

## Supplementary Material

### Linking osmotic adjustment and stomatal characteristics with salinity stress tolerance in contrasting barley accessions

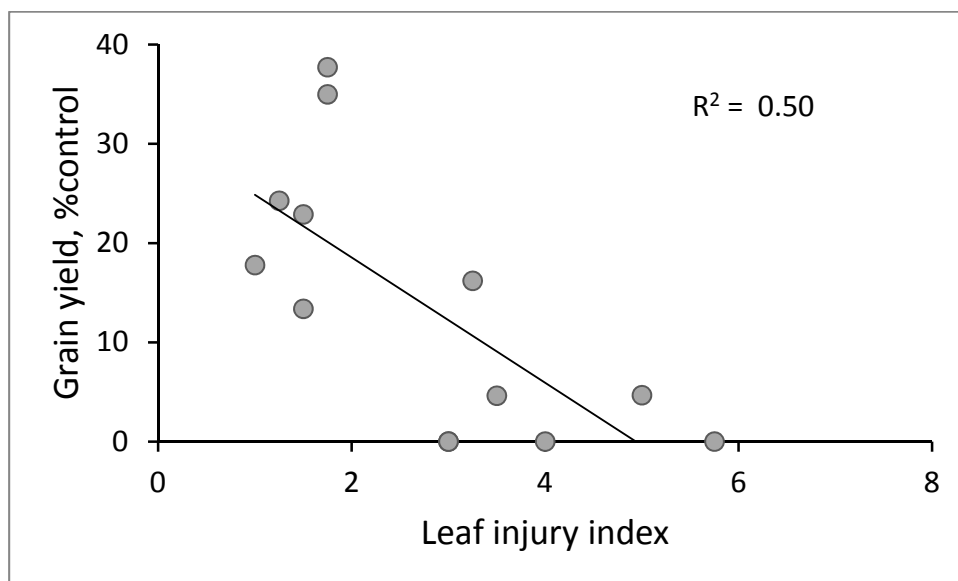
Min Zhu<sup>A</sup>, Meixue Zhou<sup>A</sup>, Lana Shabala<sup>A</sup> and Sergey Shabala<sup>A,B</sup>

<sup>A</sup>School of Land and Food, University of Tasmania, Private Bag 54, Hobart, Tas. 7001, Australia.

<sup>B</sup>Corresponding author. Email: sergey.shabala@utas.edu.au



**Fig. S1.** Visual assessment of salinity tolerance in barley quantified by using injury scoring index. Score 0 was given to plants showing no symptoms of salt injury; score index 10 is given to dead plants. Plants were treated with extreme saline solution (320 mM) till they died.



**Fig. S2.** Correlation between salt injury index and relative grain yield measured in 12 “core” barley varieties (TX9425, CM72, YWHKSL, YYXT, Numar, ZUG293, Lixi 143, YSM3, Hu 93-045, Aizao 3, Gairdner, YPSLDM and ZUG403). Yield data is taken from Chen *et al.* (2007).

**Fig. S3.** Shoot Na<sup>+</sup> content (mM) of 46 barley varieties grown under control and salt stress (200 mM NaCl for 35 days) conditions. Mean  $\pm$  s.e. ( $n = 6$ ).

(Please refer to Powerpoint file for figure)

**Fig. S4.** Shoot K<sup>+</sup> content (mM) of 50 barley varieties grown under control and salt stress (200 mM NaCl for 35 days) conditions. Mean  $\pm$  s.e. ( $n = 6$ ).

(Please refer to Powerpoint file for figure)

**Table 1. Linear correlations coefficients between agronomic and physiological characteristics under salinity stress**

**Abbreviations used:** Gs, stomatal conductance; SD, stomata density; Osm, osmolality; Leaf Na, leaf sap Na content; Leaf K, leaf sap K content; K/Na-leaf, K to Na ratio in the leaf sap. Letters in brackets indicate conditions under which the appropriate parameter was measured (C, control; S, salinity; R, relative value under saline conditions; D, the difference between control and saline treatment). Bold numbers indicate correlation coefficients that are significant at  $P < 0.05$ .

	Score	Gs(C)	Gs(S)	Gs(R)	Gs(D)	SD(C)	SD(S)	SD(R)	SD(D)	Osm(C)	Osm(S)	Osm(R)	Osm(D)	Leaf Na(C)	Leaf Na(S)	Leaf Na(R)	Leaf Na(D)	Leaf K(C)	Leaf K(S)	Leaf K(R)	Leaf K(D)	K/Na-leaf(S)
Score	1.00																					
Gs(C)	-0.06	1.00																				
Gs(S)	0.03	0.34	1.00																			
Gs(R)	0.08	-0.53	0.57	1.00																		
Gs(D)	-0.08	0.86	-0.19	-0.86	1.00																	
SD(C)	0.01	0.22	0.15	0.02	0.15	1.00																
SD(S)	-0.04	<b>0.32</b>	0.27	-0.01	0.19	0.73	1.00															
SD(R)	-0.14	0.14	0.18	-0.03	0.05	-0.26	0.41	1.00														
SD(D)	-0.06	0.23	0.24	-0.04	0.11	0.00	0.69	0.88	1.00													
Osm(C)	0.22	<b>0.30</b>	0.09	-0.15	0.27	<b>0.50</b>	<b>0.45</b>	-0.18	0.12	1.00												
Osm(S)	0.18	<b>0.41</b>	<b>0.33</b>	-0.05	0.24	<b>0.63</b>	<b>0.78</b>	0.27	<b>0.46</b>	0.57	1.00											
Osm(R)	0.02	0.09	0.26	0.11	-0.04	0.10	<b>0.33</b>	<b>0.50</b>	<b>0.37</b>	-0.45	0.47	1.00										
Osm(D)	0.05	0.25	<b>0.33</b>	0.06	0.08	<b>0.36</b>	<b>0.59</b>	<b>0.47</b>	<b>0.47</b>	-0.10	0.76	0.92	1.00									
Leaf Na(C)	-0.06	<b>-0.38</b>	<b>-0.36</b>	0.06	-0.20	<b>-0.30</b>	<b>-0.45</b>	-0.28	<b>-0.34</b>	-0.21	<b>-0.66</b>	<b>-0.50</b>	<b>-0.63</b>	1.00								
Leaf Na(S)	0.00	<b>-0.40</b>	-0.12	0.22	<b>-0.35</b>	-0.27	<b>-0.46</b>	-0.21	<b>-0.38</b>	<b>-0.44</b>	<b>-0.34</b>	0.14	-0.07	0.39	1.00							
Leaf Na(R)	-0.02	0.14	0.29	0.06	-0.01	0.06	0.17	0.28	0.19	-0.19	<b>0.38</b>	<b>0.69</b>	<b>0.61</b>	-0.62	0.26	1.00						
Leaf Na(D)	0.03	<b>-0.31</b>	-0.01	0.22	<b>-0.32</b>	-0.19	<b>-0.35</b>	-0.13	<b>-0.30</b>	<b>-0.40</b>	-0.15	<b>0.31</b>	0.14	0.10	0.95	0.49	1.00					
Leaf K(C)	0.07	0.22	0.09	-0.05	0.18	<b>0.35</b>	<b>0.30</b>	-0.06	0.06	<b>0.50</b>	<b>0.52</b>	0.01	0.23	<b>-0.34</b>	-0.17	0.08	-0.07	1.00				
Leaf K(S)	-0.28	0.06	0.00	-0.13	0.06	-0.19	-0.09	0.22	0.07	-0.12	0.09	0.26	0.21	-0.28	-0.15	0.25	-0.07	0.25	1.00			
Leaf K(R)	<b>-0.31</b>	-0.03	-0.03	-0.10	-0.01	<b>-0.33</b>	-0.20	0.26	0.06	<b>-0.37</b>	-0.12	0.29	0.14	-0.16	-0.09	0.24	-0.05	-0.20	0.90	1.00		
Leaf K(D)	<b>0.30</b>	0.10	0.07	0.09	0.07	<b>0.42</b>	0.29	-0.24	-0.02	<b>0.47</b>	0.28	-0.22	-0.03	0.02	0.02	-0.17	0.02	0.47	-0.73	-0.95	1.00	
K/Na-leaf (S)	-0.14	<b>0.32</b>	0.01	-0.28	<b>0.32</b>	0.24	<b>0.50</b>	<b>0.36</b>	<b>0.47</b>	<b>0.35</b>	<b>0.40</b>	0.04	0.21	<b>-0.42</b>	<b>-0.79</b>	-0.09	<b>-0.72</b>	<b>0.34</b>	<b>0.52</b>	<b>0.38</b>	-0.23	1.00