

Table 1. Mean squares (M.S) for grain yield and other studied traits combined over two locations, 2009 season.

S.O.V	d.f	MS								
		Days to 50% silking	Plant height (cm)	Ear height (cm)	Ear length (cm)	Ear diameter (cm)	Number of rows ear ⁻¹	Number of kernels row ⁻¹	Number of ears 100 plants ⁻¹	Grain yield (ard fad ⁻¹)
Location (E)	1	148.338**	38667.129**	41334.000**	2.227	0.174	26.835**	341.679**	51.724	896.997**
Rep/Loc	6	5.665	1025.281	558.778	6.377	0.141	2.614	26.549	29.326	74.460
Crosses (C)	26	16.253**	1575.859**	742.892**	9.354**	0.057**	2.120	28.107**	242.542	99.153**
Lines (L)	8	25.885**	3768.552**	1506.702**	10.769**	0.072	5.097**	28.057	354.796	135.486**
Testers (T)	2	84.264**	2457.181**	2152.727**	60.948**	0.024*	0.373	130.690**	414.418	288.815**
L x T	16	2.936*	369.347*	184.758	2.197**	0.054*	0.851	15.309	164.931	57.278**
C x Loc	26	1.876	182.533	169.269	1.873**	0.028*	2.307**	12.130**	181.074**	29.573**
L x Loc	8	2.390	282.161	263.074	1.059	0.039*	4.889**	15.436**	260.980**	42.658**
T x Loc	2	4.310	22.282	16.097	12.156**	0.007	3.272**	10.575	399.660**	50.552*
L x T x Loc	16	1.315	152.751	141.503	0.994	0.026	0.896	10.671**	140.797*	20.409
Pooled error	156	1.621	142.066	76.774	0.880	0.017	0.465	4.583	70.027	13.427
Exp. Error***	174	1.814	144.981	79.719	0.683	0.014	0.467	4.548	70.012	14.486
C.V%		2.16	4.67	6.08	4.51	2.67	4.62	5.43	8.17	11.31

*, ** Significant at 0.05 and 0.01 level of probability, respectively.

***Exp. Error derived from analysis of variance of crosses and check hybrids.

Table 5. General combining ability effects (\hat{g}_i) for all of the tested lines and testers for grain yield and other agronomic traits combined across two locations, 2009 growing season.

Lines	Days to 50%silking	Plant height (cm)	Ear height (cm)	Ear length (cm)	Ear diameter (cm)	Number of rows ear ⁻¹	Number of kernels row ⁻¹	Number of ears 100 plants ⁻¹	Grain yield (ard fad ⁻¹)
L1	0.694*	11.764**	2.796	0.757**	0.022	-0.479**	0.949*	7.131**	4.179**
L2	0.861**	-18.653**	-13.620**	0.210	-0.092**	-0.507**	0.099	-2.839	-4.012**
L3	0.861**	3.305	2.379	0.210	0.077**	0.415*	0.677	5.802**	-1.155
L4	-0.889**	-0.069	-1.204	-0.890**	-0.006	0.899**	-0.309	-1.060	-0.972
L5	-1.681**	-3.194	-0.037	-1.096**	-0.039	0.010	-1.642**	-3.106	-1.049
L6	-1.264**	-7.736*	-4.954*	0.040	0.060*	-0.057	-1.334**	-1.419	0.063
L7	0.444	-9.361**	-4.704*	-0.148	-0.003	0.265	-0.023	-2.831	-0.899
L8	-0.139	-0.569	3.838	-0.037	0.032	-0.207	-0.248	0.481	1.928**
L9	1.111**	24.514**	15.504**	0.954**	-0.050*	-0.340*	1.829**	-2.156	1.919**
SE gi	0.259	2.432	1.788	0.191	0.026	0.139	0.436	1.708	0.747
SE gi-gj	0.367	3.440	2.529	0.270	0.037	0.196	0.617	2.415	1.057
Tester Gm1002	-1.014**	-3.847*	-5.565**	-0.800**	-0.020	0.068	-1.368**	-2.162**	-2.259**
Gm1021	-0.125	6.722**	5.366**	-0.205	0.010	0.007	0.043	2.581**	0.704
SC166	1.139**	-2.875	-0.199	1.005**	0.010	-0.075	1.325**	-0.418	1.555**
SE gi	0.150	1.404	1.032	0.110	0.015	0.080	0.252	0.986	0.431
SE gi-gj	0.212	1.986	1.460	0.156	0.021	0.113	0.356	1.394	0.610

*, ** Significant at 0.05 and 0.01 level of probability, respectively.

Table 9. Estimates of the variance due to general combining ability GCA, specific combining ability SCA and their interaction with locations for nine traits, data combined over locations 2009 season.

Parameters	Days to 50% silking	Ear height (cm)	Plant height (cm)	Ear length (cm)	Ear diameter (cm)	Number of rows ear ⁻¹	Number of kernels row ⁻¹	Number of ears 100 plants ⁻¹	Grain yield (ard fad ⁻¹)
K ² lines	0.979	145.266	51.817	0.405	0.001	0.009	0.526	3.909	3.867
K ² testers	1.110	33.818	29.675	0.678	0.0002	-0.040	1.668	0.202	3.309
K ² GCA	1.044	57.167	34.309	0.584	-0.0001	-0.027	1.286	0.628	2.681
K ² SCA	0.203	27.074	5.407	0.150	0.004	-0.006	0.579	3.017	4.608
K ² L x Loc	0.064	11.674	15.525	0.015	0.002	0.369	0.904	15.912	2.436
K ² T x Loc	0.075	-3.327	-1.685	0.313	-0.0001	0.078	0.166	9.156	1.031
K ² GCA x Loc	0.075	-0.022	-0.079	0.234	-0.0001	0.133	0.097	7.896	1.091
K ² SCA x Loc	-0.076	2.672	16.182	0.028	0.002	0.108	1.522	17.692	1.746

All negative estimates of variance were considered equal zero

Table 10. Genotypic (above) and phenotypic correlation coefficients (down) diagonal among grain yield and other studied traits, data combined over locations 2009 season.

Characters	Days to 50 % silking	Plant height (cm)	Ear height (cm)	Ear length (cm)	Ear diameter (cm)	Number of rows ear ⁻¹	Number of kernels row ⁻¹	Ears 100 plants ⁻¹	Grain yield (ard fad ⁻¹)
Days to 50 % silking		0.763**	0.703**	0.859**	0.479	-0.166	0.974**	-0.036	0.391
Plant height (cm)	0.305**		0.996**	0.806**	0.347	-0.236	0.854**	0.164	0.799**
Ear height (cm)	0.269**	0.878**		0.813**	0.529	-0.355	0.865**	0.267	0.861**
Ear length (cm)	0.349**	0.451**	0.476**		0.645**	-0.238	1.009**	0.062	0.714**
Ear diameter (cm)	0.012	0.021	0.141	0.265**		-0.104	0.793**	-0.226	0.312
Number of rows ear ⁻¹	-0.038	-0.042	-0.074	-0.096	0.113		-0.138	-0.049	-0.226
Number of kernels row ⁻¹	0.227*	0.305**	0.324**	0.710**	0.308**	-0.070		0.273	0.687**
Ears 100 plants ⁻¹	-0.008	0.096	0.159	0.069	-0.044	-0.046	0.072		0.339**
Grain yield (ard/fed)	0.031	0.412**	0.469**	0.408**	0.148*	-0.029	0.229**	0.557**	

*, ** Significant at 0.05 and 0.01 level of probability, respectively.