

over Co4, 22% over KM 2 and 19% over Paiyur 1 (Table 3). The culture performed well in Pudukkottai, Salem, South Arcot, North Arcot and Kamarajar districts.

In rabi trials conducted during 1986, NPRG 1 performed well in Tirunelveli and Kamarajar districts. It recorded an average yield of 734 kg/ha (Table 4). Besides high yield, the culture showed moderate resistance to yellow mosaic virus disease, the per cent of infestation ranging from 7 - 30%, while

it is 32 to 85% in Co 4, 32 to 54% in KM 2 and 70 to 80% in Paiyur 1. NPRG 1 has high per cent of protein content (22.0%). Based on the above performance, the culture NPRG 1 has been released as Vamban 1 greengram variety during January 1989 for large scale cultivation in Tamil Nadu.

The authors are grateful to ICAR, New Delhi for providing finance through All India Co-ordinated Pulses Improvement Project.

Madras Agric. J. 80 (12) : 665 - 667 December 1993

<https://doi.org/10.29321/MAJ.10.A01714>

## STABILITY ANALYSIS IN BUNCH GROUNDNUT

P.VINDHIYA VARMAN AND V. MANOHARAN\*

### ABSTRACT

Ten groundnut genotypes were studied in four locations for stability parameters. Genotype x environment interaction was not significant for pod yield. VG 77 was the best performer for all the characters. For shelling percentage, hundred pod and kernel weights, JL 24, VG 55 and J1 respectively were found to be stable.

Groundnut (*Arachis hypogaea* L.) contributes nearly 40 per cent of the vegetable oil production of the country. However the productivity of groundnut varies widely as it is grown predominantly as rainfed crop. Eberhart and Russel (1966) suggested a model which provides three statistical parameters for stability, namely, mean performance, linear response (regression) of a variety to the environments and minimal deviations from linear response. The present study was designed with a view to obtain information regarding the stability parameters of pod yield and three other characters in groundnut under four locations in Tamil Nadu representing varying environmental conditions.

### MATERIALS AND METHODS

six cultures and four released varieties (Table.2) of groundnut were studied for productivity and stability during Kharif '85 in four diversified locations viz., Aliyarnagar; Paiyur; Vellore and Vriddhachalam. The trials were conducted under rainfed conditions, laid out in randomised block design with three replications. The plot size was 3 x 3.6 m and row to row and plant to plant distance was 30 cm and 10 cm respectively. Dry pod yield was recorded as kg/plot. Besides shelling percentage and hundred pod and kernel weights were also recorded. The method outlined by Eberhart and Russel (1966) was used to analyse the experimental data.

\* Regional Research Station, Vriddhachalam - 606 001

Table.1 Anova for genotype stability for yield and quality in groundnut

Source	DF	Mean sum of squares			
		Dry pod yield	Shelling percentage	100 pod weight	100 kernel weight
Genotype (G)	9	0.115	4.998**	962.020**	161.271**
Genotype x environment	30	0.532	8.305**	74.894**	18.424**
Environment (E)	1	14.825**	411.307**	1478.205**	417.362**
Genotype x Environment (linear)	9	0.039	8.320**	30.407**	7.964**
Pooled deviation	20	0.040	3.149**	24.748**	3.184**
Pooled error	72	0.037	6.375	30.168	4.731

\*\* - Significant at 1% level.

Table.2. Stability parameters for pod yield and quality characters in groundnut genotypes

Genotypes	Dry pod yield			Shelling percentage			Hundred pod weight			Hundred kernel weight		
	$\bar{X}$	(b)	$S^2d$	$\bar{X}$	(b)	$S^2d$	$\bar{X}$	(b)	$S^2d$	$\bar{X}$	(b)	$S^2d$
1.VG 77	1.73	1.36	0.21**	74.73	1.39	-1.67	116.43	2.16	37.60*	49.86	0.39	-0.21
2.VG 55	1.30	0.86	0.01	73.58	1.32	3.46	77.39	0.77	2.74	33.24	1.31	3.19
3.BS 4	1.26	0.98	0.01	72.39	0.75	-1.22	75.38	0.94	4.16	33.24	1.26	-0.25
4.BS 8	1.18	0.87	0.02	72.99	0.93	2.76	72.35	0.61	29.09*	31.38	1.17	6.85**
5.ALG 6	1.28	0.88	-0.01	72.70	0.93	3.16	81.38*	0.70*	-9.45	35.81	1.18	-0.36
6.JL 24	1.38	1.12	-0.01	73.26	1.55	0.85	107.25	1.14	46.43**	44.78	0.16	7.28**
7.CO2	1.35	0.86	-0.01	71.66	1.27	-0.71	93.68	1.18	-9.07	38.42	1.35	0.72
8.TMV 12	1.08	1.09	0.01**	70.72	0.71	-1.84	80.14	1.04	16.19	32.62	1.23	-1.18
9.CO 1	1.28	1.06	0.01	72.72	-2.19	7.18*	70.78	0.73	-4.56	30.26	0.63	-0.58
10.J1	1.25	0.91	0.05*	73.73	1.16	-1.75	76.98	0.72	33.79*	33.23	1.32	0.62
Mean	1.31	1.0	-	72.84	1.0	-	85.22	1.0	-	36.28	1.0	-
SE	0.12	0.16	-	1.02	0.28	-	2.87	0.41	-	1.03	0.28	-

\*\* , \* Significant at 1 and 5 per cent respectively

## RESULTS AND DISCUSSION

The pooled analysis of variance is presented in Table.1 for characters namely pod yield, shelling percentage, hundred pod and kernel weights. The mean sum of squares due to genotype x environmental interaction were significant for all the characters except pod yield. The significant genotype x environment interactions indicated that the genotypes responded differently, relative to each other, to a change in environment.

Further, the environment (linear) was highly significant except for all characters and genotype x environment (linear) was significant except for pod yield. This indicated that the stability parameter, regression coefficient (b) estimated by the linear component of the response to a change in environment was different for various genotypes under study. Another component of variation for stability, variance due to pooled deviations, was also highly significant except for pod yield which indicated that differences

in stability for the characters among the genotypes was due to both the linear and deviations from the linear function.

The mean performance ( $\bar{x}$ ), the regression coefficient (b), the mean squared deviations ( $S^2d$ ) are presented in Table 2. Among the entries VG 77 recorded the highest mean pod yield. But, the genotype x environment interaction was not significant for this character. However varying levels of GxE interactions, have been reported by Habib et al., 1986. For shelling percentage, VG 77 (74.73) JL 24 (73.26) and J1 (73.73) recorded higher mean performance. Deviation from linear function was significant only for Co 1, BS 8 and ALG 6 had linear response equal to unity ( $b=0.93$ ). JL 24 was the most stable genotype for this character.

The highest hundred pod weight was recorded by VG77 (116.43) followed by JL24 (107.25). TMV 12 ( $b=1.04$ ) was the most responsive genotype and VG55 ( $S^2d=2.74$ ) was the most stable genotype. Among the entries VG 77 (49.86g) and JL 24 (44.78g) had higher kernel weights. BS 8 and ALG 6 are the most responsive genotypes ( $b=1.17$  and  $1.18$ ). J1 was considered as the most stable genotype for hundred kernel weight. VG77 exhibited high mean performance for all the four characters. Stable performance for different characters were observed in different genotypes viz., shelling percentage (JL24), hundred pod weight (VG 55) and hundred kernel weight (J1)

#### REFERENCES

- EBERHART, S.A., and RUSSEL, W.A., 1966. Stability parameters for comparing varieties. *Cro-Sci.*, 6 : 36-40.
- HABIB, A.F., NADAF, H.L. KULKARNI, G.K. and NADIGER, S.D. 1986. Stability analysis of pod yield in bunch groundnut. *J.Oilseeds Res.*, 3: 46-50.

Madras Agric. J. 80 (12) : 667 - 670 December 1993

### COMBINING ABILITY FOR QUANTITATIVE TRAITS IN TRITICALE UNDER RAINFED CONDITIONS.

P.C. UPADHYAY<sup>1</sup> and A.R. SAWANT<sup>2</sup>

#### ABSTRACT

A line x tester (6 x 3) analysis, involving morphologically diverse females of triticale, was carried out. JNIT-78 was found to be best general combiner for days to maturity, number of grains per ear and grain weight per ear where as JNIT-73 was best for ear length and number of spikelets per ear. The other best general combiners were JNK6T-233 for peduncle length, 1000-grain weight; and UPT-78269 for plant height and number of ears per plant. F1 crosses showed significant specific combining ability effects for few characters viz., days to maturity (UPT-78269 x JNK6T-229), peduncle length (JNK6T-233 x JNK6T-229), and 1,000-grain weight (JNK6T-233 X JNIT-67). These crosses represented the combination of average x poor and best x poor general combiners.

- 
- 1 Regional Agricultural Research Station (J.N.K.V.V.), Chindwara-480 001 (M.P)
  2. College of Agriculture, Indore - 452 001 (M.P).