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Stability analysis of yield and quality contributing characters in muskmelon (*Cucumis melo* L.)

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ABSTRACT

Fifty genotypes of muskmelon (*Cucumis melo* L.) were evaluated for stability with respect to yield /ha, fruit length, fruit diameter, flesh thickness, F:C ratio, fruit shape index and total soluble solids in three consecutive environments. The mean sum of squares due to genotypes, when tested against G x E and pooled deviation were highly significant for all the traits studied. Environmental variances, when tested against G x E were also highly significant for all the traits indicating genetic variability among the genotypes and environments were effective in influencing the performance of the genotypes except F:C ratio. The mean sum of squares due to G x E interaction, when tested against pooled deviation was highly significant for all the attributes. However, G x E (L) effects were found to be highly significant for all the attributes indicated that major components of differences in stability was due to both linear and non linear components and the performance can be predicted over the environments except F:C ratio and fruit shape index. The non-linear components (pooled deviation) were found to be significant for all the characters except flesh thickness. Based on the environmental indices, the environment E_3 was most favourable for all the characters under studied except F:C ratio. Considering the stability parameters of individual genotypes, it is revealed that the genotypes DVRM-2 and IAM Mono-1-1 had regression coefficient bi $\cong$1 with non-significant deviation from regression (S^2di) displayed wider stability for almost all the traits except fruit shape index and these genotypes can be utilized in further breeding improvement programmes.

Key words : Muskmelon, Genotype x Environment, Stability, Yield and quality characters.

In India, muskmelon (*Cucumis melo* L.) is one of the most important desert cucurbits grown extensively both in the garden land as well as riverbeds-an indigenously developed cucurbits growing system. Precise knowledge of the nature and magnitude of genotype x environment interaction is very important in understanding the stability of different traits of a particular genotype, before it has recommended for commercial cultivation. The different sources of variation including genotype x environment interaction are of great importance to the plant breeders for deciding appropriate testing and selection procedure for planning an efficient plant-breeding programme.

The ultimate aim of plant breeder is to evolve cultivars of high yield potential with consistent performance over diverse environments. Compared with most of the vegetables crops, muskmelons are extremely susceptible to environmental variation and genotype x environment interaction may be responsible for lack of widely adapted cultivars (Timothy *et al*., 1980). The present study was, therefore, aimed to screen and isolate promising and potential genotypes of muskmelon (*Cucumis melo* L.) possessing stable performance over varying environmental conditions.

MATERIALS AND METHODS

The mean performance of fifty genotypes of muskmelon consisting of all India level germplasm collections and recommended varieties were evaluated in Randomized Block Design with three replications in three different environments *i.e.* early *kharif* (E_1- 4th April, 1999), *rabi* (E_2-18th November, 1999) and summer (E3-21st February, 2000) at Experimental Farm, Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri.

The plot size was kept at 2.00 x 4.20 m^2. The channels were prepared by keeping the distance of 2.00 m between the two channels. Seeds were directly sown on hills spaced at 60 cm. Seven hills/plants in each genotypes in each replication were maintained. After germination, two seedlings were retained at each hill and data were recorded on five plants in each genotype in each replication. All cultural practices recommended for this crop were adopted timely in all three environments/ growing seasons. Observations were recoded on yield/ ha, fruit length, fruit diameter, flesh thickness, F:C ratio, fruit shape index and total soluble solids. The data were analyzed to test the significance of genotype x environmental interactions and stability parameters, regression coefficient (bi) and deviation from regression (S^2di) were computed by the method suggested by Eberhart and Russel (1966).

RESULTS AND DISCUSSION

Analysis of variance:

The analysis of variance for stability representing the mean sum of squares due to different sources of variance presented in Table 1. Effects due to genotypes, when tested against G x E and pooled deviation, were highly significant for all the characters studied. Environmental variances, when tested against G x E, were also highly significant for all the traits except F:C ratio. This indicates that the presence of genetic variability among the genotypes and environments. G x E interaction, when tested against pooled error, was found to be highly significant for all the traits. Environmental (linear) effects and pooled deviation were highly significant for all the characters, except F:C ratio and flesh thickness, respectively. However, genotype x environment (linear) effects found significant for all the traits except F:C ratio and fruit shape index. This indicated that major component of differences in stability was due to both linear and non-linear components and the performance can be predicted over the environments (Kalloo *et al*., 1998). A stable variety is one, which should perform relatively better under adverse conditions and not so in favourable environments by Eberhart and Russel (1966). These results are conformity with the findings given by Timothy *et al*. (1980), Krishna Prasad *et al*. (1990), Rajput *et al*. (1994), Lal and Dhaliwal (1996), Varlakshmi and Reddy (1998), Krishna Prasad *et al*. (1999) and Krishna Prasad *et al*. (2000).

Environmental indices:

Estimates of environmental indices (Ij) given in Table 2 revealed that, E_3 was the most favourable environment for all the attributes except F:C ratio while E_1 and E_2 were unfavourable for almost all the characters studied.

Stability parameters:

The estimate of stability parameters for yield and quality contributing characters presented in Table 3 and 4. According to Eberhart and Russel (1966) model, stability judged by four criteria *i.e.* variety is general adaptable or stable if mean is high than population mean, bi ≅1 or non-significant and S^2di ≅0 (least or non-significant); variety is adaptable under poor environment or above average stability if mean is high, bi<1 and

Table 1 : Analysis of variance for stability parameters for yield and quality characters of muskmelon (*Cucumis melo* L.)

Source	D.F.	Yield/ha (q)	Fruit length (cm)	Fruit diameter (cm)	Flesh thickness (cm)	F:C ratio	Fruit shape index	T.S.S. (%)
Genotypes (G)	49	2169.59**++	14.75**++	7.18**++	0.45**++	0.057**++	0.164**++	5.88**++
Environments (E)	2	13.02**	89.93**	60.92**	3.20**	0.0026^{NS}	0.0027**	199.42**
G x E	98	369.39©©	0.75©©	0.43©©	0.007©©	0.0025©©	0.0016©©	1.03©©
E+ (G x E)	100	2959.88	2.54	1.64	0.07	0.0026	0.0016	5.00
Environments (L)	1	260571.30++	179.85++	121.86++	6.40++	0.0053^{NS}	0.0053	398.85++
G x E (L)	49	522.26++	1.38++	0.73++	0.01++	0.0021^{NS}	0.0015^{NS}	1.80++
Pooled deviation	50	196.52©©	0.12©©	0.11©©	0.0024^{NS}	0.0029©©	0.0016©©	0.26©©
Pooled error	294	57.56	0.12	0.09	0.0047	0.0017	0.0008	0.05

* and ** indicates significance of value at P=0.05 and 0.01, respectively, when tested against G x E.
\+ and ++ indicates significance of value at P=0.05 and 0.01, respectively, when tested against pooled deviation.
© and ©© indicates significance of value at P=0.05 and 0.01, respectively, when tested against pooled error.

Table 2 : Estimates of environmental index (Ij) for each characters of muskmelon (*Cucumis melo* L.) under different environments

Sr. No.	Characters	E_1	E_2	E_3
1.	Yield/ha (q/ha)	-1.960	-50.036	52.000
2.	Fruit length (cm)	-0.281	-1.177	1.460
3.	Fruit diameter (cm)	-0.174	-1.007	1.181
4.	Flesh thickness (cm)	-0.038	-0.231	0.270
5.	F:C ratio	0.008	-0.003	-0.006
6.	Fruit shape index	-0.009	0.003	0.006
7.	Total soluble solids (%)	-1.517	-0.744	2.263

significant and $S^2di \cong 0$ (least or non-significant); variety is adaptable under favourable environment or below average stability if mean is high, bi>1 and significant and $S^2di \cong 0$ (least or non-significant) and variety is unstable if mean is high or low, bi is significant or non-significant and S^2di is significant or $S^2di \neq 0$. In Finlay and Wilkinson's (1963) terminology, genotypes with high bi values have low stability and are specifically adapted to high yielding environments and conversely low bi values indicate a high stability and adaptation to low yielding environments.

Yield per hectare (q):

Eleven genotypes had significant S^2di values indicating their unstability for this character, while 13 genotypes showed significant regression coefficient (bi). Thirteen genotypes *viz*., Pusa Madhuras, Monoecious-3, Punjab Rasila, 84-2, DVRM-2, VRM 29-1, VRM43-6-1, IAM Mono-1-1, Kajri, 124-1, 138 (Gotya), VRM42-4-1A-1 and 124 were recorded maximum yield per hectare than population mean (82.23 q) with regression coefficient $bi \cong 1$ and non-significant S^2di values indicating their wider stability for this character. The genotypes, Hara Madhu and 140 (Kavit) had better performance than population mean with regression coefficient bi>1 and non-significant deviation from regression (S^2di) indicating their below average stability *i.e.* adaptable to favourable environments.

Fruit length:

Only two genotypes, notably 123-4 and 124-2 had significant S^2di values indicating it's unstability for this character. Twenty-eight genotypes exhibited significant regression coefficient.

Ten genotypes *viz.*, Hara Madhu, DVRM-2, VRM 29-1, VRM42-4-1A, IAM Mono-1-1, IAM82-11, IAM-2, 136, 137 and Durgapura Madhu expressed maximum fruit length with non-significant S^2di values and regression coefficient around unity indicating their stability for this trait. Genotype VRM43-6-1 had regression coefficient less than one with non-significant S^2di and higher mean performance indicating above average stability *i.e.* adaptable to poor environment. Genotypes 122-2, 122-4, 122-6, 124-1, 124-3, 138 (Gotya), 139, 140 (Kavit), VRM42-4-1A-1 and 124 had maximum fruit length with regression coefficient greater than one and non-significant S^2di values expressed below average stability *i.e.* adaptability to favourable environments.

Fruit diameter (cm):

Twenty genotypes showed significant regression coefficient while four genotypes (122-6, 123-4, 124-1 and VRM42-4-1A-1) were found to have significant deviation from regression indicating their unstability for this trait.

Thirteen genotypes *viz*., Pusa Madhuras, Monoecious-3, Hara Madhu, Punjab Rasila, 84-2, DVRM-2, VRM1-3⊕A, VRM42-4-1A, IAM Mono-1-1, IAM 1-24, Kajri, IAM-2 and 137 recorded maximum fruit diameter with regression coefficient $bi \cong 1$ and non-significant deviation from regression (S^2di) values indicating their wider stability. Genotypes 124-2, 138 (Gotya), 139 and 140 (Kavit) had significantly bi>1 with higher mean and non-significant S^2di indicating below average stability and suitability for favourable environments. However, VRM31-1-2, VRM43-6-1, IAM L-13, 85-14 CMM and IAM 85-5 recorded maximum fruit diameter with regression coefficient greater than one and non-significant S^2di values indicating their above average stability and suitability for poor environments.

Flesh thickness (cm):

Out of 50 genotypes, 25 genotypes had more flesh thickness than population mean (2.19 cm). Thirteen genotypes *viz*., Pusa Madhuras, Monoecious-3, Hara Madhu, DVRM-2, VRM31-1-2, VRM42-4-1A, VRM43-6-1, IAM Mono-1-1, IAM 1-24, IAM-15, IAM 85-5, 133 and 138 (Gotya) recorded maximum flesh thickness than population mean with regression coefficient $bi \cong 1$ and non-significant S^2di values indicating their wider adaptability. Genotypes IAM-2, 123-4, 124-2, 129, 139, 140 (Kavit) and VRM42-4-1A had high mean performance with regression coefficient greater than unity (bi>1) and non-significant S^2di indicating below average stability and suitability for favourable environments. Genotypes Punjab Rasila, 131, 132, 135 and 137 had more thickness than population mean with regression coefficient less than unity (bi<1) and non-significant deviation from regression indicating their above average stability *i.e.* adaptable to poor environments.

Flesh : cavity ratio:

Six genotypes had significant S^2di values indicating their unstability for this character. All the genotypes exhibited non-significant values of the linear components of G x E interaction except genotype 124-2. None of the genotypes was found below average as well as above average stability. Nineteen genotypes possessed higher F:C ratio than population mean with regression coefficient near to unity ($bi \cong 1$) and non-significant value of S^2di exhibited wider adaptability for this character.

Fruit shape index:

Six genotypes *viz.* DVRM-2, 122-4, 122-6, 123-3,

Table 3: Estimate of stability parameters for yield, fruit length, fruit diameter and flesh thickness of muskmelon (*Cucumis melo* L.)

Sr. No.	Acc. No. / Genotypes	Yield/ha (q)			Fruit length (cm)			Fruit diameter (cm)			Flesh thickness (cm)		
		Mean	bi	S^2di	Mean	bi	S^2di	Mean	bi	S^2di	Mean	bi	S^2di
1.	Pusa Madhuras	94.35	1.26	-43.26	10.26	0.49**	0.17	12.33	0.68	0.01	2.31	1.11	-0.004
2.	Monoecious 3 (M3)	104.88	1.38	60.49	11.96	0.77	0.02	13.43	1.02	-0.01	2.44	0.95	-0.004
3.	34	60.39	0.61	-41.25	9.15	0.50**	-0.04	10.47	0.50*	-0.06	1.55	0.64*	-0.004
4.	Punjab Sunehri	79.85	1.11	-47.53	10.00	0.52*	-0.02	9.46	0.49*	0.01	1.97	0.87	-0.002
5.	Hara Madhu	109.53	1.56**	192.68	12.62	0.87	0.02	11.03	0.67	0.20	2.41	0.83	-0.002
6.	Punjab Rasila	90.00	1.17	188.94	11.49	0.51**	0.10	10.99	0.59	0.03	2.32	0.66*	-0.005
7.	Lucknow Safeda	57.12	0.75	7.03	7.36	0.38**	-0.10	8.79	0.47*	-0.09	1.58	0.75	-0.003
8.	84-2	111.50	1.27	-17.66	10.62	0.63	0.08	10.82	1.16	0.17	2.10	0.94	-0.005
9.	DVRM-1	95.20	1.17	565.96**	7.86	0.37**	-0.12	9.18	0.71	-0.06	2.04	0.88	-0.004
10.	DVRM-2	112.34	1.26	42.09	12.87	0.83	-0.11	11.09	1.35	-0.05	2.52	0.98	-0.004
11.	VRM 1-3 ⊕B	49.69	0.49*	72.55	8.80	0.49**	-0.12	9.55	0.56*	-0.09	1.67	0.81	0.006
12.	VRM 1-3 ⊕A	70.12	0.72	142.40	11.80	0.50**	-0.12	11.62	0.57	-0.05	1.99	0.98	-0.002
13.	VRM 29-1	99.66	1.06	202.92	12.43	0.72	-0.11	8.40	0.40**	-0.09	1.91	0.71*	0.002
14.	VRM 31-1-2	116.51	1.25	405.93**	11.68	0.36**	-0.11	10.85	0.52*	-0.09	2.47	0.88	0.001
15.	VRM 42-4-1A	156.66	1.46*	233.96*	14.13	0.79	-0.12	12.68	1.22	-0.04	2.96	1.00	-0.004
16.	VRM 43-6-1	106.94	1.15	213.39	14.56	0.58*	-0.05	10.73	0.29**	-0.07	2.75	0.78	-0.005
17.	IAM Mono-1-1	110.23	1.29	120.18	12.11	0.76	-0.12	11.59	0.93	-0.07	2.68	0.96	-0.005
18.	IAM 82-11	92.70	0.82	434.75**	14.01	0.94	-0.05	9.86	0.66	-0.05	1.74	0.57**	-0.005
19.	IAM 1-24	131.47	1.26	781.68**	11.11	0.77	-0.12	11.51	0.69	-0.05	2.46	0.96	-0.005
20.	IAM-15	81.19	1.03	-54.57	10.87	0.72	-0.12	10.54	0.99	-0.08	2.35	1.09	-0.005
21.	IAM L-13	80.18	1.16	-40.44	9.87	0.52*	-0.12	11.98	0.27**	-0.09	2.00	0.91	-0.004
22.	85-14 CMM	91.87	1.46*	511.30**	11.25	0.49**	-0.12	11.61	0.50*	-0.05	2.18	0.92	-0.005
23.	IAM 85-5	56.50	0.79	-19.57	10.60	0.56*	-0.12	13.60	0.52*	-0.07	2.26	1.03	-0.005
24.	Kajri	87.58	1.04	9.54	9.21	0.52*	-0.12	10.79	0.96	-0.08	2.15	0.99	-0.002
25.	IAM-2	71.36	0.94	16.68	12.30	1.27	-0.10	11.66	1.43	0.05	2.47	1.41**	-0.005
26.	122-2	80.60	1.23	162.65	13.57	1.98**	-0.05	9.68	1.50*	-0.08	1.82	0.99	-0.002
27.	122-4	65.38	1.12	431.42**	12.88	1.59**	-0.01	8.72	1.68**	0.13	1.61	1.09	-0.003
28.	122-6	93.61	1.44*	318.29*	13.83	2.17**	0.46	9.56	2.09**	0.38*	1.92	1.56**	-0.003
29.	123-2	57.29	0.66	-22.76	9.63	1.00	-0.12	8.82	1.04	-0.08	1.58	0.96	-0.005
30.	123-3	77.60	1.29	-9.34	11.95	1.58**	0.04	7.99	0.92	-0.05	1.67	1.42**	0.013
31.	123-4	68.37	1.11	787.37**	16.43	2.38**	0.68*	11.42	2.15**	0.44*	2.74	1.38**	-0.003
32.	124-1	87.16	1.25	9.68	14.15	1.76**	0.35	9.91	1.81**	0.49*	1.89	1.30*	0.000
33.	124-2	79.53	1.11	339.66*	18.81	3.48**	1.24**	11.53	2.52**	0.01	2.89	1.80**	-0.003
34.	124-3	80.73	0.88	-26.07	12.86	1.52**	-0.09	9.59	1.42	0.16	2.04	1.43**	0.000
35.	129	39.75	0.48**	-27.71	9.60	0.99	0.06	8.58	1.00	0.05	2.38	1.31*	-0.003
36.	130	34.60	0.58*	153.23	11.18	1.03	0.11	9.96	1.16	0.08	2.16	0.73	-0.001
37.	131	36.10	0.52*	36.21	10.82	0.74	-0.10	9.63	0.86	-0.08	2.35	0.68*	-0.004
38.	132	48.99	0.76	180.75	11.05	0.69	0.11	9.68	0.79	0.03	2.42	0.60**	-0.003
39.	133	52.16	0.53*	-32.21	11.08	0.63*	-0.11	9.10	0.52*	0.09	2.29	0.73	-0.001
40.	134	44.69	0.50*	74.93	11.79	0.68	-0.11	10.25	0.93	0.05	2.08	0.72*	-0.004
41.	135	58.44	0.48**	-42.53	11.66	0.65	-0.12	10.37	0.66	0.09	2.44	0.72*	-0.003
42.	136	64.63	0.70	91.95	13.24	0.80	-0.09	9.45	0.72	-0.04	1.96	0.47**	-0.004
43.	137	71.07	0.81	129.80	12.98	0.67	-0.08	11.57	0.74	-0.05	2.38	0.58**	-0.001
44.	138 (Gotya)	89.05	1.12	-56.64	14.16	1.54**	-0.03	13.50	2.02**	-0.02	2.74	1.25	-0.001
45.	139	78.49	0.85	55.92	14.62	1.52**	-0.10	12.65	1.88**	0.01	2.64	1.51**	-0.005
46.	140 (Kavit)	111.52	1.42*	25.01	14.71	1.65**	-0.09	14.70	2.01**	0.01	2.75	1.56**	-0.003
47.	VRM 42-4-1A-1	125.70	1.26	148.69	12.58	1.46*	-0.12	11.11	1.41	0.36*	2.49	1.59**	-0.001
48.	124	106.17	0.95	-40.37	14.55	1.63**	-0.12	8.35	0.86	0.27	1.46	0.95	-0.003
49.	Pusa Sharbati	36.82	0.38**	-55.37	7.73	0.68	-0.09	8.47	0.75	-0.09	1.64	1.06	-0.004
50.	Durgapura Madhu	104.99	1.07	377.81*	13.24	1.35	-0.10	8.72	0.41	0.34	1.90	0.98	-0.001
	Mean	82.23			11.97			10.56			2.19		
	S.E. ±	9.91	0.19		3.60	0.18		0.24	0.22		0.04	0.14	

* and ** indicates significance of value at P=0.05 and P=0.01, respectively

Table 4: Estimate of stability parameters for F : C ratio, fruit shape index and total soluble solids of muskmelon (*Cucumis melo* L.)

Sr.No.	Genotypes	F : C ratio			Fruit shape index			Total soluble solids		
		Mean	bi	S^2di	Mean	bi	S^2di	Mean	bi	S^2di
1.	Pusa Madhuras	0.67	5.96	0.0069*	0.83	-1.35	-0.0007	8.85	0.80	1.43**
2.	Monoecious 3 (M3)	0.55	-1.17	-0.0015	0.89	-0.16	-0.0007	9.49	0.70	1.84**
3.	34	0.51	-1.45	-0.0014	0.87	-0.25	-0.0002	8.51	1.02	0.59**
4.	Punjab Sunehri	0.36	-6.09	0.0032	1.06	0.73	-0.0005	9.03	0.90	1.32**
5.	Hara Madhu	0.77	1.12	-0.0016	1.14	3.95	0.0004	6.62	0.91	0.27*
6.	Punjab Rasila	0.76	1.01	-0.0016	1.05	-0.78	-0.0008	6.55	1.61**	0.09
7.	Lucknow Safeda	0.58	-0.48	-0.0006	0.84	-0.77	-0.0006	10.01	1.47*	1.06**
8.	84-2	0.60	-2.44	-0.0002	0.98	-0.10	0.0019	7.58	1.50**	0.12
9.	DVRM-1	0.72	4.75	-0.0004	0.86	-1.83	-0.0004	6.76	1.79**	0.02
10.	DVRM-2	0.74	1.09	0.0088*	1.17	-1.67	0.0046*	6.53	0.87	-0.01
11.	VRM 1-3 ⊕B	0.50	0.15	-0.0010	0.92	0.16	-0.0006	6.62	0.96	-0.04
12.	VRM 1-3 ⊕A	0.56	-0.10	0.0015	1.01	1.23	-0.0008	7.48	1.06	0.12
13.	VRM 29-1	0.82	-1.31	-0.0015	1.48	3.33	0.0007	5.98	0.68	0.07
14.	VRM 31-1-2	0.82	0.63	-0.0015	1.07	-1.61	-0.0007	5.46	1.07	0.01
15.	VRM 42-4-1A	0.82	-3.47	-0.0012	1.12	-2.16	0.0006	5.81	1.03	-0.04
16.	VRM 43-6-1	1.02	2.61	-0.0003	1.34	4.00	0.0008	5.43	0.89	0.64**
17.	IAM Mono-1-1	0.88	-2.84	-0.0005	1.05	-0.32	-0.0008	6.39	1.97**	-0.01
18.	IAM 82-11	0.62	4.98	-0.0016	1.42	1.41	0.0002	6.64	1.65**	-0.05
19.	IAM 1-24	0.76	-6.02	-0.0016	0.96	-0.86	0.0007	7.15	1.77**	-0.03
20.	IAM-15	0.80	2.48	-0.0013	1.03	-1.42	-0.0004	8.02	1.61**	0.01
21.	IAM L-13	0.57	-0.27	-0.0009	0.82	1.83	0.0012	6.04	1.91**	0.08
22.	85-14 CMM	0.63	0.01	-0.0002	0.99	1.80	-0.0007	5.93	1.03	-0.03
23.	IAM 85-5	0.53	0.21	0.0002	0.78	1.77	0.0000	5.82	1.13	-0.03
24.	Kajri	0.65	1.42	-0.0015	0.86	-1.06	-0.0003	6.42	1.38*	-0.03
25.	IAM-2	0.70	-0.71	0.0001	1.05	3.20	-0.0008	6.62	1.38*	-0.04
26.	122-2	0.55	1.73	-0.0006	1.40	3.94	0.0004	3.80	0.61*	0.01
27.	122-4	0.56	6.61	0.0005	1.49	-3.44	0.0074**	3.68	0.54*	-0.01
28.	122-6	0.66	6.20	0.0028	1.45	-1.30	0.0034*	3.99	0.59*	-0.05
29.	123-2	0.56	-2.07	0.0007	1.09	0.16	-0.0006	4.58	0.19**	-0.01
30.	123-3	0.63	-3.04	0.0102*	1.49	4.80	0.0067**	4.68	0.75	0.22*
31.	123-4	0.91	9.09	0.0150**	1.44	-0.08	-0.0000	5.54	0.71	-0.05
32.	124-1	0.68	1.48	-0.0015	1.43	-3.52	0.0033*	4.37	0.57*	0.06
33.	124-2	0.97	15.62**	0.0199**	1.63	7.63	-0.0004	4.28	0.57*	-0.01
34.	124-3	0.72	8.06	0.0171**	1.34	-3.53	-0.0008	4.79	0.83	1.03**
35.	129	1.00	4.58	0.0029	1.12	0.93	-0.0006	6.51	0.35**	0.05
36.	130	0.78	1.83	0.0009	1.12	0.55	-0.0007	6.25	0.38**	0.10
37.	131	0.92	1.63	-0.0015	1.14	1.35	0.0019	6.64	0.33**	-0.05
38.	132	0.95	-5.49	-0.0016	1.14	-0.74	-0.0008	6.52	0.89	-0.01
39.	133	0.94	-4.63	-0.0008	1.22	0.47	-0.0005	6.35	0.30**	0.01
40.	134	0.71	5.20	-0.0012	1.15	0.84	0.0007	7.20	0.86	-0.04
41.	135	0.91	-0.95	-0.0016	1.12	0.16	-0.0006	5.02	0.57*	0.18
42.	136	0.73	-1.89	-0.0016	1.40	1.90	-0.0008	5.09	0.64*	0.08
43.	137	0.72	2.52	-0.0008	1.12	0.25	-0.0008	6.17	0.44**	0.21*
44.	138 (Gotya)	0.45	5.89	-0.0012	1.06	1.61	0.0019	6.54	0.97	1.21**
45.	139	0.69	2.09	-0.0016	1.16	-1.74	0.0005	6.88	1.59**	-0.03
46.	140 (Kavit)	0.61	-0.80	0.0036	0.99	1.18	-0.0008	6.78	1.17	0.12
47.	VRM 42-4-1A-1	0.77	8.40	0.0003	1.17	-1.75	0.0015	5.88	1.55**	0.05
48.	124	0.56	-6.53	0.0002	1.74	14.82**	0.0013	4.82	0.38**	0.05
49.	Pusa Sharbati	0.61	-6.47	0.0060	0.91	-0.45	0.0000	7.19	1.48**	-0.00
50.	Durgapura Madhu	0.73	3.13	-0.0016	1.52	16.38**	0.0170**	7.28	1.66**	0.01
	Mean	0.72			1.15			6.33		
	S.E.±	0.04	5.21		0.03	3.75		0.36	0.18	

* and ** indicates significance of value at P=0.05 and P=0.01, respectively

124-1 and Durgapura Madhu had significant deviation from regression (S^2di) indicating their unstability for this trait. The genotypes 84-2 (0.98), VRM1-3⊕A (1.01), IAM-15 (1.03), 85-14 CMM (0.99) and 140 (0.99) had round fruit shape with non-significant deviation from regression and regression coefficient near to the unity (bi≅1) indicating their wider adaptability to this trait.

Total soluble solids:

Twenty-eight genotypes recorded higher total soluble solids than population mean (6.33%). However, 11 genotypes exhibited significant deviation from regression indicating their unstability for this character. Genotypes DVRM-2, VRM1-3⊕A, VRM1-3⊕B, 132, 124 and 140 (Kavit) exhibited high mean performance coupled with regression coefficient near to unity (bi≅1) and non-significant deviation from regression indicating their wider adaptability for this trait.

Genotypes 129, 131 and 133 had higher total soluble solids with regression coefficient significantly less than one ($b<1$) and non-significant S^2di values indicating their above average stability and adaptable to poor environments. However, 12 genotypes showed regression coefficient greater than unity ($bi>1$) with high mean performance and non-significant deviation from regression indicating their below average stability *i.e.* adaptable to favourable environments.

The present results are in close agreement reported by Krishna Prasad and Singh (1990), Lal and Dhaliwal (1996), Krishna Prasad *et al*. (1999), Shridhar and Hari Har Ram (1999), Chaubey *et al*. (2000) and Krishna Prasad *et al*. (2000) and highly emphasized the importance of above said parameters for determination of stability and adaptability of the genotypes/varieties.

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