.40	
19.	RT-215	4.22	0.78	-0.01	59.02	1.36**	-1.46	64.22	1.26	1.08
20.	KMR-42	4.24	1.62**	-0.01	57.94	1.41**	-1.26	63.49	1.25*	-0.41
	RT-215	4.14	0.35	0.02	59.02	1.36**	-1.46	64.22	1.26	1.08

Note: * Significant at 5% level of significance, ** Significant at 1% level of significance.

Contid…

S. No.	Genotypes	Length of capsule (cm)			1000 seed weight (g)			Seed yield per plant (g)		
		4			5			6		
		X̄	bi	S^2di	X̄	bi	S^2di	X̄	bi	S^2di
1.	RT-215	3.87	1.40*	0.00	2.87	1.34**	0.00	3.87	1.40*	0.00
2.	KMR-42	3.87	1.43	0.04*	2.86	1.81	0.01	3.87	1.43	0.04*
3.	RSS-106	3.87	1.13	0.00	2.62	0.49	0.03**	3.87	1.13	0.00
4.	IS-196	3.89	0.78	0.00	2.52	0.89	0.03**	3.89	0.78	0.00
5.	AT-255	3.98	1.02	-0.01	2.71	0.40	0.00	3.98	1.02	-0.01
6.	KMR-42-1	3.87	0.87	0.00	2.59	0.35	0.02*	3.87	0.87	0.00
7.	AT-222	4.00	1.15	0.00	2.93	1.37	0.01	4.00	1.15	0.00
8.	KMR-24	4.13	0.90	0.00	3.06	1.55**	0.00	4.13	0.90	0.00
9.	EC-370840	3.91	1.11	0.04*	2.81	1.65**	0.00	3.91	1.11	0.04*
10.	JLS-05-03	3.96	1.03	0.00	2.92	1.93**	0.00	3.96	1.03	0.00
11.	JLS-08-2	4.07	0.51*	-0.01	2.59	0.88	0.01	4.07	0.51*	-0.01
12.	JLS-07-05	3.82	1.12	0.02	3.03	0.61	0.00	3.82	1.12	0.02
13.	JLSG-06-17	4.04	0.54	0.04*	2.79	1.06	0.00	4.04	0.54	0.04*
14.	JLSG-905	3.73	1.24	0.03*	2.82	0.42	0.00	3.73	1.24	0.03*
15.	PT-1	4.02	0.87	0.02	2.93	0.49	0.00	4.02	0.87	0.02
16.	JLT-408	4.04	0.91	0.01	3.03	0.78	0.01	4.04	0.91	0.01
17.	Mean	3.94			2.82			3.94		
18.	S.E.D±	1.08	0.25		0.22	0.22		1.08	0.25	
19.	RT-215	3.87	1.40*	0.00	2.87	1.34**	0.00	3.87	1.40*	0.00
20.	KMR-42	3.87	1.43	0.04*	2.86	1.81	0.01	3.87	1.43	0.04*

Note: * Significant at 5% level of significance, ** Significant at 1% level of significance.

Contid…

S. No.	Genotypes	Oil content (%)		
		10		
		X̄	bi	S^2di
1.	RT-215	48.81	1.61**	-0.03
2.	KMR-42	47.13	0.22	-0.02
3.	RSS-106	47.61	2.05	0.12*
4.	IS-196	44.74	0.24	0.07
5.	AT-255	43.83	1.23	-0.02
6.	KMR-42-1	46.66	0.70	0.08
7.	AT-222	45.19	0.96	-0.02
8.	KMR-24	49.51	1.88	0.23**
9.	EC-370840	51.73	1.15	0.04
10.	JLS-05-03	43.42	1.05**	-0.03

11.	JLS-08-2	52.62	0.05	3.55**
12.	JLS-07-05	45.40	-0.08	-0.01
13.	JLSG-06-17	47.96	0.74	0.14*
14.	JLSG-905	44.89	0.74	0.14*
15.	PT-1	48.30	2.17	-0.02
16.	JLT-408	48.72	1.32	-0.03
17.	Mean	47.28		
18.	S.E.D±	0.67	0.17	
19.	RT-215	48.81	1.61**	-0.03
20.	KMR-42	47.13	0.22	-0.02

Note: * Significant at 5% level of significance, ** Significant at 1% level of significance.

The genotypes RT-215, AT-255, PT-1 and JLT-408 showed average stability for seeds per capsule. The genotypes RT-215, AT-255, AT-222, JLS-07-05, PT-1 and JLT-408 recorded average stability for seed yield per plant. The genotypes EC-370840, PT-1 and JLT-408 showed average stability for oil content.

Above average stability was observed for genotype JLSG-905 for branches per plant; AT-222 for capsule per plant and JLS-08-2 for length of capsule indicating their suitability for poor or stress environments.

Below average stability was observed for JLS-07-05 for days to 50% flowering; JLS-08-2 and JLT-408 for days to maturity; KMR-42 and KMR-42-1 for branches per plant; RT-215, KMR-42 and JLS-07-05 for capsules per plant; RT-215 for length of capsule; KMR-24 and KMR-42-1 for seed yield per plant and RT-215 and JLS-05-03 for oil content indicating their suitability for rich or favourable environments. None of the genotype was found stable for all the characters under study. Similar finding was recorded by Boureima Seyni *et al.* (2017) [2], Manal Hefny *et al.* (2017) [9], Fiseha Baraki *et al.* (2018) [4], Fiseha Baraki *et al.* (2019) [5].

Conclusions

It is revealed that an environment E_1 *i.e.*, sowing of sesamum in 3rd week of June was found most favourable for expression of most of the characters including grain yield. Linear and non-linear component of G x E interactions were found significant for all the characters under study. None of the genotype was found average stable for all the characters. Above average stability exhibited by genotype JLS-08-2 for length of capsule. The genotypes under study showed differential stability performance for all the characters. Considering the mean yield performance, the genotype KMR-24 found suitable to grow under rich environment *i.e.*, 3rd week of June (E_1) and none of the other genotype were found suitable to grow under poor environment *i.e.*, 3rd week of July (E_3). The genotypes AT-255, JLS-07-05, RT-215, PT-1 and JLT-408 shows average stable performance for most of the characters.

Acknowledgement

The Authors are sincerely grateful to Department of Agriculture Botany and Oil Seed Research Station, Jalgaon., Mahatma Phule Krushi Vidyapeeth Rahuri, for providing necessary facilities for complete research work.

References

1. Bhandarkar S, Kumar S. Stability analysis in sesame (*Sesamum indicum* L.) genotype under rain fed situation of Bastar plateau zone of Chhattisgarh. Journal of Oilseed Research 2010;27(2):128-129.
2. Boureima Seyni, Yaou Abdoua, Lawali Sitou. Seed yield stability and analysis of genotype x environment interaction of sesame genotypes in central south of Niger. Journal of Animal & Plant Sciences 2017;34(3):5535-5547.
3. Eberhart SA, Russell WS. Stability parameters for comparing varieties. Crop Science 1966;6:36-40.
4. Fiseha Baraki, Gebrelibanos Gebremariam. Genotype × Environment interaction and stability of oil content of sesame (*Sesamum indicum* L.) Genotypes in northern ethiopia. J. Plant Breed. Genet 2018;6(02):57-65.
5. Fiseha Baraki, Yemane Tsehaye, Fetien Abay. Grain Yield Performance and Stability Analysis of Sesame (*Sesamum indicum* L.) Genotypes in Western Tigray, Ethiopia. Journal of Experimental Agriculture International 2019;29(6):1-9.
6. Kumaresan D, Nadarajan N. Genotype x environment interactions for seed yield and its components in sesame (*Sesamum indicum L.*). Electronic Journal of Plant Breeding 2010;1(4):1126-1132.
7. Mali RD, Yamgar SV, Kharade MR, Ghodake MK. Estimation of stability parameter for yield and yield contributing characters in Sesame (*Sesamum indicum* L.). IOSR Journal of Agriculture and Veterinary Science 2015;8(7):49-50.
8. Mekonnen Z, Mohammed H. Study on genotype x environment interaction of yield in sesame (*Sesamum indicum* L.). Journal of phytology 2009;1(4):199-205.
9. Manal Hefny, Shawky Megahed, Fawzy Ismail, Shrehan Mehana. Application of multivariate analysis to study genotype x environment interaction in sesame (*Sesamum indicum* L.) under stress condition. Indian Journal of Agricultural Sciences 2017;8(12):1640-44.
10. Panse VG, Sukhatme PG. Statistical methods for agricultural workers ICAR, New Delhi 1967;2:359.
11. Suvarna MH, Manjunath SD, Nehru, Manjunath A. 2011. Stability analysis of sesame varieties during early kharif. Indian J. Agric. Res 1967;45(3):244-248.