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Stability analysis over extended dates of sowing for yield and yield component traits in groundnut (*Arachis hypogaea* L)

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Abstract
The experiment were taken up at three different dates of sowing of the year 2023 *viz.*, E1 before onset of monsoon (12th June), E2 20 days after onset of monsoon (3rd July) and E3 40 days after onset of monsoon (24th July) for stability analysis on 30 groundnut genotypes for 10 quantitative characters. The material was evaluated in randomized block design with three replications at Experimental Farm College of Agriculture Latur. The mean square due to the genotype x environment interaction were significant for all the characters indicating the influence of environmental conditions on the genotypes evaluated. The mean square due to G x E (linear) were significant for all the characters except days to maturity. On further perusal of genotypes in relation to overall performance revealed that genotypes *viz.*, NRCG-1513 and NRCG- 866 found average stable performance while, the genotypes NRCG-1399 and NRCG-1408 found stable or the better environmental condition for pod yield per plant and the genotypes NRCG-649, NRCG-557 and NRCG-1484 reported stable for poor environmental condition for pod yield considering the performance of stability parameters, genotypes could be used as parents in hybridization programme for commercial exploitation after their rigorous evaluation.

Keywords: Stability, G x E interaction, mean square

1. Introduction

Groundnut (*Arachis hypogaea* L.) is one of the most important oilseed crop cultivated in semi-arid region in India with oil content around 40-50 % and it is extensively used for cooking purpose. It is the thirteenth most important food crop and 4th important oilseed crop of the world. It occupies 3rd rank in terms of acreage and production among oilseed crop of India (ICVO, IIOR, Hyderabad, 2023). The total production of groundnut in India in 2023 was 6.73 million tones (Anonymous, 2023) [2]. As this crop has to play a major role in bridging the vegetable oil gap in country. One of the main reasons for the low yield of groundnut in the country is poor adaptation of improved varieties and their inconsistent performance over range of environments. Therefore, it has become necessary to develop varieties with attributes such as wide adaptability, biotic and abiotic stress resistance and fertilizer responsiveness.

Yield is a complex character resulting from interplay of various yield contributing characters, which have positive or negative association with yield and among themselves also. The consistent performance of a genotype over a range of environments is essential for a wide stability of a variety. Stability of genotypes depends upon maintaining expression of certain morphological and physiological attributes and allowing others to vary, resulting in G x E interactions. G x E interaction has a masking effect on the performance of a genotype and hence the relative ranking of the genotype do not remain the same over number of environments. Stability of genotypes to environmental fluctuations is important for stabilization of crop production both temporally and spatially. Estimation of phenotypic stability, which involves regression analysis, has proven to be a valuable tool in the assessment of varietal adaptability. Stability analysis is useful in the identification of stable genotypes and in predicting the responses of various genotypes over changing environments.

It is generally agreed that, the more stable genotypes adjust their phenotypic responses to provide some measure of uniformity in spite of environmental fluctuations. Therefore, an attempt has been made in present study to evaluate different groundnut genotypes across the different date of sowing to know the role of G x E interactions and also to analyze the stability of genotype for different traits.

2. Materials and Methods

The stability analysis the field experiment on 30 groundnut genotypes were conducted during *kharif* season 2023 for three different dates of sowing at Experimental farm college of Agriculture Latur, Maharashtra. For ten quantitative characters for yield and yield component traits in groundnut. The three environments were created by three dates of sowing *viz*., E1 before onset of monsoon 12th June, (E2) 20 days after onset of monsoon 3rd July and 40 days after onset of monsoon 24 July (E3). The experiment conducted in randomized block design with two replications. Each experimental unit consists of a single row of 5m length with 30 x 10 cm inter and intra row spacing. The recommended package of practices and plant protection measures to raise a good crop were timely and uniformly applied. The phenotypic stability of genotypes estimated by regression analysis according to Eberhart and Russell (1966) [7].

3. Results and Discussion

3.1 Analysis of variance for phenotypic stability

The analysis of variance for stability reveled (Table.1) that, the difference among the genotype was significant for all character except plant height when tested against the pooled deviation whereas, all the traits are significant when tested against all genotype. Similarly, the difference due to environments were also significant for all traits when tested against the pooled error whereas, the character days to 50 percent flowering, plant height, kernel yield per plant and shelling percentage were significant over pooled deviation. The analysis of variance for stability revealed that, the difference among the genotypes were significant for all characters except plant height when tested against the pooled deviation whereas, all the traits are significant when tested against all genotype. The environment + (genotype x environment) interaction was also significant for all traits when tested against the pooled error whereas the characters days to 50 percent flowering, plant height, kernel yield per plant and shelling percentage were significant over pooled deviation indicating considerable interaction of genotypes with environments and also the distinct nature of environment and genotype x environment interactions in phenotypic expression. The G x E interaction was significant for all the traits when tested against pooled error and similar findings were reported by Reddy *et al*. (2016) [16]. Further, partitioning of the environment + (genotype x environment) component into environment (linear) revealed the significance of environment (linear) component for all the traits, indicating that environmental differences were present under all three environments studied. The higher magnitude of mean sum of squares for environment (linear), compared to genotype x environment (linear) indicated that linear response of environment accounted for major part of the total variation for all the traits studied and might be responsible for high adaption of the genotypes in relation to yield and other traits. Similar findings were reported by Minde *et al*. (2017) [13]. Further, the mean square due to genotype x environment (linear) were significant for all characters except days to maturity when tested against pooled error. Similar finding was reported by Patil *et al.* (2014) [15].

3.2 Stability parameter

Eberhart and Russell (1966) [7] defined a stable genotype as one which showed high mean yield, regression coefficient (bi) around unity and deviation from regression (S^2di) equal to zero. Later on, Breese (1969) [4] advocated that, linear regression (bi) could be simply be regarded as measure of response of particular genotype, whereas the deviation from regression (S^2di) as a measure of stability. Singh and Singh (1980) suggested the methodology to classify the different genotype**.**

The present investigation (Table.2) for days to 50 per cent flowering the genotype NRCG-1513 and NRCG-866 found specially adopted to better environment. While the genotype NRCG-1033 and NRCG-1613 were specially adopted to the poor environment while the genotypes NRCG-1476 and NRCG-1408 found wider adaptability to environment and consider as the stable for average environmental condition genotype. Similar results were obtained by Khan *et al.* (2018) [11] and Joshi *et al.* (2003) [10]. The stability analysis for days to maturitythe genotype NRCG-866 and NRCG-1613 specially adopted to better environment. While, the genotype NRCG-1513 and NRCG-802 were specially adopted to the poor environment. The genotype NRCG-1378 indicated wider adaptability to environment and found quite stable genotype. Similar results found by Chavan *et al*. (2019) [5] and Khan *et al* (2018) [11]. The genotypes for plant height NRCG-705 and NRCG-1484 were specially adopted to better environment. While the genotype NRCG-802 and NRCG-1613 found specially adopted to the poor environment While, the genotype NRCG-1281, NRCG-771 and NRCG-1408 were had wider adaptability to environment and consider as the stable genotype. Similar results found by Khan *et al.* (2018) [11] and Reddy *et al.* (2016) [16].

The stability parameter for number of branches per plant revealed that, the genotype NRCG-1053 and NRCG-1374 were specially adapted to better environment. While the genotype NRCG-1390, NRCG-802 and NRCG-866 found specially adopted to the poor environment while the genotype NRCG-1484 and NRCG-1408 observed quite stable genotype. The stability analysis for number of pods per plant genotype NRCG-1478 and NRCG-1165 found specially adapted to better environment. While the genotype NRCG-1513 and NRCG-866 were specially adapted to the poor environment and the genotype NRCG-1484 and NRCG-1281 had wider adaptability to environment and consider as the stable genotype. Same results obtained by Khan *et al.* (2018) [11] and Ahmad *et al.* (2016) [1]. The estimates of stability parameter for kernel yield per plant genotype, NRCG-1158 and NRCG-771 found specially adopted to better environment. While, the genotype NRCG-645, NRCG-1390 and NRCG-1513 were specially adapted to the poor environment and the genotype NRCG-1484 found wider adaptability to environment and consider as the stable genotype. Same results were found by Patil *et al*. (2014) [15] and Mothilal *et al.* (2010) [14].

In present study, none of the genotype was found stable for average environmental condition for the character 100 kernel weight and the genotype NRCG-739 found specially adopted to better environment. While the genotype, NRCG-1165, NRCG-1053 and NRCG- 1484 were specially adopted to the poor environment. Similar results were obtained by Venkateswarlu *et al.* (2021) [18] and Chavn *et al.* (2009). The stability parameter for oil content the genotype NRCG-1476 and NRCG-645 observed specially adapted to better environment. While the genotype NRCG-1378 and LGN-1 found specially adopted to the poor environment while the genotype NRCG-649 and NRCG-1158 had wider adaptability to environment and consider as the stable genotype. Similar results were found by Chavan *et al*. (2009) [6]. Estimates of stability parameter for shelling per cent genotype NRCG-739 and NRCG- 1374 were specially adopted to better environment. While the genotype NRCG-649 and NRCG-1484 found specially adopted to the poor environment while the genotype NRCG-1033 and NRCG-1399 observed wider adaptability to environment and consider as the stable genotype. Similar results were obtained by Khan *et al*. (2018) [11], Venkateswarlu *et al.* (2021) [18], Minde *et al.* (2017) [13] and Chavan *et al.* (2009) [6].

The present investigation for pod yield per plant genotype NRCG-1408 and NRCG-1399 were specially adopted to better environment. While the genotype NRCG-649, NRCG-1484 and NRCG-557 found specially adopted to the poor environment. The genotypes NRCG-1513 and NRCG-866 indicated wider adaptability to environment and consider as the stable genotype. Similar results were found by Minde *et al.* (2017) [13] and Iramma *et al*. (2017).

Table 1: Analysis of variance for stability of yield and yield components in groundnut (*Arachis hypogaea* L.)

Source of variation	DF	Days to 50% flowering	Days to maturity	Plant height (cm)	No. of branches per plant	No. of pods per plant	Pod yield per plant (g)	Kernel yield per plant (g)	100 kernel weight (g)	Oil content (%)	Shelling percentage (%)
Genotype	29	25.329**$^{++}$	33.269**$^{++}$	18.444^{++}	1.587**$^{++}$	21.473**$^{++}$	72.195**$^{++}$	24.326**++	23.840**$^{++}$	25.138**$^{++}$	151.432**$^{++}$
Environment +(G x E)	60	4.274*$^{++}$	6.753^{++}	203.828**$^{++}$	0.512^{++}	10.034^{++}	7.654^{++}	9.192*$^{++}$	5.519^{++}	1.377^{++}	82.580*$^{*++}$
G X E	58	2.678^{++}	6.241^{++}	13.246^{++}	0.433^{+}	5.285^{++}	4.515^{++}	4.614^{++}	5.244^{++}	1.165^{+}	41.783^{++}
Environment (linear)	1	101.106**$^{++}$	43.211*$^{++}$	11461.420**$^{++}$	5.617**$^{++}$	295.550**$^{++}$	197.354**$^{++}$	283.887**$^{++}$	27.017*$^{++}$	15.012**$^{++}$	2531.362^{**++}
G x E (linear)	29	3.043^{++}	3.327	13.017^{++}	0.479^{++}	4.598^{++}	4.162^{++}	4.189^{++}	5.704^{++}	0.624^{++}	48.307^{++}
Pooled deviation	30	2.236**	8.849**	13.025**	0.374**	5.773**	4.707**	4.872**	4.624**	1.650**	34.083**
Poled error	87	0.169	3.666	1.072	0.072	0.941	1.306	0.743	0.354	0.241	5.459

*Significant at 5 % level, **Significant at 1 % level when tested against pooled deviation.
+ Significant at 5% level, ++ Significant at 1 % level when tested against pooled error

Table 2: Estimation of stability parameters for seed yield and components over three environments in groundnut. (*Arachis hypogaea* L.).

Sr. No	Genotype	Days to 50% flowering			Days to maturity			Plant height (cm)		
		Xi	bi	S^2di	Xi	bi	S^2di	Xi	Bi	S^2di
1.	NRCG-1380	30.76	1.30	-0.16	102.96	2.29	-1.00	46.70	0.95	56.46
2.	NRCG-1476	30.80	0.86	-0.16	102.96	-0.58	-3.74	46.40	0.96	24.98
3.	NRCG-1053	32.53	0.09	0.01	105.50	0.68	18.68	49.63	1.26	12.14
4.	NRCG-592	36.03	2.57	3.87	108.86	1.70	12.47	51.16	0.94	34.66
5.	NRCG-1408	33.50	0.93	0.06	106.73	1.18	-3.85	48.700	0.90	-0.97
6.	NRCG-1390	35.16	1.37	3.94	111.06	3.49	6.03	48.63	1.08	7.42
7.	NRCG-1393	41.40	-0.26	0.11	115.03	0.05	-3.82	49.93	0.95	9.20
8.	NRCG-1513	34.63	1.73	0.95	110.40	0.52	0.08	48.06	0.95	12.92
9.	NRCG-802	34.56	1.53	0.34	110.03	0.45	-2.32	47.70	0.72	-0.97
10.	NRCG-1294	37.23	1.93	0.37	111.53	0.83	-3.85	49.86	0.92	30.03
11.	NRCG-1374	38.70	2.88	0.46	112.83	3.81	2.21	45.43	0.99	3.94
12.	NRCG-1478	31.43	0.92	0.58	105.16	2.06	8.67	53.23	1.11	20.65
13.	NRCG-1613	32.06	0.52	0.05	106.20	1.82	-1.20	51.06	0.83	1.39
14.	NRCG-1165	32.66	0.07	0.86	105.83	2.55	-3.43	50.83	1.26	8.05
15.	NRCG-1187	40.13	-0.51	5.96	114.80	-0.31	-1.66	50.76	1.21	-1.01
16.	NRCG-1484	34.43	0.75	3.08	109.00	0.23	11.60	48.43	1.16	-0.89
17.	NRCG-1033	36.70	0.91	0.00	109.06	2.13	-1.27	41.20	1.00	26.56
18.	NRCG-1281	33.60	0.87	6.32	107.11	2.00	-0.96	46.73	0.97	-0.97
19	NRCG-1378	32.26	-0.39	0.30	106.10	0.86	5.28	50.33	1.24	19.89
20.	NRCG-649	36.86	1.61	-0.16	110.30	-0.98	19.72	46.33	1.18	5.00
21.	NRCG-739	37.33	1.30	5.63	110.46	0.20	5.08	45.06	0.61	26.77
22.	NRCG-1399	36.50	2.65	16.82	110.00	-0.79	1.96	46.33	0.59	12.42
23.	NRCG-645	36.73	1.11	0.76	112.03	0.06	50.77	50.86	0.76	11.22
24.	NRCG-1158	36.23	1.97	1.81	109.33	-2.18	-3.86	47.66	0.91	9.24
25.	NRCG-771	33.76	-0.73	3.60	105.73	1.67	33.25	48.40	0.90	-1.02
26.	NRCG-1094	39.50	2.03	1.37	112.36	3.62	4.58	49.76	0.99	5.41
27.	NRCG-866	35.53	1.39	-0.13	110.70	1.51	-3.22	48.40	1.17	4.34
28.	NRCG-705	36.40	0.30	0.58	109.36	-1.94	7.57	49.26	1.12	-0.78
29.	NRCG-557	37.66	-0.17	2.14	113.36	0.45	-3.41	52.00	1.28	12.73
30.	LGN-1	29.70	0.47	2.72	103.50	2.59	-0.91	51.26	1.09	10.15
General Mean		35.16			108.94			48.67		

Table 2: Stability parameters for Number of branches per plant, Number of pods per plant and Kernel yield per plant

Sr. No	Genotype	Number of branches per plant			Number of pods per plant			Kernel yield per plant(g)		
		Xi	Bi	S^2di	Xi	bi	S^2di	Xi	Bi	S^2di
1.	NRCG-1380	6.76	3.93	0.58	18.40	-0.08	4.09	11.60	0.49	14.50
2.	NRCG-1476	7.03	4.26	0.09	16.83	1.04	3.63	9.30	0.93	1.30
3.	NRCG-1053	6.83	1.61	2.25	17.43	1.41	1.27	11.63	2.14	0.86
4.	NRCG-592	6.33	4.68	0.65	16.40	0.61	37.31	8.70	0.47	16.69
5.	NRCG-1408	6.43	1.01	0.42	17.00	2.04	9.35	8.50	1.25	-0.21
6.	NRCG-1390	6.46	0.70	-0.04	20.10	0.60	2.09	15.33	0.55	1.03
7.	NRCG-1393	5.90	-0.35	-0.03	16.76	1.79	19.69	8.90	1.04	20.2
8.	NRCG-1513	7.56	0.45	-0.06	20.66	0.67	-0.74	15.40	0.56	-0.73
9.	NRCG-802	6.00	0.65	-0.01	15.06	1.80	9.25	8.10	1.16	4.60
10.	NRCG-1294	6.60	-0.43	0.14	16.96	2.22	2.72	10.03	1.74	10.38
11.	NRCG-1374	6.00	1.73	-0.07	17.76	1.72	11.41	13.46	0.46	2.92
12.	NRCG-1478	6.33	0.64	0.60	19.03	1.46	3.21	13.40	2.65	0.26
13.	NRCG-1613	4.53	1.45	-0.02	14.66	0.62	0.18	9.63	0.51	10.90
14.	NRCG-1165	5.93	-1.39	0.46	15.46	1.53	-0.40	9.46	1.13	-0.36
15.	NRCG-1187	5.46	-1.14	1.39	11.23	1.49	2.35	7.40	1.11	2.79
16.	NRCG-1484	7.73	0.98	-0.06	24.00	0.83	0.31	19.03	0.83	1.10
17.	NRCG-1033	6.06	3.13	1.30	15.40	1.16	13.93	12.70	1.74	-0.41
18.	NRCG-1281	6.83	0.33	-0.04	24.40	0.83	0.31	16.43	-0.27	5.91
19	NRCG-1378	5.90	-0.09	0.01	17.40	0.18	-0.65	12.06	0.41	-0.33
20.	NRCG-649	5.60	0.35	-0.03	16.96	0.44	-0.66	12.06	0.43	-0.48
21.	NRCG-739	6.16	2.88	1.51	15.80	1.54	5.35	11.00	1.36	5.05
22.	NRCG-1399	5.23	-1.35	-0.07	16.13	2.23	-0.79	12.16	1.71	-0.54
23.	NRCG-645	7.23	0.63	-0.06	17.93	0.44	-0.97	13.23	0.57	-0.73
24.	NRCG-1158	5.13	-0.19	-0.07	16.53	0.48	0.74	10.18	1.30	-0.48
25.	NRCG-771	5.36	3.52	0.26	16.80	0.70	-0.04	10.76	1.28	0.92
26.	NRCG-1094	5.46	0.05	0.12	15.50	1.40	20.41	10.88	2.09	11.90
27.	NRCG-866	6.26	0.66	0.03	21.68	0.55	-0.74	16.26	0.50	-0.68
28.	NRCG-705	5.60	0.26	-0.06	16.56	0.35	-0.88	10.23	1.26	0.14
29.	NRCG-557	6.50	0.52	-0.04	19.26	-0.07	1.20	14.56	-0.11	0.36
30.	LGN-1	5.80	0.52	-0.04	18.56	-0.07	1.20	15.13	0.68	17.60
General Mean		6.17			17.55			11.92		

Table 3: Stability parameters for 100 Kernel weight and Oil content

Sr. No	Genotype	100 kernel weight (g)			Oil content (%)		
		Xi	Bi	S^2di	Xi	bi	S^2di
1.	NRCG-1380	30.00	1.46	-0.28	52.62	3.44	2.48
2.	NRCG-1476	30.50	-0.99	8.27	51.27	1.55	0.32
3.	NRCG-1053	30.83	0.32	-0.28	51.75	2.19	1.83
4.	NRCG-592	33.50	2.21	10.75	52.63	1.32	-0.20
5.	NRCG-1408	29.16	0.15	8.30	51.21	2.24	1.52
6.	NRCG-1390	30.83	0.07	1.81	51.07	2.36	1.14
7.	NRCG-1393	31.50	4.40	8.18	50.73	1.22	2.24
8.	NRCG-1513	37.50	-0.74	2.66	51.67	0.62	0.18
9.	NRCG-802	29.66	0.39	12.68	51.81	0.17	0.00
10.	NRCG-1294	29.83	-0.18	6.79	52.92	2.53	-0.14
11.	NRCG-1374	30.16	3.82	-0.34	52.20	0.26	-0.23
12.	NRCG-1478	31.33	-2.11	0.31	54.10	-0.89	0.30
13.	NRCG-1613	33.66	-1.28	22.85	52.79	1.35	10.43
14.	NRCG-1165	32.50	0.49	-0.07	54.45	0.31	0.10
15.	NRCG-1187	32.00	6.59	0.06	54.44	-0.90	0.22
16.	NRCG-1484	40.83	-0.16	0.79	55.02	-0.99	1.27
17.	NRCG-1033	34.50	-4.14	3.74	53.06	0.55	4.19
18.	NRCG-1281	31.16	-0.81	2.23	54.36	-0.22	2.54
19	NRCG-1378	31.33	-0.40	2.67	55.58	0.40	-0.19
20.	NRCG-649	31.00	-0.48	1.44	53.82	0.59	-0.22
21.	NRCG-739	32.66	-1.79	-0.06	52.68	1.58	2.16
22.	NRCG-1399	31.66	0.90	0.09	48.67	1.03	-0.11
23.	NRCG-645	37.83	1.55	3.64	48.99	1.59	-0.22
24.	NRCG-1158	29.66	6.50	2.32	49.35	0.99	-0.10
25.	NRCG-771	30.83	3.27	8.21	44.67	1.00	-0.11
26.	NRCG-1094	32.50	6.08	12.86	43.54	3.12	-0.07
27.	NRCG-866	38.00	0.72	3.68	46.02	1.66	6.73
28.	NRCG-705	31.16	1.86	3.70	49.17	0.06	1.78
29.	NRCG-557	31.16	0.89	1.11	51.78	0.48	4.64
30.	LGN-1	31.16	1.38	0.10	50.92	0.32	-0.21
General Mean		32.28			51.44		

Table 4: Stability parameter for shelling percent and pod yield per plant

Sr. No	Genotype	Shelling %			Pod yield per plant (g)		
		Xi	Bi	S^2di	Xi	bi	S^2di
1.	NRCG-1380	68.97	1.29	72.97	15.50	-0.08	5.50
2.	NRCG-1476	65.20	1.05	-5.00	13.53	0.80	1.76
3.	NRCG-1053	74.27	1.62	20.63	15.53	1.96	-0.91
4.	NRCG-592	70.23	0.62	22.84	12.60	0.80	20.09
5.	NRCG-1408	64.30	0.66	120.35	13.23	1.81	1.66
6.	NRCG-1390	68.54	0.86	160.99	22.80	0.07	0.99
7.	NRCG-1393	65.52	1.05	34.83	13.63	1.27	13.91
8.	NRCG-1513	64.14	0.07	-5.15	24.00	0.95	-1.22
9.	NRCG-802	66.31	1.05	10.24	11.80	1.34	14.67
10.	NRCG-1294	67.82	1.14	118.56	14.60	2.58	5.02
11.	NRCG-1374	75.75	1.47	8.17	15.16	1.89	5.06
12.	NRCG-1478	78.85	2.15	0.28	16.63	2.29	0.09
13.	NRCG-1613	72.01	0.33	226.79	12.60	0.25	2.15
14.	NRCG-1165	71.27	1.65	13.48	14.23	1.56	8.04
15.	NRCG-1187	73.13	0.93	69.54	9.83	1.28	0.02
16.	NRCG-1484	73.07	0.68	6.77	26.00	0.51	-1.01
17.	NRCG-1033	79.59	0.86	-5.41	15.60	2.03	-0.78
18.	NRCG-1281	65.39	0.38	-1.71	27.53	0.25	1.83
19	NRCG-1378	54.99	0.63	-2.47	21.60	-0.12	-1.16
20.	NRCG-649	57.48	0.30	-5.01	20.97	0.54	-1.03
21.	NRCG-739	77.78	1.15	0.75	13.53	1.94	7.31
22.	NRCG-1399	84.86	0.90	-2.95	14.16	2.00	-1.29
23.	NRCG-645	61.97	0.70	-3.35	21.33	0.28	-1.09
24.	NRCG-1158	71.46	2.24	21.69	14.23	0.44	-1.29
25.	NRCG-771	74.14	1.82	-3.34	14.16	0.77	3.73
26.	NRCG-1094	73.92	2.62	-5.04	14.03	1.38	11.02
27.	NRCG-866	67.73	0.34	-3.58	24.26	0.59	-1.20
28.	NRCG-705	69.63	2.33	-4.09	14.26	0.51	-0.50
29.	NRCG-557	60.51	-0.40	2.41	24.06	0.33	-0.75
30.	LGN-1	54.83	-0.50	-5.44	22.96	-0.20	2.14
General Mean		69.12			17.14		

4. Conclusion

The genotype in relation to overall performance and overall picture of stability of genotypes for all character revealed that the genotypes NRCG-1513 and NRCG-866 found stable for average environmental condition and the genotypes NRCG-0649, NRCG-1484 and NRCG-557 were stable for unfavorable environments. Thus, three genotype *viz.* NRCG- 649, NRCG-1484 and NRCG-557 considering the performance of stability parameters, could be used as parents in hybridization programme for commercial exploitation after their rigorous evaluation.

5. References

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