10.1071/FP09228_AC

Accessory Publication: Functional Plant Biology, 2010, 37(4), 323–333.

Accessory Publication

Table S1. Results of the repeated measures ANOVA for the two drought cycles and species

Variables analysed are: relative water content (RWC), stomatal conductance under saturating light and ambient CO_2 (g_s), light saturated photosynthesis (A_{sat}), light-saturated photosynthesis in phyllodes provided with 1000 ppm CO_2 (A_{1000}), dark respiration (R_{dark}), instant water use efficiency (iWUE) and maximum quantum efficiency of photosystem II photochemistry (F_v/F_m)

		Cycle 1					Cycle 2				
			A. pycnantha		*A. floribunda*			*A. pycnantha*		*A. floribunda*	
Variable	Factor	DF	F	*P*	F	*P*	DF	F	*P*	F	*P*
RWC	Treatment	1					1	5.56	0.100	139.60	**<0.001**
RWC	Time	4					6	20.81	**<0.001**	62.50	**<0.001**
RWC	Time*treatment	4					6	22.33	**<0.001**	62.40	**<0.001**
g_s	Treatment	1	5.13	**0.064**	8.000	**0.033**	1	11.99	**0.018**	10.26	**0.024**
g_s	Time	4	6.35	**0.001**	1.000	0.347	6	2.16	0.075	11.57	**<0.001**
g_s	Time*treatment	4	4.79	**0.006**	0.868	0.497	6	1.80	0.133	0.08	0.997
A_{sat}	Treatment	1	11.19	**0.020**	7.876	**0.031**	1	12.84	**0.016**	17.70	**0.014**
A_{sat}	Time	4	2.47	0.078	0.991	0.432	6	11.06	**<0.001**	13.02	**<0.001**
A_{sat}	Time*treatment	4	3.98	**0.016**	0.803	0.535	6	9.64	**<0.001**	2.09	0.093

iWUE	Treatment	1	5.874	0.052	3.437	0.123	1	22.65	**0.005**	5.73	0.075
iWUE	Time	4	4.78	**0.006**	0.117	0.975	6	2.20	0.071	0.95	0.48
iWUE	Time*treatment	4	4.24	**0.010**	0.69	0.611	6	2.02	0.094	1.35	0.274
A_{1000}	Treatment	1	7.81	**0.031**	7.99	**0.030**	1	19.200	**0.048**	10.26	**0.024**
A_{1000}	Time	4	4.04	**0.012**	3.25	**0.029**	6	4.260	**0.010**	9.28	**<0.001**
A_{1000}	Time*treatment	4	4.35	**0.009**	2.42	0.076	6	4.900	**0.006**	1.94	0.106
R_{dark}	Treatment	1	0.79	0.407	0.01	0.912	1	0.353	0.578	0.08	0.789
R_{dark}	Time	4	7.94	**<0.001**	1.34	0.285	6	0.980	0.456	2.20	0.066
R_{dark}	Time*treatment	4	2.08	0.116	0.02	0.999	6	0.571	0.750	0.77	0.601
R_{dark}/A_{sat}	Treatment	1	2.94	0.147	15.62	**0.011**	1	2.795	0.155	4.96	0.090
R_{dark}/A_{sat}	Time	4	2.78	*0.055*	0.81	0.535	6	2.320	*0.059*	3.87	**0.008**
R_{dark}/A_{sat}	Time*treatment	4	2.81	*0.053*	0.97	0.444	6	2.311	*0.059*	3.81	**0.008**
F_v/F_m	Treatment	1	0.44	0.513	16.99	**<0.001**	1	4.92	**0.032**	42.82	**<0.001**
F_v/F_m	Time	4	3.95	**0.011**	3.97	**0.011**	6	0.72	0.636	12.70	**<0.001**
F_v/F_m	Time*treatment	4	0.98	0.432	3.96	**0.011**	6	0.70	0.654	4.57	**0.001**

Table S2. Mean values (± s.e., *n*=4) for each day and desiccation cycle for relative water content (RWC in %) and monitored gas exchange variables: light saturated photosynthesis (A_{sat}) and light-saturated photosynthesis in phyllodes provided with 1000 ppm CO_2 (A_{1000}) (both in µmol CO_2 m^{-2} s^{-1}), stomatal conductance to water under saturating light and ambient CO_2 (g_s in mol H_2O m^{-2} s^{-1}), instant water use efficiency (iWUE in µmol CO_2 mol^{-1} H_2O), intercellular CO_2 concentration (C_i in µmol CO_2 mol^{-1}) and phyllode dark respiration (R_{dark} in µmol CO_2 m^{-2} s^{-1})

Values for days of maximum water stress are in bold font

			Acacia pycnantha						
Cycle	Treatment	Day	RWC	A_{sat}	g_s	iWUE	C_i	A_{1000}	R_{dark}
1	Control	1		17.73 ± 0.43	0.52 ± 0.03	33.78 ± 2.10	307.8 ± 4.62	29.53 ± 1.16	2.50 ± 0.37
		3		19.82 ± 1.25	0.86 ± 0.11	22.02 ± 1.30	323.86 ± 1.26	29.29 ± 1.53	2.38 ± 0.33
		5		20.29 ± 1.23	0.67 ± 0.07	29.46 ± 3.41	309.60 ± 5.66	30.29 ± 2.32	2.22 ± 0.18
		7		21.26 ± 1.05	0.50 ± 0.17	25.54 ± 1.87	302 ± 53 1.99	32.23 ± 1.48	1.99 ± 0.12
		9		21.10 ± 0.54	0.63 ± 0.07	33.07 ± 2.38	307.8 ± 4.00	32.39 ± 0.14	1.83 ± 0.16
	Drought	1		17.10 ± 0.85	0.59 ± 0.11	31.61 5.62	314.05 ± 9.67	29.6 ± 1.01	2.44 ± 0.07
		3		16.38 ± 0.42	0.54 ± 0.07	31.36 2.89	315.25 ± 4.19	28.41 ± 0.94	1.82 ± 0.15
		5		**6.75 ± 4.06**	**0.15 ± 0.12**	**70.12 ± 14.11**	**268.40 ± 18.27**	**14.22 ± 6.13**	**2.62 ± 0.45**
		7		13.77 ± 2.06	0.28 ± 0.06	54.71 ± 8.89	266.00 ± 12.45	25.59 ± 2.16	1.62 v 0.11
		9		14.76 ± 2.36	0.38 ± 0.11	50.82 ± 13.13	287.58 ± 17.61	26.18 ± 2.26	1.30 ± 0.25
2	Control	1	91.91 ± 2.34	21.60 ± 1.13	0.93 ± 0.06	23.62 ± 2.56	319.55 ± 5.99	35.74 ± 2.83	1.74 ± 0.53
		3	97.27 ± 0.38	21.41 ± 1.64	0.85 ± 0.03	28.97 ± 4.98	311.53 ± 8.13	35.57 ± 3.21	1.87 ± 0.07
		5	96.39 ± 0.61	20.79 ± 2.25	0.98 ± 0.29	26.85 ± 6.24	312.93 ± 10.51	35.92 ± 2.91	1.49 ± 0.10
		8	96.48 ± 0.53	21.01 ± 1.58	0.85 ± 0.11	26.10 ± 3.80	316.58 ± 8.41	36.42 ± 3.04	1.82 ± 0.07
		10	96.98 ± 0.34	21.11 ± 1.56	0.85 ± 0.07	25.09 ± 1.87	318.98 ± 4.47	35.92 ± 2.69	1.90 ± 0.29
		12	97.38 ± 0.38	21.12 ± 1.58	0.91 ± 0.15	24.98 v 3.62	318.70 ± 6.45	36.76 ± 2.52	1.92 ± 0.09
		14	96.69 ± 0.86	20.92 ± 1.69	0.89 ± 0.15	25.06 ± 3.32	318.65 ± 5.96	35.69 ± 2.57	1.66 ± 0.10
	Drought	1	96.00 ± 1.33	19.87 ± 0.81	0.74 ± 0.07	27.41 ± 2.80	316.83 ± 5.74	31.08 ± 1.68	2.12 ± 0.28
		3	94.28 ± 2.33	18.23 ± 1.08	0.49 ± 0.08	38.04 ± 3.87	301.90 ± 5.15	30.13 ± 1.22	2.07 ± 0.24
		5	**85.57 ± 6.92**	**8.17 ± 4.29**	**0.18 ± 0.13**	**72.82 ± 24.35**	**252.57 ± 39.00**	**18.13 ± 5.11**	**1.86 ± 0.40**
		8	**52.96 ± 5.16**	**3.19 ± 1.40**	**0.04 ± 0.02**	**72.31 ± 9.87**	**268.27 ± 14.91**	**8.97 ± 3.94**	**1.74 ± 0.07**
		10	92.09 ± 3.12	11.97 ± 2.50	0.21 ± 0.07	62.00 ± 9.87	273.27 ± 11.07	22.60 ± 2.33	1.81 ± 0.03
		12	93.02 ± 2.33	15.41 ± 2.22	0.45 ± 0.15	42.49 ± 12.99	300.13 ± 19.98	24.41 ± 3.16	1.84 ± 0.16
		14	90.81 ± 4.07	15.29 ± 2.46	0.44 ± 0.16	48.96 ± 19.19	288.93 ± 27.60	25.64 ± 3.47	1.66 ± 0.08

			Acacia floribunda						
Cycle	Treatment	Day	RWC	A_{sat}	g_s	iWUE	C_i	A_{1000}	R_{dark}
1	Control	1		8.31 ± 1.95	0.16 ± 0.03	54.92 ± 2.73	301.13 ± 6.78	18.16 ± 3.12	1.49 ± 0.20
		3		11.98 ± 1.92	0.21 ± 0.04	64.87 ± 4.32	283.98 ± 7.11	23.57 ± 3.13	1.10 ± 0.24
		5		12.63 ± 2.59	0.17 ± 0.06	67.19 ± 9.77	303.98 ± 33.27	22.50 ± 3.42	1.43 ± 0.19
		7		11.08 ± 2.64	0.17 ± 0.03	67.17 ± 3.55	272.10 ± 4.99	20.52 ± 3.94	1.33 ± 0.22
		9		13.00 ± 1.43	0.23 ± 0.02	60.74 ± 3.43	290.00 ± 8.23	25.46 ± 2.83	1.27 ± 0.13
	Drought	1		6.65 ± 1.39	0.13 ± 0.03	53.52 ± 1.92	301.65 ± 2.77	14.22 ± 2.72	1.46 ± 0.21
		3		11.51 ± 2.73	0.22 ± 0.05	53.16 ± 1.57	301.40 ± 2.81	20.91 ± 3.51	1.12 ± 0.22
		5		7.75 ± 2.59	0.14 ± 0.03	45.90 ± 11.43	314.40 ± 28.20	15.00 ± 5.08	1.43 ± 0.36
		7		**5.96 ± 3.47**	**0.10 ± 0.04**	**41.27 ± 13.87**	**296.10 ± 18.52**	**3.77 ± 2.81**	**1.40 ± 0.22**
		9		5.17 ± 1.59	0.09 ± 0.02	50.38 ± 8.92	308.85 ± 15.01	10.54 ± 3.43	1.32 ± 0.04
2	Control	1	95.88 ± 1.01	17.97 ± 0.72	0.45 ± 0.05	44.44 ± 1.46	310.03 ± 6.73	32.06 ± 2.07	2.3 ± 0.75
		3	97.36 ± 0.96	9.87 ± 2.90	0.20 ± 0.05	40.72 ± 3.54	316.15 ± 6.10	18.18 ± 4.46	1.50 ± 0.15
		5	93.47 ± 0.56	13.85 ± 2.79	0.27 ± 0.08	47.00 ± 4.62	302.88 ± 4.15	24.22 ± 3.25	1.43 ± 0.23
		8	94.80 ± 2.05	8.2 ± 1.00	0.12 ± 0.00	66.20 ± 8.11	285.19 ± 12.86	15.65 ± 2.61	1.23 ±0.20
		10	96.87 ± 0.80	11.85 ± 1.97	0.15 ± 0.05	156.92 ± 97.45	325.13 ± 29.59	20.49 ± 3.67	1.65 ± 0.27
		12	96.81 ± 0.56	13.54 ± 3.01	0.19 ± 0.01	64.83 ± 13.32	295.10 ± 25.97	19.71 ± 4.13	1.35 ± 0.29
		14	95.66 ± 2.07	11.71 ± 3.10	0.21 ± 0.06	47.63 ± 8.28	307.83 ± 11.41	20.20 ± 5.18	1.24 ± 0.32
	Drought	1	90.78 ± 1.27	14.49 ± 1.04	0.36 ± 0.09	46.03 ± 10.74	309.10 ± 16.81	26.46 ± 0.62	1.83 ± 0.57
		3	95.66 ± 0.17	6.61 ± 1.44	0.14 ± 0.04	51.16 ± 7.66	303.53 ± 10.51	18.61 ± 5.49	1.69 ± 0.42
		5	89.43 ± 1.32	9.39 ± 0.72	0.17 ± 0.01	54.18 ± 4.07	295.07 ± 2.49	20.66 ± 1.01	1.57 ± 0.30
		8	**64.01 ± 2.47**	**0.55 ± 0.45**	**0.03 ± 0.00**	**15.08 ± 11.43**	**366.20 ± 17.80**	**1.62 ± 0.99**	**1.35 ± 0.21**
		10	**50.54 ± 2.88**	**0.99 ± 0.21**	**0.03 ± 0.01**	**38.04 ± 13.00**	**330.07 ± 21.31**	**1.54 ± 0.39**	**2.63 ± 1.11**
		12	93.52 ± 0.50	3.48 ± 0.54	0.08 ± 0.01	43.30 ± 2.20	321.37 ± 3.38	12.36 ± 3.63	1.37 ± 0.27
		14	92.01 ± 2.35	4.36 ± 0.85	0.10 ± 0.00	44.92 ± 7.28	318.30 ± 11.40	13.60 ± 2.74	1.14 ± 0.29