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Supplementary Material

Plant ionic relation and whole-plant physiological responses to waterlogging, salinity and their combination in barley

Zhinous Falakboland^A, Meixue Zhou^A, Fanrong Zeng^{A,B}, Ali Kiani-Pouya^A, Lana Shabala^A and Sergey Shabala^{A,C}

^ASchool of Land and Food, University of Tasmania, Private Bag 54, Hobart, Tas. 7001, Australia.

^BCollege of Agriculture and Biotechnology, Zhejiang University, Hangzhou, China.

^CCorresponding author. Email: sergey.shabala@utas.edu.au

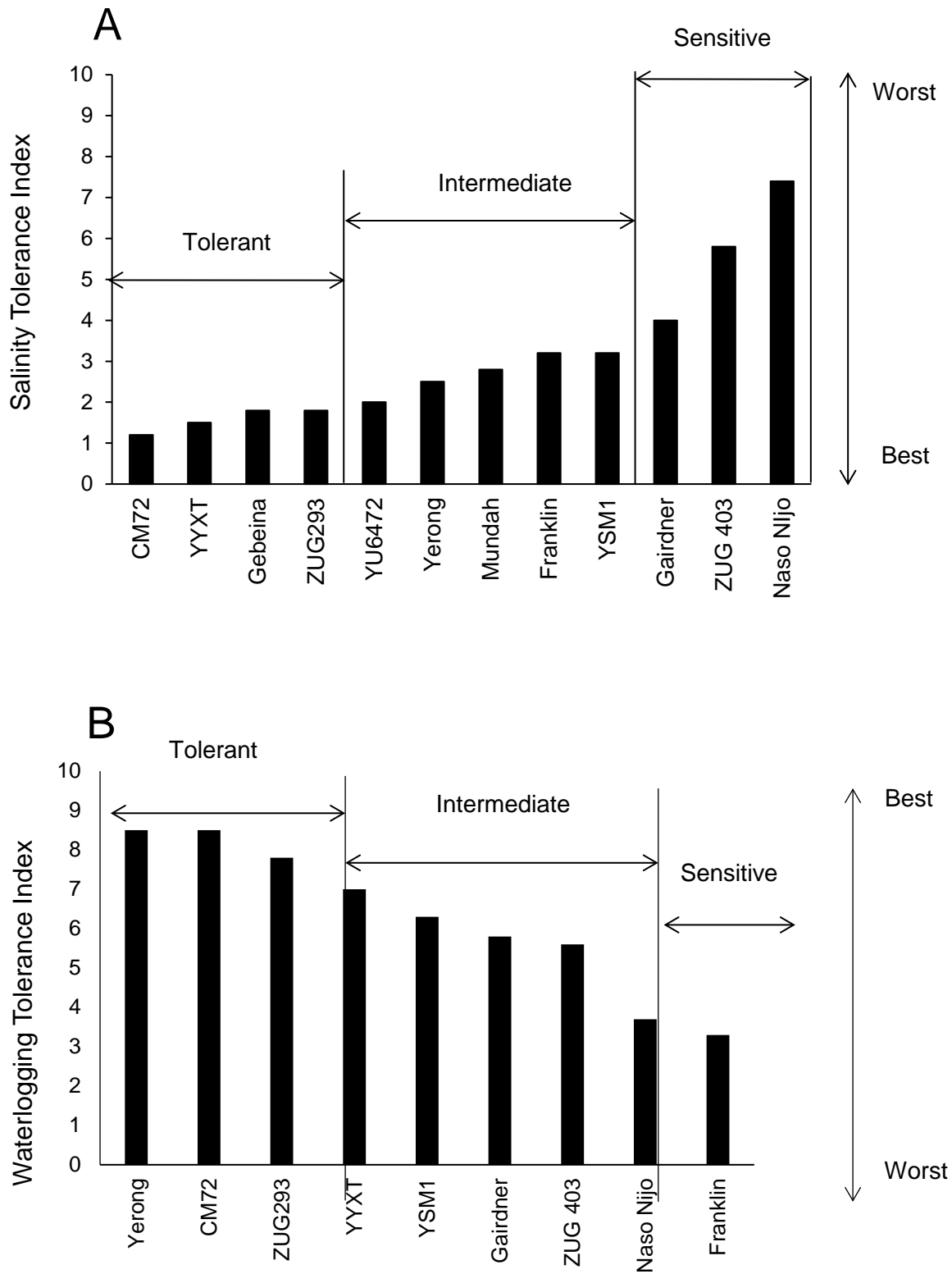


Fig. 1. Salinity (A) and waterlogging (B) stress tolerance of selected barley varieties (based on Wu *et al.* 2015 and Huang *et al.* 2015, respectively). For quantitative estimation of tolerance index, see Materials and Methods.

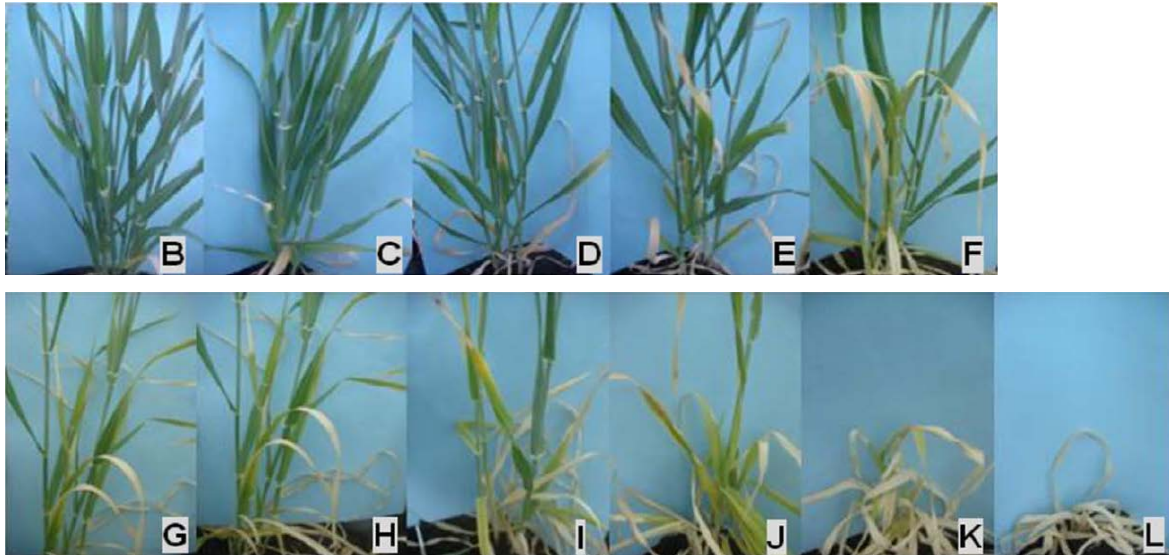


Fig. S2. Quantification of salinity tolerance index in barley. The extent of salt damage to plant is quantified on 0 to 10 scale (0 = no visual symptoms; 10 = completely dead plants) as illustrated in photos above based on the percentage of chlorotic and necrotic leaves. Salinity treatment (320 mM NaCl) was applied when plants reach 3-leaf stage and lasted for 5 weeks, before the visual assessment was conducted. Reproduced from Xu R, Wang J, Li C, Johnson P, Lu C, *et al.* (2012) A single locus is responsible for salinity tolerance in a Chinese landrace barley (*Hordeum vulgare* L.). *PLoS ONE* 7(8), e43079. doi:10.1371/journal.pone.0043079, with some modifications.

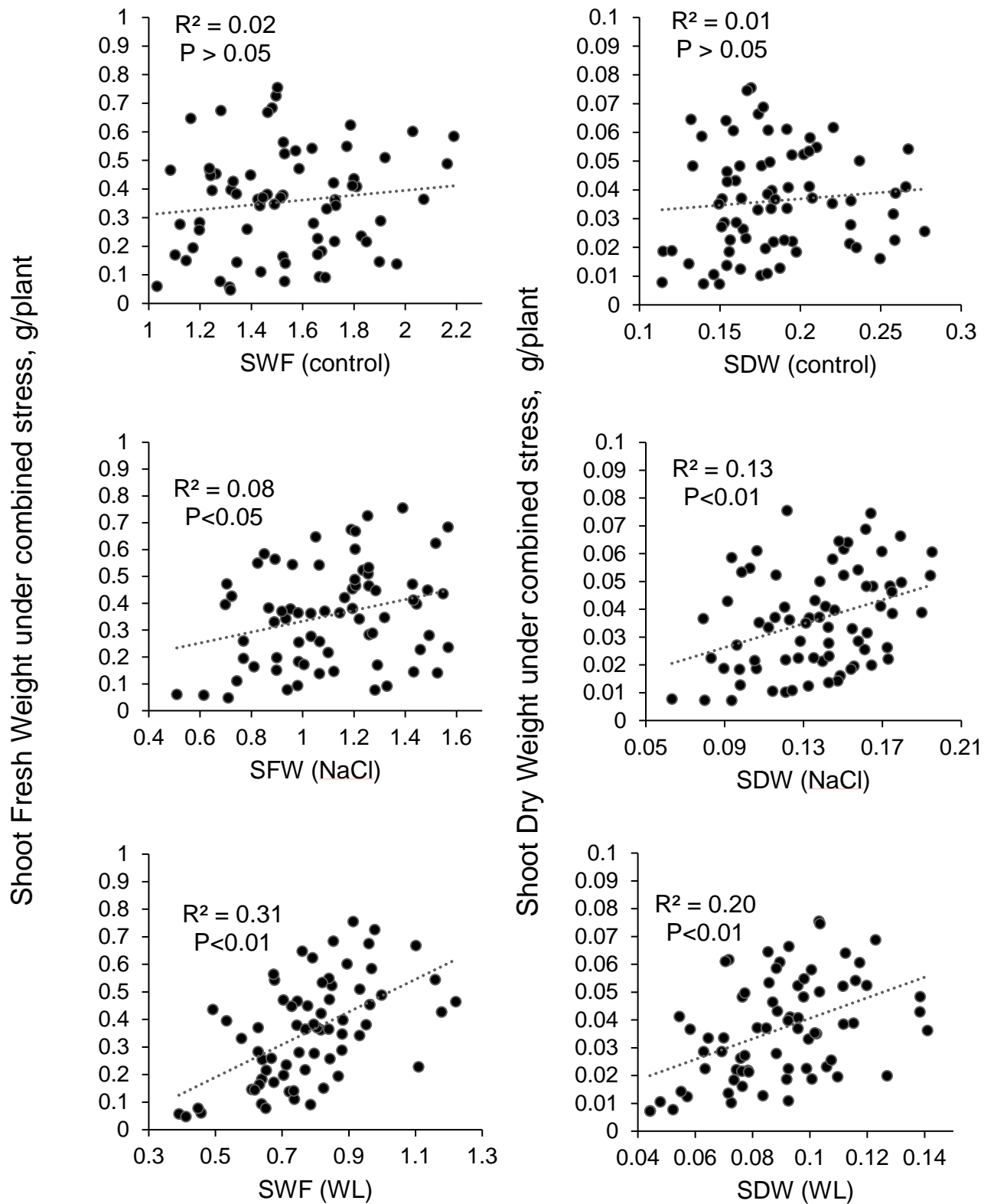


Fig. S3. Correlation between shoot fresh (SFW) and dry (SDW) weight (in grams per plant) of 12 barley varieties grown under saline, waterlogged and control conditions with SFW and SDW of plants grown under combined salinity and waterlogging stress. Each point represents an individual plant.

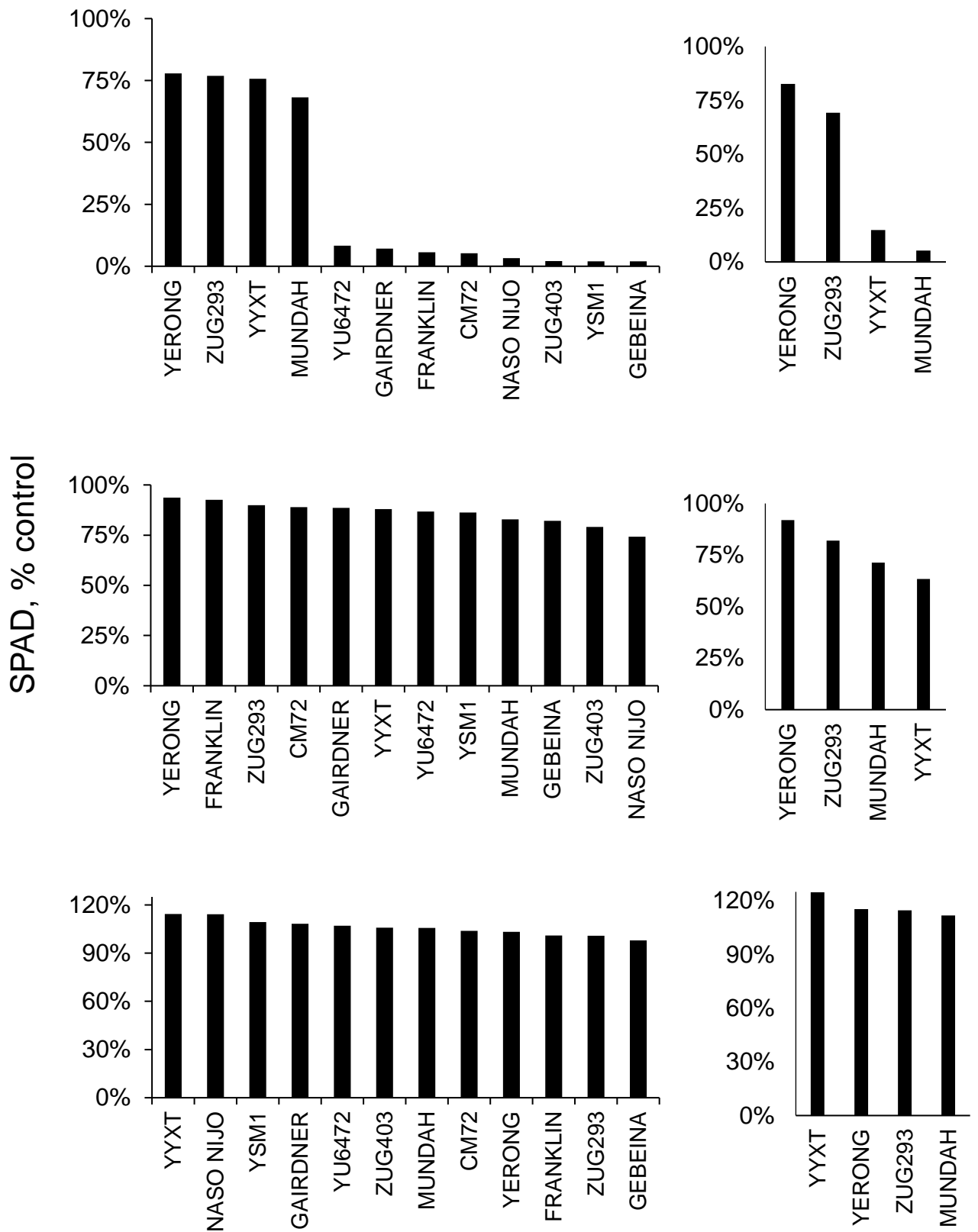


Fig. 4. Effects of separate and combined salinity and waterlogging stresses on chlorophyll content (SPAD values) of selected 12 barley varieties relative to their control (%). SPAD value measurements were taken 10 and 15 days after the treatment onset.

10 Days Treatment (all varieties)			
	Control	NaCl	WL
NaCl	0.455**		
WL	0.495**	0.458**	
WL/NaCl	0.057	0.099	0.234

10 Days Treatment (tolerant varieties only)			
	Control	NaCl	WL
NaCl	0.280		
WL	0.380	0.085	
WL/NaCl	0.324	0.033	0.629**

10 Days Treatment (sensitive varieties only)			
	Control	NaCl	WL
NaCl	0.487**		
WL	0.523**	0.537**	
WL/NaCl	-0.018	-0.020	0.005

15 Days Treatment (tolerant varieties only)			
	Control	NaCl	WL
NaCl	0.086		
WL	0.489*	0.559**	
WL/NaCl	0.447*	0.541*	0.746**

Fig. 5. Correlation (r values) between chlorophyll content (SPAD value) in barley leaves exposed to different stresses and their combinations. Plants were divided into two groups (sensitive and tolerant) according to their overall salinity stress tolerance, and r values have been calculated for chlorophyll data measured after 10 and 15 days of appropriate stress.