

Table 1 Scaling tests estimates of gene effects and type of epistasis for different characters in barley

	DL 88 × K 560				K 603 × Azad				RD 2552 × NDB 1020			
	Normal (N)	soil Saline soil (S)	sodic		Normal (N)	soil Saline soil (S)	sodic		Normal (N)	soil Saline soil (S)	sodic	
1	2	3	4	5	6	7						
Scale	Days to ear emergence											
A	7.34**	21.00**	+1.70	26.00**	8.33**	6.34**	8.33**					
	+1.56			+0.94	+1.63	+1.24	+2.31					
B	-3.34**	15.33**		14.00**	7.00**	-6.34*	-7.67**					
	+1.05	+1.70		+1.88	+2.00	+1.63	+1.15					
C	-2.66	26.33**		1.34	8.67	-2.67	12.00					
	+6.30	+2.87		+6.20	+3.80	+2.30	+4.14					
D	-3.34	-5.00**		-19.34**	-3.33	-1.34	6.33**					
	3.12	+1.50		+3.19	+2.08	+1.00	+2.00					
Gene effects, 6 parameters												
m	83.00**	87.00**		78.00**	77.33**	77.33**	77.67**					
	+1.52	+0.57		+1.52	+0.89	+0.33	+0.88					
(d)	2.66**	-3.67**		0.00	-1.33	2.66**	1.00					
	+0.66	+0.94		+0.94	+1.10	+0.74	+0.94					
(h)	5.33	11.17**		37.99**	9.67*	7.34**	12.67**					
	+6.30	+3.07		+6.41	+4.20	+2.21	+4.10					
(i)	6.66	10.00**		38.67**	6.67	2.67	12.67					
	+6.25	+2.98		+6.39	+4.16	+2.00	+4.00					
(j)	5.33**	2.83*		6.00**	0.67	6.34**	8.00**					
	+0.84	+1.33		+1.02	+1.27	+0.81	+1.30					
(l)	-10.66	-46.33**		-78.67**	-22.00**	-2.67	-13.33**					
	+6.84	+4.74		+7.75	+5.83	+3.77	+5.60					
Type of epistasis	-	D		D	D	-	D					
Scale	Days to maturity											
A	8.34**	5.00*		7.00**	7.33	22.00**	7.67**					
	+2.26	+2.49		+1.24	+4.00	+3.05	+2.45					
B	6.00	8.00		4.67**	6.67**	17.67**	6.00**					
	+2.62	+1.37		+1.20	+2.00	+3.46	+0.82					
C	7.67*	3.00		4.34*	-2.00	53.67**	-3.00					
	+3.16	+4.20		+2.42	+4.94	+5.65	+1.56					
D	-3.34*	-5.00		-3.67*	-8.00**	7.00**	-8.33*					
	+1.63	+2.38		+0.81	+0.82	+2.49	+1.41					
Gene effects, 6 parameters												
m	137.33**	146.00**		137.67**	143.33**	146.00**	144.33**					
	+0.33	+1.00		+0.33	+0.33	+1.00	+0.33					
(d)	-1.33	-3.00*		0.34	0.00	-1.67	0.33					
	+1.49	+1.29		+0.47	+0.47	+1.49	+1.25					
(h)	9.83**	12.83**		8.17**	13.67**	-13.83**	19.17**					
	+3.56	+4.78		+1.92	+2.21	+5.37	+2.85					
(i)	6.66*	10.00*		7.34**	16.00**	-14.00**	16.67					
	+3.26	+4.76		+1.63	+1.63	+4.98	+2.83					
(j)	1.16	-1.50		1.16*	0.33	2.17	0.83					
	+1.81	+1.40		+0.50	+2.03	+2.10	+1.27					
(l)	21.00**	23.00**		-18.99**	-30.00**	-20.67**	-30.33**					
	+6.74	+6.67		+3.07	+5.29	+3.05	+5.23					
Type of epistasis	C	C		D	D	C	D					

Continued Table 1

Scale	No. of effective tillers/plant					
A	1.6**	-3.03**	-0.36	-2.33**	2.73**	3.07**
	±0.68	±0.57	±0.47	±1.11	±0.79	±0.70
B	1.47**	5.75**	-1.17**	0.73	-14.10**	-1.30*
	±0.28	±0.62	±0.52	±1.05	±0.47	±0.58
C	1.43**	13.63**	1.87	-8.80**	-17.10**	8.70**
	±0.33	±1.04	±1.82	±1.09	±0.47	±1.26
D	-1.00**	5.47**	1.70	-3.60**	-2.87**	3.47**
	±0.33	±0.55	±0.91	±0.71	±0.74	±5.88
Gene effect 6-parameters						
m	11.70	10.70**	12.33**	11.07	8.09**	12.07
	±0.33	±0.21	±0.43	±0.09	±0.32	±0.24
(d)	0.53	-3.47**	1.23**	-2.77**	6.67**	2.80**
	±0.31	±0.35	±0.27	±0.28	±0.36	±0.34
(h)	4.58**	10.72**	-2.53	-3.75**	7.12**	-5.58**
	±0.68	±1.13	±1.86	±0.69	±1.52	±1.25
(i)	2.00**	-10.93**	-3.39	-4.73**	5.73**	6.93**
	±0.66	±1.09	±1.81	±0.66	±1.48	±1.18
(j)	0.25	-4.38**	0.40	-4.25**	8.42**	2.18**
	±0.37	±0.36	±0.30	±0.30	±0.41	±0.36
(l)	-5.43*	8.23**	4.93*	2.83*	3.63**	5.17**
	±1.33	±1.75	±2.12	±1.27	±2.06	±1.86
Type of epistasis	D	D	-	D	C	D
Scale Weight of grains/main spike (g)						
A	-0.17	0.67**	-0.67**	0.96**	0.17	1.30**
	±0.35	±0.14	±0.16	±0.13	±0.19	±0.19
B	0.73**	0.27	0.90**	0.73**	0.20	-0.30
	±0.19	±0.16	±0.19	±0.22	±0.16	±0.25
C	-0.57	0.00	-0.63*	-1.70**	0.57*	-4.27**
	±0.40	±0.34	±0.27	±0.41	±0.23	±0.44
D	-0.57**	-0.47**	-0.43*	-1.70**	0.10	-2.77
	±0.19	±0.15	±0.16	±0.20	±0.24	±0.21
Gene effects, 6 parameters						
m	2.80**	2.03**	0.22**	2.67**	3.17**	1.63**
	±0.06	±0.07	±0.06	±0.08	±0.03	±0.08
(d)	0.57	0.13*	-0.50**	0.09	-0.16	0.03
	±0.15	±0.07	±0.11	±0.09	±0.08	±0.12
(h)	1.92**	0.73*	1.75**	2.95**	0.15	4.67**
	±0.41	±0.32	±0.33	±0.41	±0.24	±0.45
(i)	1.13**	0.93**	0.87**	3.40**	0.19	5.53**
	±0.37	±0.30	±0.32	±0.40	±0.22	±0.04
(j)	-0.45**	0.19*	-0.78**	0.12	-1.67**	0.67**
	±0.17	±0.08	±0.12	±0.11	±0.12	±0.13
(l)	-1.70*	1.86**	-1.09*	-5.10**	-0.17	-6.80**
	±0.71	±0.43	±0.52	±0.56	±0.42	±0.05
Type of epistasis	D	D	D	D	-	D
Scale No. of grain/spike						
A	3.87	-2.20	0.47	-19.90**	12.87**	11.43**
	±2.65	±1.58	±2.08	±1.93	±2.11	±3.31
B	20.87** ±1.08	-22.37**	24.57**	32.97	11.57**	-34.33**
		±1.20	±0.81	±3.14	±2.24	±2.79
C	-27.33** 1.79	-46.77**	40.76**	37.07**	-25.17**	-37.56**
		±2.20	±2.58	±4.12	±3.62	±5.57
D	-26.03**	-11.10**	7.87**	12.00**	-24.80**	-7.33**
	±1.46	±1.35	±1.35	±2.72	±1.93	±1.89

Continued Table 1

Gene effects, 6 parameters						
m	83.13**	50.27**	72.57**	100.67**	80.73**	63.67**
	± 0.29	± 0.49	± 0.49	± 1.06	± 0.75	± 0.67
(d)	1.89	8.57	13.00**	20.73**	1.40	5.46**
	± 1.32	± 0.92	± 0.91	± 1.81	± 1.21	± 1.29
(h)	68.86	27.15	-24.75**	40.53**	59.62**	15.08**
	± 2.97	± 2.75	± 2.82	± 5.44	± 3.99	± 4.44
(i)	52.07	22.20**	15.73**	-23.99**	49.59**	14.67**
	± 2.89	± 2.71	± 2.69	± 5.42	± 3.86	± 3.72
(j)	-8.50**	10.08	-12.05**	26.43**	0.65	22.88**
	± 1.37	± 0.95	± 0.99	± 1.83	± 1.50	± 1.34
(l)	-76.80**	2.36	-9.30*	10.93	-74.03**	8.23
	± 5.9	± 4.28	± 4.45	± 8.34	± 6.04	± 7.57
Type of epistasis	D	-	C	-	D	-
Scale	1000-grain weight (g)					
A	-8.93**	-13.67**	19.47**	-0.67	-6.17**	7.67**
	± 1.33	± 1.58	± 1.17	± 1.31	± 1.32	± 1.12
B	2.60**	-23.80**	21.13**	-4.30**	13.97**	4.73**
	± 1.06	± 1.95	± 1.28	± 1.21	± 0.52	± 1.04
C	19.07**	-30.87**	-20.13**	-12.63*	-26.40**	-2.47**
	± 2.44	± 1.97	± 2.44	± 5.49	± 2.08	± 0.74
D	12.70**	3.30**	-30.36**	-3.83	-17.10**	30.50**
	± 0.92	± 0.73	± 1.41	± 2.76	± 1.19	± 0.21
Gene effect 6-parameters						
m	37.47**	30.50**	26.13**	32.76**	28.77**	30.50**
	± 0.41	± 0.06	± 0.58	± 1.33	± 0.49	± 2.21
(d)	-1.83	5.23**	-0.17	0.89	-5.29**	-2.80**
	± 0.41	± 0.72	± 0.80	± 0.70	± 0.67	± 0.61
(h)	-22.07**	-10.43	58.99**	11.15	43.86**	4.33**
	± 2.04	± 1.75	± 2.84	± 5.56	± 2.39	± 1.59
(i)	-25.40**	-6.60**	60.73**	7.67	34.20	4.93**
	± 1.83	± 1.45	± 2.81	± 5.52	± 2.37	± 1.48
(j)	-5.76**	5.07**	-0.83	1.83	-10.07**	6.19**
	± 0.68	± 0.74	± 0.85	± 0.83	± 0.67	± 0.72
(l)	31.73**	44.07**	-101.33**	-2.69	-41.99**	-2.00
	± 2.94	± 3.48	± 4.03	± 6.17	± 3.37	± 2.86
Type of epistasis	D	D	D	-	D	-

Note: *, ** = 0.05 and 0.01 respectively; D = Duplicate; C = Complementary