

Table S1. Means of agronomic traits for the parents, CO940610 and Platte, under two irrigation levels in the 2007–2008 and 2008–2009 growing seasons.

	Environments†							
Variable‡	08FW		08FD		09GW		09GD	
	CO940610	Platte	CO940610	Platte	CO940610	Platte	CO940610	Platte
Plht (cm)	84.7**	77.7	73.3**	67.1	94.6**	88.3	77.6*	72.0
Ll (cm)	13.1	14.5*	10.4	11.0	15.8	16.4	17.3	17.4
Lw (cm)	1.2	1.3*	1.0	1.2**	1.2	1.5**	1.4	1.5
Sl (cm)	8.2	9.3*	7.8	9.0**	9.1	9.9**	9.5	9.9
Dth (d)	153.9	156.0**	151.0	152.2**	143.2	145.1**	142.0	143.7**
Dpm (d)	190.8	190.7	186.4	186.6	183.6	184.2	181.3	181.0
Gfd (d)	36.9**	34.2	34.7	34.0	40.0	39.3	38.9	37.4
Gfr (g d ⁻¹)	4.5	4.4	3.2	3.2	4.2	4.0	4.0*	3.3
Agb (g)	374.1	364.5	300.9	295.3	472.3*	436.8	452.2**	386.6
Hi	0.44	0.40	0.42*	0.33	0.46*	0.33	0.33	0.32
200Kwt (g)	7.98*	6.89	7.83*	7.00	7.75*	7.09	7.39	7.15
Gy (kg ha ⁻¹)	4200.5*	3720.3	3308.6*	2830.4	4223.9**	3697.5	3651.3**	2960.9
Phs	0.63	0.79*	-----	-----	0.50	0.69*	-----	-----
Ndvi	-----	-----	-----	-----	0.71	0.70	0.71	0.71

*,** Asterisks denote that a parental mean is significantly higher than the other mean in that environment at the 0.05 and 0.01 levels of probability, respectively.

† The four environments obtained from different moisture levels in two growing seasons: Fort Collins limited irrigation (08FD), Fort Collins full irrigation (08FW), Greeley limited irrigation (09GD), and Greeley full irrigation (09GW).

‡ Plht, plant height; Ll, leaf length; Lw, leaf width; Sl, spike length; Dth, days to heading; Dpm, days to physiological maturity; Gfd, grain filling duration; Gfr, grain filling rate; Agb, above ground biomass; Hi, harvest index; 200Kwt, 200 kernel weight; Gy, grain yield; Phs, pre-harvest sprouting; Ndvi, normalized difference vegetation index.

Table S2. Pearson correlation coefficients among agronomic characteristics of the CO940610/Platte population (n=185) at Fort Collins under different irrigation levels in the 2007–2008 growing season. Values above the diagonal refer to the fully irrigated treatment and those below the diagonal refer to the limited irrigation treatment.

Trait †	200Kw												
	Plht	Ll	Lw	Sl	Dth	Dpm	Gfd	Gfr	Agb	Hi	t	Gy	Phs
Plht		0.29**	0.13	0.32**	0.48**	0.24**	-0.49**	0.29**	0.37**	-0.11*	0.01	0.35**	-0.09
Ll	-0.06		0.32**	0.47**	-0.13	-0.09	0.19**	0.09	0.15*	-0.08	-0.08	0.13	0.08
Lw	-0.03	0.32**		0.29**	0.12	0.13	-0.07	0.12	0.09	-0.07	0.01	0.37**	0.19**
Sl	0.13	0.33**	0.11		0.07	0.11	-0.01	0.03	0.15*	-0.06	-0.12	0.12	0.13
Dth	0.46**	0.38**	0.35**	0.38**		0.72**	-0.92**	-0.29**	0.07	-0.16*	-0.50**	-0.26*	-0.12
Dpm	0.17**	0.30**	0.28**	0.38**	0.62**		-0.39**	-0.04	0.16*	-0.19**	-0.39**	-0.19**	0.22**
Gfd	-0.49**	-0.33**	-0.32**	-0.29**	-0.85**	-0.26**		-0.41**	-0.18**	0.11	0.45**	-0.14*	0.07
Gfr	0.40**	0.21**	0.14	0.23**	-0.25**	-0.26**	-0.23**		0.79**	0.39**	-0.01	0.59**	-0.12
Agb	0.27**	0.21**	0.06	0.03	0.08	0.01	-0.08	0.84**		-0.08	0.12	0.52**	-0.06
Hi	0.04	-0.05	0.08	0.05	0.06	0.03	-0.01	-0.01	0.04		0.05	0.36**	-0.08
200Kw													
t	0.23**	0.14*	0.21**	0.11	-0.27**	-0.17*	0.24**	0.09	0.15*	0.11		0.22**	-0.06
Gy	0.33**	0.08	0.07	0.09	-0.18**	-0.12*	-0.14*	-0.14*	0.40**	0.21**	0.19*		-0.07

*, **, significant at the 0.05 and 0.01 levels of probability, respectively.

†Plht, plant height; Ll, leaf length; Lw, leaf width; Sl, spike length; Dth, days to heading; Dpm, days to physiological maturity; Gfd, grain filling duration; Gfr, grain filling rate; Agb, above ground biomass; Hi, harvest index; 200Kwt, 200 kernel weight; 1Mtg. One meter grain weight; Gy, grain yield; Phs, pre-harvest sprouting.

Table S3. Pearson correlation coefficients among agronomic characteristics of the CO940610/Platte population (n=185) at Greeley under different irrigation levels in the 2008–2009 growing season. Values above the diagonal refer to the fully irrigated treatment and those below the diagonal refer to the limited irrigation treatment.

Trait †	200Kw													
	Plht	Ll	Lw	Sl	Dth	Dpm	Gfd	Gfr	Agb	Hi	t	Gy	Phs	Ndvi
Plht		-0.11	-0.01	0.09	0.19**	0.13	-0.12	0.24**	0.45**	-0.19**	0.25**	0.19*	-0.07	0.18**
Ll	0.03		0.31**	0.41**	-0.14*	-0.13	0.08	0.13	0.02	0.01	0.01	0.07	0.02	0.25**
Lw	-0.03	0.17*		0.29**	0.23**	0.05	-0.27**	0.09	-0.04	0.01	0.14*	0.04	0.14	0.06
Sl	0.01	0.16*	0.50**		0.24**	0.17*	-0.16*	0.02	0.03	-0.16*	-0.11	-0.08	0.11	0.17*
Dth	0.35**	-0.06	0.21**	0.25**		0.72**	-0.52**	-0.14*	-0.01	-0.42**	-0.39**	-0.37**	-0.08	-0.26**
Dpm	0.19**	-0.02	0.13	0.22**	0.73**		0.11	-0.21**	0.02	-0.30**	-0.39**	-0.29**	-0.04	-0.22**
Gfd	-0.25**	0.10	-0.10	-0.09	-0.67**	-0.01		-0.08	0.04	0.20**	0.12	0.15*	0.05	0.16*
Gfr	0.21**	0.04	0.03	-0.05	-0.15*	-0.39**	-0.24**		0.77**	0.39**	0.23**	0.59**	-0.01	0.42**
Agb	0.39**	0.15*	0.12	0.12	0.13	0.02	-0.16*	0.75**		0.14*	0.16*	0.49**	-0.04	0.45**
Hi	-0.14	0.06	-0.04	-0.13	-0.43**	-0.53**	0.05	0.63**	0.02		0.27**	0.48**	0.02	0.26**
200Kw														
t	0.12	0.08	0.05	0.04	-0.38**	-0.31**	0.19**	0.31**	0.28**	0.17*		0.21**	0.15*	0.32**
Gy	0.25**	0.05	0.05	0.02	-0.11*	-0.29**	-0.16*	0.71**	0.54**	0.44**	0.39**		0.01	0.48**

Ndvi	0.01	0.05	0.03	0.09	0.08	-0.18**	-0.09	0.20**	0.20**	0.12	0.15*	0.29**	0.05
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*, **, significant at the 0.05 and 0.01 levels of probability, respectively.

† Plht, plant height; Ll, leaf length; Lw, leaf width; Sl, spike length; Dth, days to heading; Dpm, days to physiological maturity; Gfd, grain filling duration; Gfr, grain filling rate; Agb, above ground biomass; Hi, harvest index; 200Kwt, 200 kernel weight; Gy, grain yield; Phs, pre-harvest sprouting; Ndvi, normalized difference vegetation index.