

SUPPLEMENTARY TABLES

to the article A. Zatybekov, S. Anuarbek, S. Abugalieva, Y. Turuspekov “Phenotypic and genetic variability of a tetraploid wheat collection grown in Kazakhstan”

**Supplementary Table 1.** A list of tetraploid wheat accessions with means of agronomic traits (Almaty region, 2018 and 2019)

#	Accession Name / ID	Origin	Taxonomic classification	Accession type	HT	FT	SMT	PH	NFS	SL	NKS	TKW	YPP
1	AC Navigator	Canada	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	55.0±2.0	64.5±2.5	38.5±1.5	63.4±6.3	2.5±0.1	6.5±0.8	40.3±3.7	48.1±2.8	3.9±0.2
2	Alemanno	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	52.5±0.5	61.0±6.0	42.5±2.5	67.8±2.0	2.3±0.1	6.5±0.3	52.1±5.5	47.4±0.6	4.7±0.5
3	Altar 84	Mexico	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	54.0±1.0	60.3±2.3	39.5±2.5	67.8±8.0	2.5±0.5	6.3±0.4	48.9±8.3	35.7±7.4	4.0±1.3
4	Ambral	France	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	61.5±2.5	64.5±2.5	35.0±3.0	67.8±1.6	2.6±0.2	7.9±0.1	43.8±1.0	45.5±4.1	3.9±0.8
5	Ancomarzio	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	53.0±2.0	61.3±3.3	40.5±1.5	74.6±0.8	3.3±0.1	6.9±0.3	51.6±2.4	42.9±1.7	5.7±0.3
6	Brindur	France	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	50.0±2.0	53.0±2.0	43.8±1.3	68.2±7.2	2.7±0.2	7.2±0.4	45.5±2.1	46.2±3.8	4.8±0.5
7	Capeiti-8	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	50.0±2.0	53.0±2.0	43.5±1.5	88.5±11.5	2.6±0.2	5.6±0.2	47.0±1.8	48.4±2.9	5.1±1.0
8	Cappelli	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	60.0±1.0	63.8±1.7	36.5±1.5	123.9±9.7	2.1±0.7	7.9±0.2	50.3±2.7	46.6±8.4	4.4±0.9
9	Casanova	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	50.8±1.3	54.0±1.0	41.5±3.5	58.0±3.7	1.8±0.4	6.2±0.3	37.3±0.5	47.4±3.3	3.0±0.9
10	Ceedur	France	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	56.5±2.5	59.0±3.0	40.0±2.0	97.2±3.7	2.9±0.5	7.7±0.8	36.2±6.0	53.3±1.9	4.4±0.8
11	Ciclope	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	51.5±0.5	55.0±0.0	42.0±3.0	60.5±3.9	2.7±0.2	6.9±0.2	44.1±2.9	50.3±3.8	4.2±0.6
12	Cirillo	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	53.5±1.5	60.5±2.5	41.5±0.5	64.2±1.8	1.7±0.2	7.2±0.1	42.0±3.6	43.5±0.7	2.1±0.1
13	Claudio	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	61.5±2.5	66.5±4.5	35.0±3.0	73.8±6.6	3.1±0.3	5.9±0.1	41.8±5.3	48.5±5.6	4.9±1.8
14	Colosseo	Italy	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	52.3±2.8	58.5±0.5	38.8±3.3	69.5±8.5	1.7±0.7	6.7±0.2	41.8±1.8	50.8±1.6	2.9±1.1
15	Cosmodur	France	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	54.0±1.0	59.5±1.5	39.5±2.5	64.7±7.1	2.2±0.3	6.1±0.2	41.9±0.4	48.5±2.5	3.6±0.8
16	Granizo	Spain	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	54.0±1.0	63.5±5.5	39.5±2.5	71.1±5.3	4.4±0.4	6.3±0.7	61.5±1.3	47.1±2.4	7.0±1.9
17	Kiperounda	Morocco	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	60.0±1.0	61.3±0.8	35.0±3.0	92.4±13.0	2.9±0.5	6.2±0.2	40.3±3.1	37.3±0.9	2.7±0.6
18	LO92	USA	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	57.0±2.0	59.5±2.5	36.5±1.5	104.5±10.1	3.3±0.7	8.7±1.2	48.9±4.3	43.0±0.9	5.4±2.1
19	Mexicali75	Mexico	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	48.0±0.7	51.0±0.9	42.0±2.8	58.5±4.9	2.3±0.3	6.8±1.0	49.4±2.8	47.0±2.8	4.1±0.9
20	Sharm5	Syria	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	50.0±2.0	53.0±2.0	43.5±1.5	76.0±1.01	3.3±0.7	6.2±0.2	49.8±0.2	43.0±4.0	6.0±1.3
21	Strongfield	Canada	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	59.0±3.0	63.5±1.5	34.5±0.5	89.3±11.9	3.6±0.2	8.9±0.1	62.2±1.2	48.5±5.1	7.6±1.9
22	CLTR11390	USA	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	59.8±0.8	61.8±0.3	36.8±1.3	107.6±16.1	2.2±0.5	8.1±0.2	37.0±0.3	64.8±4.1	4.8±1.4
23	PI 68287	Azerbaijan	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	59.3±0.3	64.8±2.8	37.3±0.8	117.8±8.0	2.4±0.2	9.0±0.2	43.8±3.7	47.9±5.0	3.4±0.4
24	PI 113393	Iraq	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	55.0±0.5	61.3±0.8	37.3±0.8	106.9±2.3	1.8±0.2	10.6±1.3	40.2±8.2	52.4±4.9	2.8±0.4
25	PI 167481	Turkey	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	64.0±3.2	77.0±3.3	32.0±0.9	100.7±10.7	2.0±0.3	8.3±0.9	30.6±2.8	29.8±2.1	2.0±0.3
26	PI 192641	Morocco	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	5.07±2.0	62.5±0.5	39.5±1.5	100.5±10.2	2.1±0.7	7.5±0.1	41.3±8.3	49.1±4.2	4.0±0.4
27	PI 254206	Iran	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	57.5±1.5	64.5±2.5	37.5±0.5	100.9±5.0	2.0±0.2	10.4±0.9	35.0±6.2	55.2±4.0	3.4±0.8
28	PI 290530	Hungary	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	55.0±0.5	64.8±0.3	38.5±3.5	70.6±5.0	1.7±0.2	8.0±0.5	47.7±2.8	44.9±5.9	2.5±0.4
29	PI 576854	Turkey	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	64.0±3.2	74.0±3.1	32.0±1.7	77.8±4.7	1.8±0.9	11.0±0.7	27.5±1.7	41.4±4.1	1.9±0.2
30	PI 184526	Potugal	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	54.5±0.5	57.0±1.0	37.8±4.3	82.9±14.7	2.5±0.3	5.0±0.2	32.4±1.2	36.3±4.6	2.4±0.5
31	PI 352514	Azerbaijan	<i>Triticum turgidum</i> L. ssp. <i>turanicum</i> (Jakubz.) Á. Löve & D. Löve	cultivar	59.3±0.3	59.5±2.5	34.5±3.5	115.8±9.4	2.3±0.1	7.7±0.3	37.4±8.0	58.2±1.0	4.2±1.1
32	PI 210845	Iran	<i>Triticum turgidum</i> L. ssp. <i>polonicum</i> (L.) Thell.	cultivar	64.0±3.3	72.0±2.8	32.0±1.7	129.9±6.3	1.7±0.8	17.5±1.7	37.4±1.2	43.8±3.1	3.2±0.7
33	PI 266846	United Kingdom	<i>Triticum turgidum</i> L. ssp. <i>polonicum</i> (L.) Thell.	cultivar	64.0±3.1	67.0±2.9	32.0±1.6	122.0±4.2	1.6±0.8	16.6±1.2	37.6±3.5	45.8±2.7	2.2±0.2
34	PI 387479	Ethiopia	<i>Triticum turgidum</i> L. ssp. <i>polonicum</i> (L.) Thell.	cultivar	58.5±3.5	66.0±3.0	33.8±1.3	93.7±1.2	1.9±0.1	9.7±0.5	28.2±4.5	38.9±2.2	2.1±0.3
35	PI 208911	Iraq	<i>Triticum turgidum</i> L. ssp. <i>polonicum</i> (L.) Thell.	cultivar	58.5±0.9	61.0±1.7	32.0±1.1	94.5±1.8	2.8±0.3	8.8±0.7	40.1±2.9	61.8±4.5	4.1±1.1
36	PI 94755	Georgia	<i>Triticum turgidum</i> L. ssp. <i>carthlicum</i> (Nevski) Á. Löve & D. Löve	cultivar	56.0±3.0	58.5±3.5	36.3±1.8	114.9±4.9	3.5±0.7	9.6±0.2	39.5±4.9	32.0±1.7	3.5±1.0
37	PI 115816	Georgia	<i>Triticum turgidum</i> L. ssp. <i>carthlicum</i> (Nevski) Á. Löve & D. Löve	cultivar	60.8±4.3	65.8±5.3	30.3±1.8	120.9±6.0	3.5±0.5	9.7±0.1	41.1±3.4	27.9±0.7	3.1±0.8
38	MG 5350	Ethiopia	<i>Triticum turgidum</i> ssp. <i>dicoccum</i> (Shrank ex Schübler) Thell	cultivar	52.8±2.3	55.5±2.5	38.3±3.8	73.2±0.2	3.0±0.1	9.3±2.1	25.3±1.6	39.8±1.2	2.7±0.1
39	MG 15516/1	Syria	<i>Triticum turgidum</i> ssp. <i>dicoccum</i> (Shrank ex Schübler) Thell	cultivar	66.0±2.0	75.0±1.0	30.5±1.5	121.6±14.6	1.6±0.2	10.3±1.3	34.5±0.3	39.9±1.5	2.6±0.1
40	PI 343446	Israel	<i>Triticum turgidum</i> ssp. <i>dicoccoides</i> (Korn. ex Asch. & Graebn.) Thell.	line	56.5±2.5	59.0±3.0	35.8±2.3	107.5±1.2	3.9±0.6	8.4±0.3	24.8±3.8	35.0±1.1	2.5±0.5
41	PI 346783	Hungary	<i>Triticum turgidum</i> ssp. <i>dicoccoides</i> (Korn. ex Asch. & Graebn.) Thell.	line	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42	Orenburgskaya 10	Russia	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	62.3±2.8	70.5±6.5	33.5±1.5	98.0±18.7	2.6±0.6	7.4±0.4	40.9±1.7	46.9±0.9	3.4±1.6
43	Kargala1514	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	60.3±2.3	64.8±2.8	35.5±3.5	118.9±2.0	2.3±0.5	10.2±0.8	56.0±7.0	40.4±1.1	4.5±0.9
44	Kargala1411	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	54.8±1.8	61.3±4.3	39.3±0.3	100.3±10.4	2.0±0.5	6.6±1	45.7±4.8	42.7±3.5	5.2±0.3

Supplementary Table 1 (end)

#	Accession Name / ID	Origin	Taxonomic classification	Accession type	HT	FT	SMT	PH	NFS	SL	NKS	TKW	YPP
45	Kargala1409	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	59.5±1.5	65.3±0.3	37.0±2.0	105.8±3.3	2.8±0.4	7.5±0.5	48.7±3.2	45.2±1.1	5.3±0.3
46	Kargala71	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	63.0±2.0	71.3±5.8	33.5±1.5	116.4±0.9	2.6±0.1	9.4±0.7	54.4±0.5	43.2±2.4	5.1±1.1
47	Kargala70	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	58.8±0.8	63.0±1.0	37.0±2.0	88.4±3.8	2.3±0.7	7.3±1.1	50.8±6.0	41.7±0.3	3.8±0.4
48	Kargala66	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	60.3±2.3	72.3±4.8	35.5±3.5	137.6±3.0	2.0±0.5	8.8±1.0	39.2±11.1	37.4±0.2	2.8±0.2
49	Kargala69	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	57.8±0.3	63.0±1.0	38.8±0.3	103.3±2.7	2.8±0.3	8.2±0.6	53.4±6.4	48.1±0.3	5.2±0.1
50	Kargala34	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	57.0±1.0	60.8±1.3	38.0±1.0	113.5±3.2	3.1±0.2	7.2±0.5	42.0±4.9	44.1±0.3	3.8±0.6
51	Kargala 9	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	57.0±1.0	63.8±1.8	39.5±0.5	105.6±3.7	3.3±0.3	9.3±0.5	47.7±7.1	46.4±0.2	5.4±0.2
52	Almaz	Russia	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	64.5±0.5	72.5±3.5	32.0±0.3	102.2±3.6	2.7±0.7	8.5±0.3	49.3±2.2	43.0±0.5	5.0±1.8
53	Altaika	Russia	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	61.5±0.5	66.8±1.3	35.0±0.3	119.0±3.0.2	3.2±0.2	7.4±0.8	41.4±3.0	51.4±4.4	5.1±1.2
54	Altaiskii yantar	Russia	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	63.0±2.0	70.8±5.3	33.5±1.5	113.8±1.8	3.4±0.4	7.4±0.1	38.3±2.1	47.6±3.7	5.2±0.6
55	Altyn dala	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	56.5±1.5	64.8±2.8	38.5±0.5	113.5±0.2	2.7±0.5	7.9±0.4	44.6±2.0	48.5±3.7	4.2±0.2
56	Asangali 20	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	57.0±1.0	63.0±1.0	39.5±0.5	110.9±4.1	2.4±0.2	7.7±0.5	42.2±2.8	40.4±2.9	3.5±0.2
57	Gordeiforme 254	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	56.5±1.5	63.8±1.8	38.5±0.5	112.3±4.0	2.3±0.3	9.8±0.7	67.7±7.1	39.9±0.7	4.4±1.6
58	Kostanaiskaya 12	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	60.0±2.0	64.5±0.5	36.5±1.5	100.8±8.0	3.0±0.2	9.3±0.5	49.7±0.3	40.6±1.7	4.0±0.2
59	Kustanaiskaya 1	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	61.5±0.5	65.3±0.3	35.0±0.5	102.8±2.6	3.1±0.5	10.7±0.9	49.6±2.5	36.8±1.3	4.1±0.3
60	Kostanaiskaya 52	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	59.5±1.5	63.8±1.8	37.0±2.0	109.6±2.2	3.9±0.5	8.9±1.1	54.5±5.1	40.2±2.1	4.9±0.8
61	Nazarovka	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	61.3±3.8	70.8±5.3	35.3±3.3	85.5±0.5	2.3±0.7	7.0±0.2	41.6±3.5	39.4±4.3	3.2±1.0
62	Nurly	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	56.8±1.3	64.5±0.5	48.3±7.8	102.1±12.1	2.5±0.2	8.9±0.1	45.0±7.6	37.9±5.3	4.2±2.2
63	Omskii rubin	Russia	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	57.8±4.8	63.8±3.8	35.5±3.5	95.0±1.4	2.0±0.6	8.4±1.1	43.8±9.8	41.5±4.8	2.5±0.7
64	SID 88	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	59.5±1.5	62.3±2.8	37.0±2.0	106.9±4.6	3.5±0.7	8.3±0.2	46.4±5.0	45.9±0.9	5.8±0.5
65	Saratovskaya 31	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	59.0±1.0	67.5±3.5	35.0±3.0	94.4±3.9	2.4±0.1	7.2±0.6	35.2±1.7	41.5±1.7	3.3±0.2
66	Har'kovskaya 46	Russia	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	63.0±2.0	70.8±5.3	33.5±1.5	120.5±5.2	3.1±0.2	9.5±0.5	55.1±2.1	39.6±0.8	5.5±0.2
67	Har'kovskaya 9	Ukraine	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	55.8±2.2	59.3±2.8	40.0±1.0	118.9±7.7	3.3±0.2	8.6±0.9	52.0±6.8	47.4±2.0	6.4±0.3
68	Har'kovskaya 90	Ukraine	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	57.3±0.8	63.0±1.0	39.3±0.3	109.0±6.4	3.9±0.1	8.5±0.3	49.5±1.1	46.3±4.2	6.0±0.1
69	Celinogradskaya 75	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	57.3±0.8	63.0±1.0	39.3±0.3	122.6±10.2	2.4±0.2	7.4±0.4	35.7±0.5	47.4±2.4	3.1±0.1
70	Chernokolosaya 20	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	cultivar	58.0±0.0	63.0±1.0	38.5±0.5	122.1±10.7	2.8±0.3	9.1±0.3	45.2±0.8	46.0±8.3	4.8±1.1
71	G 1764	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	62.0±3.2	65.0±2.1	35.0±1.7	116.8±2.3	3.0±0.8	8.4±1.1	54.2±2.4	44.7±6.9	6.5±1.2
72	G 1846	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	62.0±3.2	65.0±2.1	35.0±1.7	114.0±3.8	2.4±0.4	7.6±0.3	47.2±2.1	54.8±3.7	3.7±0.7
73	G 2246	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.0	117.2±3.8	4.0±0.4	6.2±0.8	38.8±1.7	47.0±4.5	6.7±1.3
74	G 2267	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	62.0±3.2	65.0±2.1	35.0±1.7	117.2±3.5	1.6±0.2	6.8±0.1	37.6±1.7	41.5±2.6	2.0±0.2
75	G 2345	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	62.0±3.2	65.0±2.1	35.0±1.7	117.8±2.6	3.4±0.7	7.0±1.1	39.2±1.6	46.2±1.8	4.8±0.5
76	G 2363	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.1	107.8±2.7	3.6±0.8	8.1±0.9	51.4±3.9	42.2±1.0	4.5±0.6
77	G 2409	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.1	121.4±2.7	3.8±1.1	6.4±1.3	34.6±2.6	44.5±3.4	5.0±0.3
78	G 2580	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.1	123.7±3.2	1.8±0.2	7.3±0.8	28.8±0.5	41.1±5.4	3.0±0.7
79	G 2589	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.1	122.0±2.1	2.0±0.4	8.6±0.3	52.4±3.6	45.5±5.8	6.8±1.3
80	G 2601	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	62.0±3.2	64.0±1.8	35.0±1.8	111.8±5.9	2.4±0.1	7.8±0.4	46.6±2.9	39.7±6.0	4.5±1.0
81	G 2607	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	62.0±3.2	65.0±2.1	35.0±0.9	134.6±7.3	3.4±0.7	8.0±0.3	51.4±5.7	50.7±5.7	7.2±1.4
82	G 2611	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.4	117.2±8.6	2.8±0.3	7.4±0.2	38.6±3.4	43.0±1.9	3.7±0.9
83	G 2638	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.4	112.2±2.2	3.2±0.7	7.6±0.9	43.6±4.5	45.0±1.1	4.2±1.2
84	G 2640	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.4	125.8±5.8	2.6±0.5	7.4±0.1	37.2±2.1	42.9±8.1	3.4±1.1
85	G 2654	Kazakhstan	<i>Triticum turgidum</i> L. ssp. <i>turgidum</i> convar. <i>durum</i> (Desf.) MacKey	breeding line	58.0±1.2	62.0±1.2	39.0±1.4	115.4±5.4	2.6±0.1	6.0±0.8	38.0±4.6	47.3±6.1	3.3±0.9

Note: HT – heading time, FT – flowering time, SMT – seed maturation time, PH – plant height, NFS – number of fertile spikes, SL – spike length, NKS – number of kernels per spike, TKW – thousand kernel weight, YPP – yield per plant.

**Supplementary Table 2.** The list of simple sequence repeat (SSR) primers used for screening the tetraploid wheat collection

SSR marker	Chromosome	Motif	Primer sequences (5'–3')	Annealing temperature, °C
<i>Xgwm11</i>	1B	(TA)6CATA(CA)19(TA)6	F:5' GGATAGTCAGACAATTCTTGTG 3' R:5' GTGAATTGTGTCTTGTATGCTTCC 3'	50
<i>Xgwm148</i>	2B	(CA)22	F:5' GTGAGGCAGCAAGAGAGAAA 3' R:5' CAAAGCTTGACTCAGACCAAA 3'	60
<i>Xgwm251</i>	4B	(CA)28	F:5' CAACTGGTTGCTACACAAGCA 3' R:5' GGGATGTCTGTCCATCTTAG 3'	55
<i>Xgwm234</i>	5B	(CT)16(CA)20	F:5' GAGTCCTGATGTGAAGCTGTTG 3' R:5' CTCATTGGGGTGTGTACGTG 3'	55
<i>Xcfa-2114</i>	6A	(CA)32	F:5' ATTGGAAGGCCACGATACAC 3' R:5' CCCGTCGGGTTTTATCTAGC 3'	60
<i>Xgwm169</i>	6A	(GA)23	F:5' ACCACTGCAGAGAACACATACG 3' R:5' GTGCTCTGCTTAAGTGTTGGG 3'	60
<i>Xgwm219</i>	6B	(GA)35	F:5' GATGAGCGACACCTAGCCTC 3' R:5' GGGGTCCGAGTCCACAAC 3'	60

Note: F – forward, R – reverse.