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**Screening wild progenitors of wheat for salinity stress at early stages of plant growth: insight into potential sources of variability for salinity adaptation in wheat**

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**Supplementary Table S1. Characteristics of sampling locations of Iranian *Aegilops* and *Triticum* accessions in the first experiment**

No.	Species	Genebank code	Province	Origin
1	<i>T. aestivum</i> (ABD)	IUGB-00074	West Azerbaijan	Naqadeh
2		IUGB-00133	Razavi Khorasan	Gonbad-e Kavus
3		IUGB-00134	Qazvin	Qazvin
4		IUGB-00264	Isfahan	Esfahan–Shahreza Road
5		IUGB-00447	Kurdistan	Saqqez
6		IUGB-00453	West Azerbaijan	Khoye
7		IUGB-00460	Zanjan	Zanjan
8		IUGB-00480	West Azerbaijan	Mahabad
9		IUGB-00482	Kurdistan	Kamyaran
10		IUGB-00485	West Azerbaijan	Urmia
11		IUGB-00516	Khuzestan	Izeh
12		IUGB-00911	Ilam	Mehran–Salehabad Road
13		IUGB-01569	Lorestan	Borujerd
14		IUGB-01635	Ilam	Shirvan
15		IUGB-01671	Lorestan	Pol-e Dokhtar
16		IUGB-01695	Kermanshah	Qasr-e Shirin
17		IUGB-01696	Kermanshah	Qasr-e Shirin
18	<i>T. boeoticum</i> (A <sup>b</sup> )	IUGB-00003	West Azerbaijan	Mahabad–Sardasht Road
19		IUGB-00009	Kurdistan	Qorveh
20		IUGB-00052	Lorestan	Sepiddasht
21		IUGB-00098	Qazvin	Taleqan
22		IUGB-00102	Kermanshah	Javanrud–Paveh Road
23		IUGB-00114	Qazvin	Taleqan
24		IUGB-00122	West Azerbaijan	Khalkhal
25		IUGB-00123	West Azerbaijan	Oshnavieh
26		IUGB-00126	Kermanshah	Hasanabad
27		IUGB-00163	Chaharmahal & Bakhtiari	Sar Khun
28		IUGB-00407	Kermanshah	Kerend-e Gharb
29		IUGB-00181	Kermanshah	Sonqor
30		IUGB-00216	East Azerbaijan	Ahar–Keleybar Road
31		IUGB-00230	Lorestan	Aleshtar–Firuzabad Road
32	IUGB-00348	Chaharmahal & Bakhtiari	Borujen–Sar khun Road	
33	IUGB-00368	Ilam	Sarableh	
34	IUGB-01865	Chaharmahal & Bakhtiari	Shahr-e Kord	
35	<i>Ae. caudata</i> (C)	IUGB-00066	Lorestan	Afrineh Village
36		IUGB-00071	Lorestan	Andimeshk
37		IUGB-00072	Lorestan	Veisian Village
38		IUGB-00081	Ilam	Darreh Shahr
39		IUGB-00084	–	Iran
40		IUGB-00304	Lorestan	Shorab region
41		IUGB-00815	Ilam	Holeylan
42		IUGB-00888	Ilam	Ban Ganjab
43	<i>Ae. crassa</i> (DM)	IUGB-00149	Fars	Brdej-e Shiraz
44		IUGB-00170	Fars	Sepidan
45		IUGB-00280	East Azerbaijan	Azarshahr
46		IUGB-00284	Kermanshah	Sonqor
47		IUGB-00319	Chaharmahal & Bakhtiari	Sisakht–Borujen Road
48		IUGB-00334	Ilam	Ilam
49		IUGB-00379	Kermanshah	Harsin
50		IUGB-00408	Kermanshah	Harsin, Dehsefid Village
51		IUGB-00817	Ilam	Holeylan
52		IUGB-00830	Ilam	Shirvan
53		IUGB-00881	Ilam	Ban Ganjab
54		IUGB-01267	Kermanshah	Homail
55		IUGB-01564	Lorestan	Borujerd
56		IUGB-01582	Lorestan	Delfan-e Sanjabi
57	<i>Ae. cylindrica</i> (DC)	IUGB-2073	Kurdistan	Sanandaj

58		IUGB-00034	Kermanshah	Harsin
59		IUGB-00150	West Azerbaijan	Ardabil–Meshginshahr Road
60		IUGB-00156	East Azerbaijan	Ahar–Kalibar Road
61		IUGB-00168	Kermanshah	Harsin–Kermanshah Road
62		IUGB-00172	Zanjan	Zanjan
63		IUGB-00185	Gilan	Somesara–Astara Road
64		IUGB-00188	East Azerbaijan	Tabriz
65		IUGB-00189	Lorestan	Sepiddasht
66		IUGB-00200	Kermanshah	Sonqor
67		IUGB-00210	Lorestan	Dorud
68		IUGB-00221	West Azerbaijan	Sarein
69		IUGB-00236	Khuzestan	Izeh
70		IUGB-00267	Gilan	Rasht–Fuman Road
71		IUGB-00359	Kurdistan	Zarneh
72		IUGB-00373	Chaharmahal & Bakhtiari	Shahr-e Kord
73		IUGB-00403	Kohgiluyeh & Boyer-Ahmad	Yasuj
74		IUGB-00097	Kermanshah	Kamyaran
75		IUGB-01747	Ilam	Abdanan
76	<i>T. durum</i> (AB)	IUGB-00038	Isfahan	Golpayegan
77		IUGB-00268	Khuzestan	Khorramshahr
78		IUGB-00517	Khuzestan	Ahvaz
79		IUGB-00520	West Azerbaijan	Ardabil
80		IUGB-00522	Kohgiluyeh & Boyer-Ahmad	Yasuj
81		IUGB-00531	Kurdistan	Sanandaj
82		IUGB-00543	Kurdistan	Sanandaj
83		IUGB-00651	Golestan	Gorgan
84		IUGB-00658	Razavi Khorasan	Mashhad
85		IUGB-00663	Razavi Khorasan	Mashhad
86		IUGB-00770	Kohgiluyeh & Boyer-Ahmad	Gachsaran
87		IUGB-00912	Ilam	Mehran–Salehabad Road
88		IUGB-01673	Lorestan	Pol-e Dokhtar
89		IUGB-01677	Lorestan	Pol-e Dokhtar
90		IUGB-01859	Kermanshah	Sarpol-e Zahab
91		IUGB-01692	Kermanshah	Qasr-e Shirin
92		IUGB-01731	Ilam	Ilam
94	<i>Ae. neglecta</i> (UM)	IUGB-00030	West Azerbaijan	Ardabil–Meshginshahr Road
95		IUGB-00032	Ilam	Ilam
96		IUGB-00035	Kermanshah	Eslamabad-e Gharb
97		IUGB-00137	Gilan	Hayran Ghaut
98		IUGB-00173	West Azerbaijan	Ardabil–Meshginshahr Road
99		IUGB-00194	West Azerbaijan	Ardabil–Meshginshahr Road
100		IUGB-00217	East Azerbaijan	Ardabil–Meshginshahr Road
101		IUGB-00240	East Azerbaijan	Ardabil–Meshginshahr Road
102		IUGB-00246	East Azerbaijan	Ahar–Kalibar Road
103		IUGB-00387	Ilam	Manesht koh region
104		IUGB-00421	Kermanshah	Kamyaran
105	<i>Ae. speltoides</i> (B)	IUGB-00025	Kermanshah	Qasr-e Shirin
106		IUGB-00083	Kermanshah	Sarpol-e Zahab
107		IUGB-00337	–	Iran
108		IUGB-00416	–	Iran
109		IUGB-00963	Ilam	Darreh Shahr
110		IUGB-01057	Ilam	Darreh Shahr
111	<i>Ae. tauschii</i> (D)	IUGB-00020	West Azerbaijan	Sarein
112		IUGB-00107	Gilan	Rasht
113		IUGB-00164	West Azerbaijan	Hayran Ghaut
114		IUGB-00193	East Azerbaijan	Kalibar

115		IUGB-00196	Mazandaran	Ramsar
116		IUGB-00198	Zanjan	Zanjan
117		IUGB-00222	Golestan	Aliabad-e Ketol
118		IUGB-00223	Mazandaran	Salman Shahr–Ramsar Road
119		IUGB-00224	Gilan	Rasht
120		IUGB-00245	Mazandaran	Chalus
121		IUGB-00247	Mazandaran	Amol
122		IUGB-00260	Gilan	Astara
123		IUGB-00261	Mazandaran	Chalus
124		IUGB-00275	West Azerbaijan	Sarein
125		IUGB-00325	Mazandaran	Chalus
126		IUGB-00365	Mazandaran	Amol
127		IUGB-00366	Gilan	Chaboksar
128		IUGB-00369	Gilan	Kelachay
129		IUGB-00402	Mazandaran	Noor
130	<i>Ae. triuncialis</i> (CU)	IUGB-00026	Zanjan	Zanjan
131		IUGB-00031	Lorestan	Khorramabad
132		IUGB-00069	East Azerbaijan	Azarshahr
133		IUGB-00139	Chaharmahal & Bakhtiari	Yasouj–Borujen Road
134		IUGB-01688	Kermanshah	Qasr-e Shirin
135		IUGB-00175	Chaharmahal & Bakhtiari	Chaharmahal
136		IUGB-00186	Khuzestan	Dehdez
137		IUGB-01113	Ilam	Darreh Shahr
138		IUGB-00228	Kermanshah	Harsin
139		IUGB-00242	Kurdistan	Sanandaj–Divandarreh Road
140		IUGB-00250	Lorestan	Khorramabad
141		IUGB-00259	West Azerbaijan	Heyran Village
142		IUGB-00317	Khuzestan	Izeh
143		IUGB-00318	Chaharmahal & Bakhtiari	Yasouj–Borujen Road
144		IUGB-00840	Ilam	Darreh Shahr
145		IUGB-01146	Ilam	Ilam
146		IUGB-01353	Kermanshah	Gilan-e Gharb
147	<i>Ae. umbellulata</i> (U)	IUGB-00377	Ilam	Manesht koh region
148		IUGB-00076	Kermanshah	Kermanshah–Eslamabad-e Gharb
149		IUGB-01627	Ilam	Lumar
150		IUGB-01259	Ilam	Ilam
151		IUGB-00234	Fars	Sepidan
152		IUGB-00237	Khuzestan	Dehdez
153		IUGB-00278	Khuzestan	Dehdez
154		IUGB-00804	Ilam	Holeylan
155		IUGB-00818	Ilam	Holeylan
156		IUGB-00887	Ilam	Ban Ganjab
157		IUGB-01056	Ilam	Darreh Shahr
158		IUGB-01429	Ilam	Sarableh
159		IUGB-00966	Ilam	Dehloran
160		IUGB-01529	Lorestan	Kuhdasht
161		IUGB-01547	Gilan	Gilan-e Gharb
162		IUGB-01132	Ilam	Chaviz region
163	<i>T. urartu</i> (A <sup>u</sup> )	IUGB-00077	Kermanshah	Eslamabad-e Gharb–Kerend-e Gharb

164	IUGB-00079	Kurdistan	Saqquez
165	IUGB-00094	Kurdistan	Marivan
166	IUGB-00124	Kurdistan	Marivan
167	IUGB-00128	Kermanshah	Eslamabad-e Gharb–Kerend-e Gharb
168	IUGB-00145	Kurdistan	Marivan
169	IUGB-00154	Kohgiluyeh & Boyer-Ahmad	Sisakht
170	IUGB-00162	Chaharmahal & Bakhtiari	Farrokh Shahr
171	IUGB-00206	Kermanshah	Sonqor
172	IUGB-00285	Kermanshah	Housein Abad, Bisotun
173	IUGB-00286	Chaharmahal & Bakhtiari	Chaharmahal
174	IUGB-00324	Kermanshah	Kermanshah–Sonqor Road
175	IUGB-00344	Kermanshah	Kermanshah
176	IUGB-00346	Kurdistan	Saqquez–Marivan Road
177	IUGB-00347	West Azerbaijan	Ardabil
178	IUGB-00423	Kermanshah	Kermanshah
179	IUGB-00426	Kurdistan	Marivan
180	Arg	Tolerant control variety	
181	Darya	Sensitive control variety	

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**Table S2. Characteristics of genomic constitution and sampling locations of the selected wild relatives of wheat for antioxidant assay**

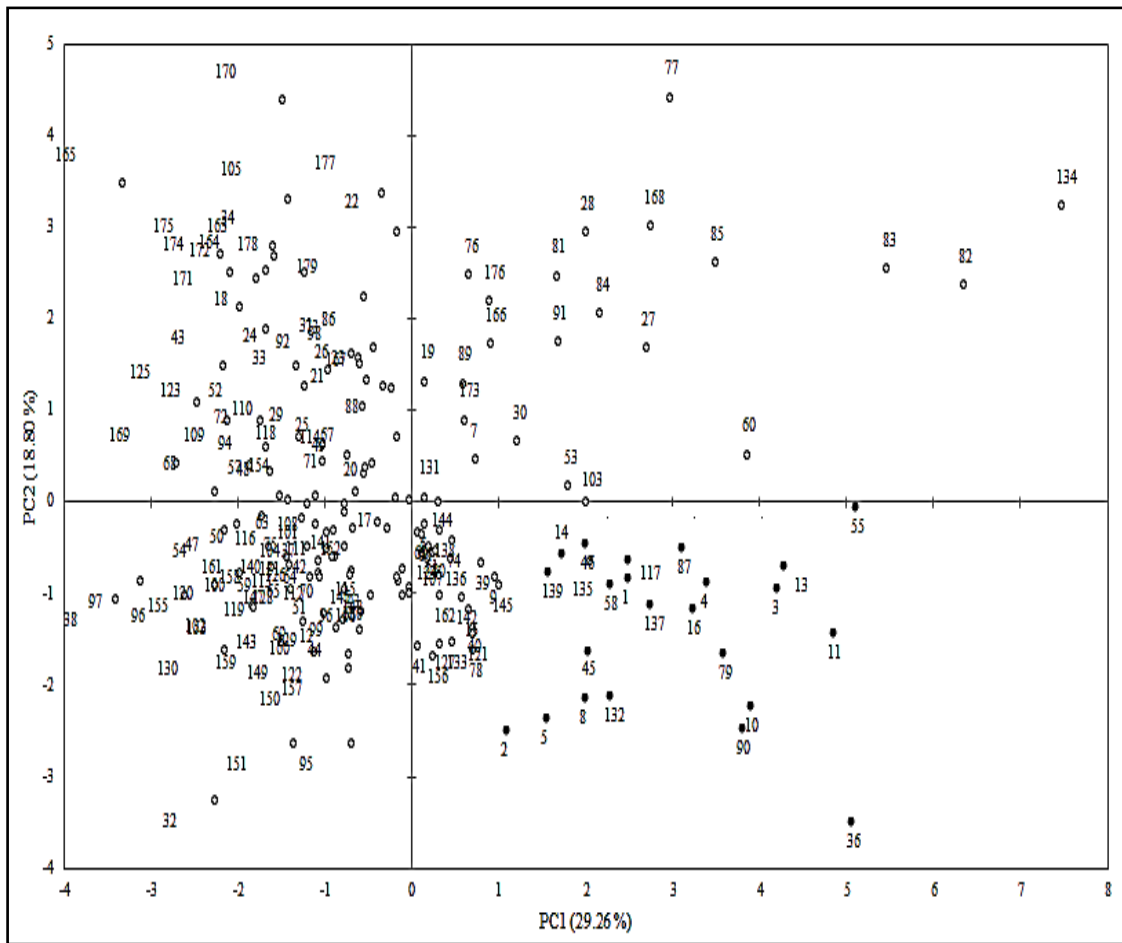
No.	Genebank code	Species (genome)	Province	Sampling location
1	IUGB-00480	<i>T. aestivum</i> (ABD)	West Azerbaijan	Mahabad
2	IUGB-00651	<i>T. durum</i> (AB)	Golestan	Gorgan
3	IUGB-00407	<i>T. boeoticum</i> (A <sup>b</sup> )	Kermanshah	Kerend-e Gharb
4	IUGB-00347	<i>T. urartu</i> (A <sup>u</sup> )	West Azerbaijan	Ardabil
5	IUGB-00369	<i>Ae. tauschii</i> (D)	Mazandaran	Amol
6	IUGB-00025	<i>Ae. speltoides</i> (B)	Kermanshah	Qasr-e Shirin
7	IUGB-00237	<i>Ae. umbellulata</i> (U)	Khuzestan	Dehdez
8	IUGB-00072	<i>Ae. caudata</i> (C)	Lorestan	Weisian Village
9	IUGB-01146	<i>Ae. triuncialis</i> (UC)	Ilam	Ilam
10	IUGB-00319	<i>Ae. crassa</i> (DM)	Chaharmahal & Bakhtiari	Sisakht–Borujen Road
11	IUGB-00359	<i>Ae. cylindrica</i> (DC)	Kurdistan	Zarneh
12	IUGB-00421	<i>Ae. neglecta</i> (UM)	Kermanshah	Kamyaran
13	Tolerant control	<i>T. aestivum</i> cv. Arg	Seed and Plant Improvement Institute (SPII), Karaj, Iran	
14	Sensitive control	<i>T. aestivum</i> cv. Darya	Seed and Plant Improvement Institute (SPII), Karaj, Iran	

IUGB Ilam University Genbank

**Table S3. Mean, maximum, minimum, coefficients of variation (CV) and percent of relative change (RC) due to salinity stress for each character evaluated in the *Aegilops* and *Triticum* core collection**

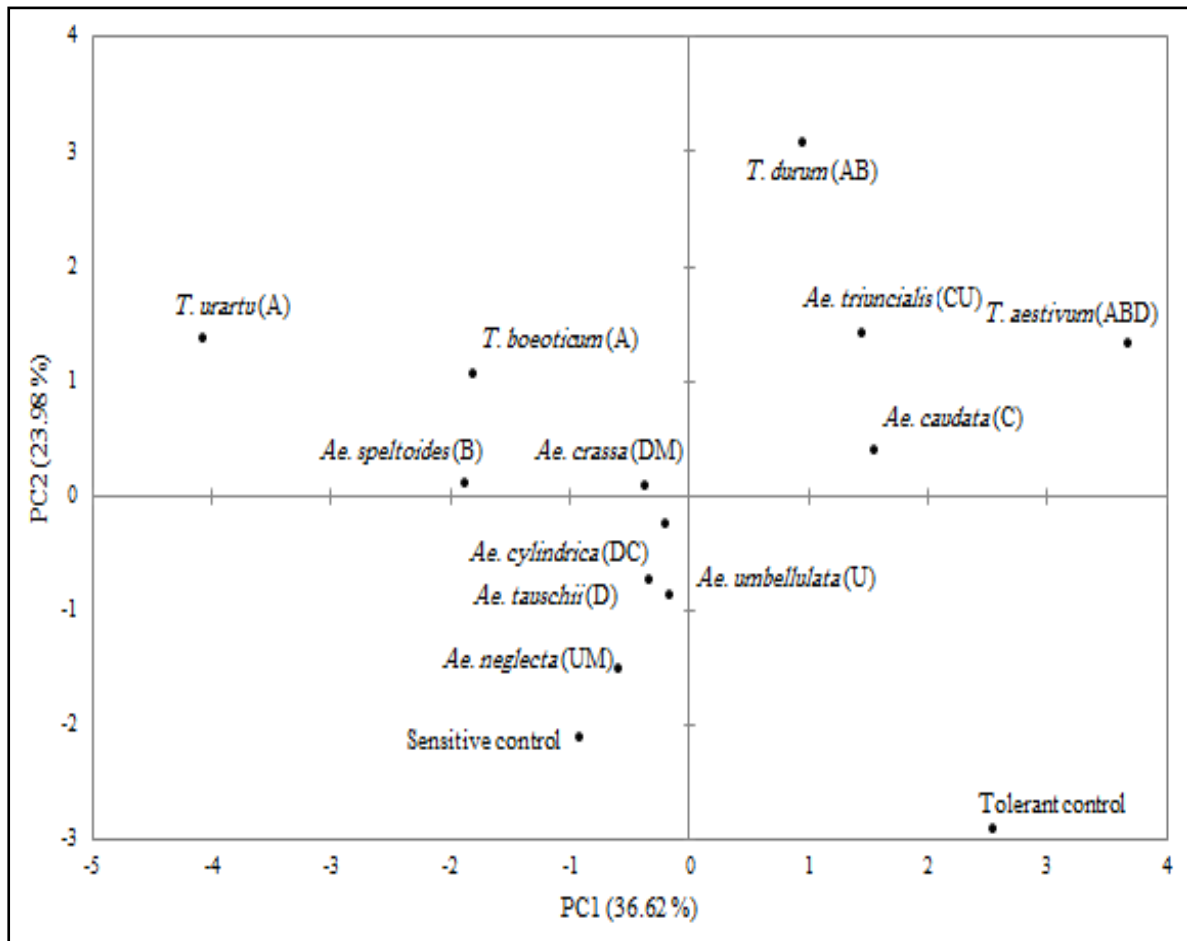
Significant differences are indicated: \*  $P < 0.05$ ; \*\*  $P < 0.01$ ; <sup>ns</sup> no significant difference ( $P > 0.05$ ). Negative numbers in RC column indicate value higher than the control condition

Species	Trait	Control				300 mM NaCl				T-test	RC (%)
		mean	min	max	CV	mean	min	max	CV		
<i>Aegilops</i> spp.	Root fresh weight (g)	0.084	0.021	0.190	18.23	0.069	0.020	0.206	13.74	**	18.600
	Root dry weight (g)	0.024	0.009	0.053	14.27	0.017	0.001	0.072	12.58	**	31.489
	Root K <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.648	0.367	1.109	14.24	0.566	0.248	1.580	13.54	**	12.620
	Root Na <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.217	0.077	0.447	17.70	1.918	0.365	4.885	11.12	**	-784.640
	Root K <sup>+</sup> /N <sup>+</sup> ratio	3.225	1.516	9.492	10.91	0.311	0.099	0.829	15.58	**	90.351
	Shoot fresh weight (g)	0.178	0.070	0.366	16.69	0.111	0.032	0.511	11.35	**	37.624
	Shoot dry weight (g)	0.059	0.024	0.127	11.67	0.050	0.020	0.120	13.90	**	16.169
	Shoot K <sup>+</sup> content (mM g DW <sup>-1</sup> )	1.349	0.356	2.201	15.29	0.386	0.193	0.596	13.77	**	71.360
	Shoot Na <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.594	0.260	2.931	8.89	2.789	1.850	5.276	9.58	**	-369.647
	Shoot K <sup>+</sup> /N <sup>+</sup> ratio	2.493	0.527	5.735	16.44	0.142	0.059	0.242	14.08	**	94.324
	Root-to-shoot dry mass	0.427	0.107	1.343	10.45	0.347	0.020	1.100	14.42	**	18.765
<i>Triticum</i> spp.	Root fresh weight (g)	0.091	0.215	0.014	44.12	0.069	0.167	0.013	42.26	**	23.934
	Root dry weight (g)	0.027	0.048	0.006	33.45	0.018	0.038	0.001	46.07	**	35.458
	Root K <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.681	1.278	0.391	25.16	1.034	2.364	0.248	46.79	**	-51.965
	Root Na <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.251	0.481	0.087	36.77	2.038	3.613	0.799	27.24	**	-711.010
	Root K <sup>+</sup> /N <sup>+</sup> ratio	3.062	8.374	1.698	38.85	0.508	1.223	0.186	41.52	**	83.406
	Shoot fresh weight (g)	0.232	0.611	0.088	43.60	0.142	0.277	0.039	46.06	**	38.927
	Shoot dry weight (g)	0.071	0.125	0.028	30.14	0.058	0.110	0.028	28.20	**	18.638
	Shoot K <sup>+</sup> content (mM g DW <sup>-1</sup> )	1.231	2.169	0.723	23.25	0.405	0.875	0.138	33.86	**	67.051
	Shoot Na <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.818	2.566	0.271	58.69	2.879	4.920	0.574	41.51	**	-251.740
	Shoot K <sup>+</sup> /N <sup>+</sup> ratio	1.818	4.889	0.452	43.04	0.144	0.265	0.081	28.91	**	92.091
	Root-to-shoot dry mass	0.406	1.301	0.133	38.01	0.306	0.585	0.003	34.41	**	24.798
Total individuals	Root fresh weight (g)	0.087	0.014	0.215	42.41	0.069	0.013	0.206	41.52	ns	20.727
	Root dry weight (g)	0.026	0.006	0.053	32.59	0.017	0.001	0.072	55.16	**	33.109
	Root K <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.660	0.367	1.278	24.75	0.745	0.248	2.364	27.99	**	-12.755
	Root Na <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.230	0.077	0.481	37.36	1.964	0.365	4.885	49.32	**	-753.962
	Root K <sup>+</sup> /N <sup>+</sup> ratio	3.163	1.516	9.492	34.67	0.386	0.099	1.223	32.12	**	87.788
	Shoot fresh weight (g)	0.199	0.070	0.611	28.94	0.123	0.032	0.511	50.87	**	38.204
	Shoot dry weight (g)	0.064	0.024	0.127	41.67	0.053	0.020	0.120	27.06	*	17.215
	Shoot K <sup>+</sup> content (mM g DW <sup>-1</sup> )	1.304	0.356	2.201	24.74	0.394	0.138	0.875	29.62	**	69.810
	Shoot Na <sup>+</sup> content (mM g DW <sup>-1</sup> )	0.679	0.260	2.931	55.27	2.823	0.574	5.276	25.98	**	-315.506
	Shoot K <sup>+</sup> /N <sup>+</sup> ratio	2.236	0.452	5.735	42.14	0.142	0.059	0.265	44.02	**	93.632
	Root-to-shoot dry mass	0.419	0.107	1.343	34.80	0.331	0.003	1.100	50.82	ns	20.727



**Fig. S1.** Distribution plot of the 181 individual accessions of *Aegilops* and *Triticum* along with two control varieties (tolerant and sensitive) under salinity stress (300 mM NaCl) according to the first two principal components (*solid circles* indicate selected accessions).





**Fig. S2.** Distribution plot of the 12 landraces and wild relatives of wheat along with two control varieties (tolerant and sensitive) under salinity stress (300 mM NaCl) according to the first two principal components.