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### *Drought priming effects on alleviating the photosynthetic limitations of wheat cultivars (*Triticum aestivum* L.) with contrasting tolerance to abiotic stresses*

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Table S.1. Intercellular response curve (A/Ci) and light response curve (A/Q) parameters of two cultivars: 'Gladius' and 'Paragon'. A/Ci parameters presented are: saturated net photosynthetic rate ( $A_{sat}$ ), maximum carboxylation of Rubisco ( $V_{cmax}$ ) and maximum photosynthetic electron transport rate ( $J_{max}$ ). A/Q parameters shown are: maximum net photosynthetic rate ( $A_{max}$ ), dark respiration ( $R_d$ ); maximal quantum efficiency of photosynthesis ( $\alpha$ ) corrected for  $Abs_{Leaf}$ ; stomatal conductance ( $g_s$ ), leaf transpiration rate ( $E$ ), light compensation point (LCP); intercellular  $CO_2$  ( $C_i$ ); the difference between leaf and cuvette air temperature ( $\Delta T = T_{leaf} - T_{cuvette}$ ) and ratio between  $CO_2$  assimilation and transpiration rate ( $WUE_{leaf} = A/E$ ). Measurements were taken when the relative soil water content reached 35%; control and primed treatments were measured during the expansion of third (P1) and fifth (P2) leaf, respectively, using the last fully developed leaf. Parameters were measured at growth temperature (20°C). All parameters are given at light level of 2000  $\mu mol m^{-2} s^{-1}$  and  $[CO_2]$  of 407 ppm. Different lower letters indicate significant difference at  $P < 0.05$  within each cultivar and priming periods. Data represents mean values  $\pm SEM$ ,  $n = 3$ .

Parameters	Units	'Gladius'				'Paragon'			
		1 <sup>st</sup> Priming		2 <sup>nd</sup> Priming		1 <sup>st</sup> Priming		2 <sup>nd</sup> Priming	
		Control	Primed	Control	Primed	Control	Primed	Control	Primed
<b>A/Ci</b>									
$A_{sat}$	$\mu mol m^{-2} s^{-1}$	32.94 $\pm$ 2.23	34.08 $\pm$ 2.71	42.16 $\pm$ 2.10	44.61 $\pm$ 1.94	31.39 $\pm$ 1.98	25.65 $\pm$ 1.16	37.09 $\pm$ 2.55	38.75 $\pm$ 0.90
$V_{cmax}$	$\mu mol m^{-2} s^{-1}$	70.73 $\pm$ 9.87	68.29 $\pm$ 10.73	101.07 $\pm$ 12.90	104.49 $\pm$ 11.59	67.20 $\pm$ 7.01	56.38 $\pm$ 4.15	82.6 $\pm$ 10.99	103.78 $\pm$ 4.9
$J_{max}$	$\mu mol m^{-2} s^{-1}$	171.75 $\pm$ 20.04	166.69 $\pm$ 17.24	226.42 $\pm$ 17.38	249.30 $\pm$ 15.29	168.27 $\pm$ 15.53	135.05 $\pm$ 7.47	194.85 $\pm$ 21.20	221.65 $\pm$ 4.78
<b>A/Q</b>									
$A_{max}$	$\mu mol m^{-2} s^{-1}$	31.46 $\pm$ 2.54	30.23 $\pm$ 2.59	39.89 $\pm$ 1.74	38.29 $\pm$ 5.22	28.43 $\pm$ 2.02	27.04 $\pm$ 0.92	35.99 $\pm$ 6.42	36.86 $\pm$ 3.5
$R_d$	$\mu mol m^{-2} s^{-1}$	1.46 $\pm$ 0.38	1.13 $\pm$ 0.08	1.26 $\pm$ 0.15	1.14 $\pm$ 0.03	0.84 $\pm$ 0.06	0.99 $\pm$ 0.11	1.15 $\pm$ 0.75	0.74 $\pm$ 0.16
$\alpha$	-	0.040 $\pm$ 0.001	0.040 $\pm$ 0.001	0.04 $\pm$ 0.001	0.05 $\pm$ 0.001	0.04 $\pm$ 0.0001	0.04 $\pm$ 0.0001	0.05 $\pm$ 0.001	0.05 $\pm$ 0.001
$g_s$	$mmol m^{-2} s^{-1}$	523.6 $\pm$ 98.2 <sup>a</sup>	334.7 $\pm$ 20.0 <sup>b</sup>	523.0 $\pm$ 188.3	416.9 $\pm$ 79.0	417.0 $\pm$ 140.5	398.0 $\pm$ 111.7	556.2 $\pm$ 96.7	454.4 $\pm$ 129.3
$E$	$mmol m^{-2} s^{-1}$	4.57 $\pm$ 0.66	3.33 $\pm$ 0.23	4.85 $\pm$ 1.30	4.01 $\pm$ 0.72	4.02 $\pm$ 0.76	3.84 $\pm$ 0.82	5.16 $\pm$ 0.46	4.28 $\pm$ 0.87
LCP	$\mu mol m^{-2} s^{-1}$	35.77 $\pm$ 8.05	27.91 $\pm$ 1.73	27.95 $\pm$ 4.49	24.80 $\pm$ 1.87	28.43 $\pm$ 1.62	27.04 $\pm$ 13.86	23.72 $\pm$ 15.02	15.55 $\pm$ 2.91
$C_i$	ppm	307 $\pm$ 27	266 $\pm$ 06	276 $\pm$ 35	258 $\pm$ 23	290 $\pm$ 32	297 $\pm$ 24	300 $\pm$ 21	271 $\pm$ 38
$\Delta T$	°C	0.2 $\pm$ 0.2	0.6 $\pm$ 0.1	0.3 $\pm$ 0.2	0.4 $\pm$ 0.1	0.4 $\pm$ 0.3	0.3 $\pm$ 0.2	0.2 $\pm$ 0.2	0.3 $\pm$ 0.2
$WUE_{leaf}$	$\mu mol mmol^{-1}$	5.76 $\pm$ 4.58	7.74 $\pm$ 1.15	7.01 $\pm$ 1.88	8.29 $\pm$ 1.69	6.12 $\pm$ 1.35	5.89 $\pm$ 1.25	5.75 $\pm$ 1.01	7.50 $\pm$ 2.03

Table S.2. Destructive harvest parameters and chlorophyll index (SPAD) values of two wheat cultivars: 'Gladius' and 'Paragon'. Harvest parameters are: biomass accumulation, specific leaf area (SLA), plant height and number of tillers. SPAD measurements were taken on the flag leaf of the primary tiller of primed and non-primed plants kept under non-stress conditions (CC and PC), after seven days of drought (CD and PD) or heat stress (CH and PH). Different lower letters indicate significant difference at  $P < 0.05$  within each cultivar for parameters with interaction between priming and stress, the absence of letters indicates no interaction between factors. . Data represents mean values  $\pm$  SEM,  $n = 4$ .

Parameters	Units	CC	CD	CH	PC	PD	PH
<b>'Gladius'</b>							
Biomass accumulation	g	11.11 $\pm$ 2.06	11.53 $\pm$ 0.89	11.73 $\pm$ 0.61	13.33 $\pm$ 0.69	12.69 $\pm$ 0.94	11.73 $\pm$ 0.58
SLA	g cm <sup>-2</sup>	149.26 $\pm$ 11.75	132.01 $\pm$ 21.63	152.98 $\pm$ 4.44	144.81 $\pm$ 7.98	164.55 $\pm$ 6.15	140.94 $\pm$ 10.17
Plant height	cm	43.25 $\pm$ 3.13	48.75 $\pm$ 1.68	45.62 $\pm$ 1.78	45.62 $\pm$ 0.71	46.01 $\pm$ 2.16	46.62 $\pm$ 0.89
Number of tillers		5.25 $\pm$ 0.47 <sup>a</sup>	5.00 $\pm$ 0.4 <sup>a</sup>	4.75 $\pm$ 0.47 <sup>a</sup>	3.75 $\pm$ 0.57 <sup>a</sup>	5.75 $\pm$ 0.25 <sup>ab</sup>	4.75 $\pm$ 0.47 <sup>a</sup>
SPAD		45.55 $\pm$ 0.63	43.29 $\pm$ 3.06	47.21 $\pm$ 1.12	47.68 $\pm$ 2.06	46.25 $\pm$ 0.72	44.62 $\pm$ 1.83
<b>'Paragon'</b>							
Biomass accumulation	g	18.64 $\pm$ 2.75	17.72 $\pm$ 2.08	17.89 $\pm$ 3.08	19.29 $\pm$ 1.15	18.41 $\pm$ 1.75	17.58 $\pm$ 1.28
SLA	g cm <sup>-2</sup>	131.17 $\pm$ 3.84	138.7 $\pm$ 8.68	114.24 $\pm$ 10.72	118.83 $\pm$ 8.18	103.15 $\pm$ 11.14	113.84 $\pm$ 2.63
Plant height	cm	79.25 $\pm$ 3.19 <sup>a</sup>	71.25 $\pm$ 2.38 <sup>b</sup>	80.25 $\pm$ 0.43 <sup>a</sup>	72.375 $\pm$ 1.73 <sup>b</sup>	69.25 $\pm$ 1.89 <sup>b</sup>	68.12 $\pm$ 1.61 <sup>b</sup>
Number of tillers		3.75 $\pm$ 0.25	3.50 $\pm$ 0.64	3.50 $\pm$ 0.64	3.75 $\pm$ 0.25	4.50 $\pm$ 0.51	4.00 $\pm$ 0.41
SPAD		40.51 $\pm$ 2.07	40.32 $\pm$ 0.74	38.01 $\pm$ 0.92	42.78 $\pm$ 0.99	38.01 $\pm$ 1.18	40.78 $\pm$ 0.61