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G x E Interaction for Grain Yield and its Components in Durum Wheat (*Triticum durum* Desf.)

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The potential of newly developed genotypes and stability of their performance can be judged by multi environment testing. A precise knowledge of genotype x environment interaction is very important to evaluate the stability of grain yield and its components. The present study is an attempt to identify stable genotypes for grain yield and its components in durum wheat under different sowing times in specific climatic condition.

The 48 genotypes of durum wheat, consisting of 43 advanced generation lines and 5 cultivated check varieties were grown in a randomized block design with three replications at Wheat Research Station, Junagadh during *rabi* 1995-96. The environments were created by sowing the crop on three different dates, i.e. early sowing (29th Oct., `95) as Environment-1 ($E_1$), timely sowing (15th Nov., `95) as environment-2 (E_2) and late sowing (2nd Dec., `95) as environment-3 (E_3). The data were analysed for stability parameters according to Eberhart and Russell (1996) for days to flowering, tillers per plant, grains per spike and grain yield per plant (g).

The mean, regression co-efficient ($\bar{b}i$) and deviation from regression ($\bar{S}^2di$) are presented in table 1. High heterogenity between the slopes of linear regression was observed making it difficult to decide the criteria for selection. A genotype having high mean, unit regression and least deviation from regression is considered to be superior. The different genotypes used in this study, however, did not exhibit uniform stability and responsiveness patterns for all the characters. The stability and responsiveness appeared to be specific for specific characters within a single genotype.

It was also observed that generally, the genotypes with relatively high yield exhibited low stability, indicating that mean performance and stability are two different components genetically controlled in different manner. The genotypes JDB 95-11 and MACS 1967 had high mean performance for grains per spike and grain yield per plant, respectively.

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REFERENCES

Eberhart, S. A. and W. A. Russell. 1966. Stability parameters for comparing varieties. *Crop Sci.*, 6 : 36-40.

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TABLE 1

Stability parameters for grain yield and its components in 48 genotypes of durum wheat.

Genotypes	Days to flowering			Tillers per plant			Grains per spike			Grain yield per plant		
	$\bar{X}$	bi	$\bar{S}^2di$	$\bar{X}$	bi	$\bar{S}^2di$	$\bar{X}$	bi	$\bar{S}^2di$	$\bar{X}$	bi	$\bar{S}^2di$
JDB 95-1	58.58	0.49	9.62**	5.00	0.68**	-0.52	44.16	-1.15**	-4.40	7.67	0.25**	-1.04
JDB 95-2	64.89	2.73**	-0.77	5.06	1.35**	-0.52	49.97	3.09	19.29*	9.78	1.49**	-1.14
JDB 95-3	57.67	-1.08**	0.14	4.38	-0.23**	-0.47	42.58	0.37	0.01	7.11	0.27**	-0.80
JDB 95-4	58.00	-0.41	1.52	4.64	0.63**	-0.53	43.73	-1.22**	-4.98	6.12	0.17**	-1.09
JDB 95-5	62.00	1.53	0.22	6.07	1.08	1.02	43.58	-0.44**	-3.76	8.14	1.09	1.26
JDB 95-6	58.22	1.70	-0.56	5.96	1.06	-0.29	45.82	0.98	-2.96	6.43	1.22	-0.72
JDB 95-7	63.33	1.83	0.72	4.69	1.49**	-0.48	40.82	2.67	9.77	7.11	1.45**	-1.14
JDB 95-8	58.11	-0.50**	-0.19	4.53	0.28**	-0.46	46.23	0.76	-4.31	6.69	0.20	-0.95
JDB 95-9	65.56	2.10	-0.01	7.22	0.90	4.76**	39.31	1.47	6.23	9.33	0.20	13.36**
JDB 95-10	59.67	0.11**	-0.74	5.91	2.47**	-0.24	43.01	2.41	-4.06	9.15	1.84**	-0.89
JDB 95-11	59.56	1.64	-0.52	4.37	1.12**	-0.03	54.24	2.09**	-4.84	7.83	1.26**	-1.17
JDB 95-12	59.11	-0.73	3.27*	6.84	-0.16*	4.04**	41.16	-0.37*	-4.36	7.21	0.57**	-1.03
JDB 95-13	64.44	1.16**	-0.93	6.69	0.43	2.40*	43.84	-0.20**	-4.74	8.69	0.92	6.31*
JDB 95-14	58.22	0.09*	-0.44	6.86	0.71	-0.43	39.32	1.03	-5.11	8.44	0.90*	-1.15
JDB 95-15	61.33	1.37	0.27	6.27	1.23	0.39	44.51	-0.34*	-3.42	8.81	1.14	1.04
JDB 95-16	59.33	1.60**	-0.92	5.22	0.15	-0.54	47.40	0.45	-3.50	8.84	0.49	2.44
JDB 95-17	60.67	0.75	4.45*	5.73	0.05**	-0.47	48.16	-0.55**	-5.02	8.90	0.06**	-1.12
JDB 95-18	55.56	-1.23	7.54	4.93	0.46**	-0.29	37.73	2.46	33.07**	7.82	0.13	0.52
JDB 95-19	57.33	-1.09**	0.11	5.06	1.01	-0.19	46.14	-0.13**	-3.86	8.92	1.14	-0.93
JDB 95-20	59.44	1.17	3.48*	5.71	1.76	-0.53	39.13	-0.56**	-5.11	7.95	1.30	-0.81
JDB 95-21	61.33	-0.34	0.76	4.44	1.12	1.96*	42.93	2.69	25.40*	8.42	1.21	-0.91
JDB 95-22	59.78	1.51	-0.29	4.49	0.19	-0.52	41.13	1.71	-3.87	7.52	0.28	7.28**
JDB 95-23	60.78	-0.32	1.54	4.11	-0.01**	-0.27	49.13	1.88	0.91	6.96	0.48**	-1.12
JDB 95-24	58.22	0.78	0.63	5.58	0.11*	-0.49	47.29	0.28	0.05	9.03	0.72	-0.98

Table 1 (Contd.)

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
JDB 95-25	61.22	2.16	2.20	6.78	1.70**	-0.04	45.07	1.91	1.25	8.71	1.19**	-1.16
JDB 95-26	65.44	3.80**	-0.80	6.82	2.39**	-0.04	46.07	2.80	8.20	10.29	2.91**	-0.99
JDB 95-27	62.56	0.84	1.68	5.31	-0.19	0.32	39.46	1.52	-4.08	7.37	0.34	2.45
JDB 95-28	61.33	-0.23*	-0.18	5.13	1.83**	-0.48	47.42	2.46	6.30	7.35	1.03	-1.07
JDB 95-29	63.56	2.24	-0.07	6.67	2.46**	-0.09	40.58	0.38	-4.26	8.51	0.77	0.12
JDB 95-30	59.67	1.66	0.39	5.76	0.57	-0.40	46.20	-1.11	17.74*	8.67	0.26	2.43
JDB 95-31	64.56	2.61**	-0.92	7.27	2.24**	-0.19	41.33	0.80	-0.72	9.79	0.66	-0.09
JDB 95-32	58.22	-0.65**	0.01	5.73	1.31	0.76	50.27	2.34**	-0.92	9.22	1.56**	-1.11
JDB 95-33	56.33	-1.78**	-0.71	5.21	0.98	-0.25	43.36	-1.49**	-2.84	9.25	1.71	-0.26
JDB 95-34	56.67	1.43*	-0.85	4.51	1.72**	-0.41	50.58	1.36**	-5.10	7.69	0.95	-1.08
JDB 95-35	60.56	0.78	-0.28	4.93	0.38**	-0.51	43.11	2.05*	-4.02	7.03	0.56**	-1.10
JDB 95-36	57.22	-0.37*	0.12	4.32	0.56	0.09	42.12	3.01	3.43	6.92	0.25	0.97
JDB 95-37	60.22	-0.13	3.99*	6.39	0.35	1.45	43.36	0.08	8.43	8.45	0.86	-0.93
JDB 95-38	62.00	2.52**	-0.38	5.24	0.81	-0.25	43.66	1.13	14.24	8.85	0.38	1.36
JDB 95-39	60.22	0.44**	-0.93	5.58	2.13**	-0.41	38.49	2.38	-1.13	8.64	1.94**	-1.16
JDB 95-40	57.44	0.70**	-0.85	5.07	0.14**	-0.52	50.62	1.73	-0.65	8.38	0.85	1.45
JDB 95-41	61.67	1.38	0.80	4.98	1.15	-0.37	48.11	1.63	-3.58	9.13	1.49**	-0.99
JDB 95-42	63.22	1.47**	-0.86	4.73	0.85	-0.27	46.96	2.59	-0.53	8.56	0.86	-0.88
JDB 95-43	58.22	-0.03	4.48*	5.0	1.26*	-0.52	47.67	1.18	-2.68	8.97	1.83*	-0.29
Raj 1555	62.33	0.69	1.35	5.80	0.87	-0.47	51.26	0.44	-1.69	9.09	0.72	-0.61
HI 8381	75.00	5.37**	2.62	5.67	1.36	1.16	48.84	-0.44	16.15*	8.48	1.66	6.55*
HD 4530	60.78	-1.84**	1.08	6.63	1.29**	-0.54	41.34	0.40	-3.25	6.89	0.95	-0.48
PBw 34	79.11	8.60**	-0.51	6.12	1.58	3.31**	50.92	0.17	57.71**	9.97	2.69	15.70**
MACS 1967	63.11	2.25*	0.06	6.02	2.41**	0.21	43.44	2.54	1.48	12.21	2.82	7.02**
Mean	61.10			5.56			44.83			8.34		
S. Em. ±	0.96			0.74			2.26			1.73		
C. D.	2.66			2.05			6.26			4.79		