

Supplementary Material

Partial root zone drying exerts different physiological responses on field-grown grapevine (*Vitis vinifera* cv. Monastrell) in comparison to regulated deficit irrigation

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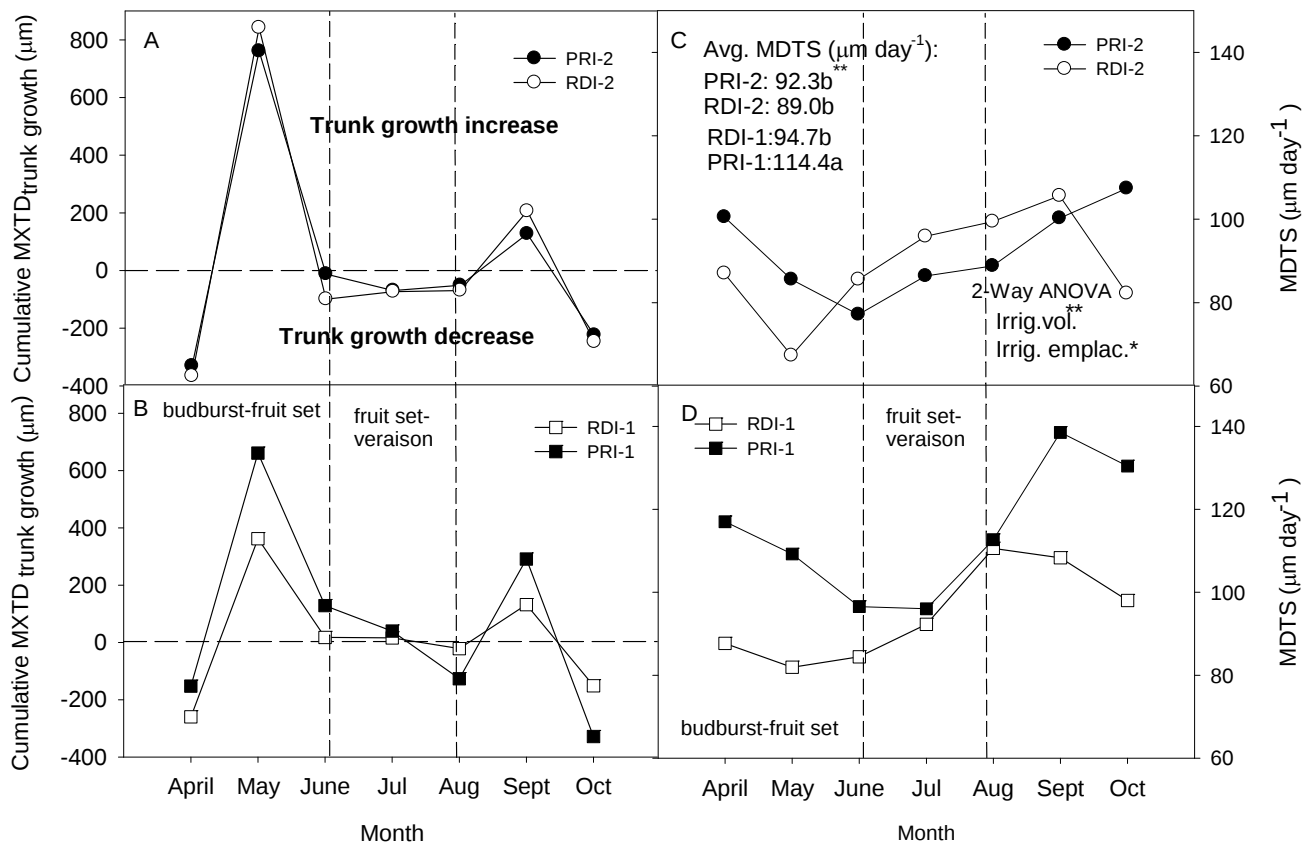


Fig. S1. (A, B) Cumulative maximum trunk diameter growth (MXTD) calculated monthly for each treatment in 2009. (C, D) Mean values of maximum daily trunk shrinkage (MDTS) calculated monthly and average values of MDTS during the whole season in 2009 for each treatment. Each point is the average of two vines per treatment and the average of different days of measurement for each month. In C and D, treatment differences are indicated thus: * $P < 0.05$; ** $P < 0.01$. Separation by Duncan's multiple range test at the 95% confidence level.

Pre-veraison water stress period (early June- end July 2009)

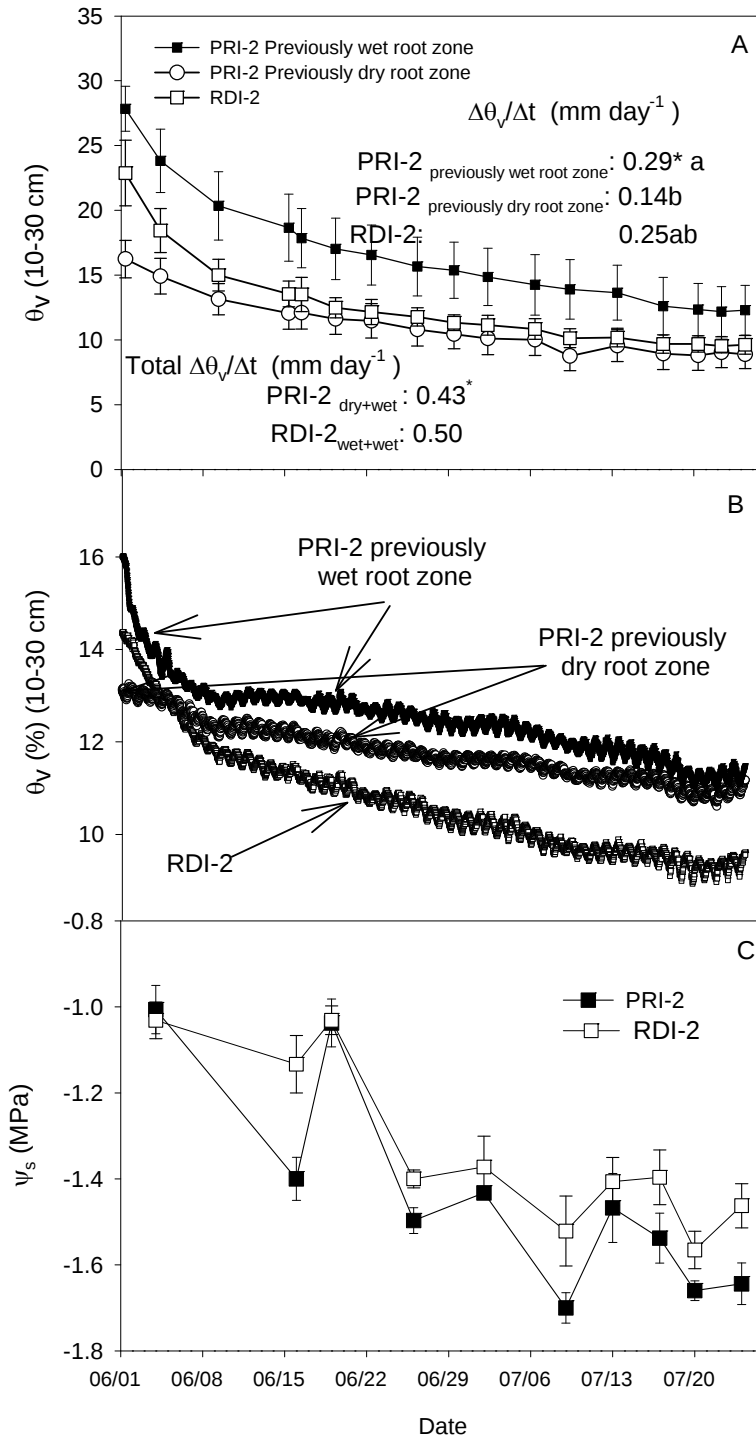


Fig. S2. Evolution of volumetric soil water content (θ_v) measured by Diviner 2000 (A) and C-probes (B) soil capacitance probes and midday stem water potential (Ψ_s) (C) measured during pre-veraison complete irrigation cut-off period for PRI-2 and RDI-2 vines in 2009. In A differences between treatments are thus: * $P < 0.05$; Separation by Duncan's multiple range test at 95% confidence level.

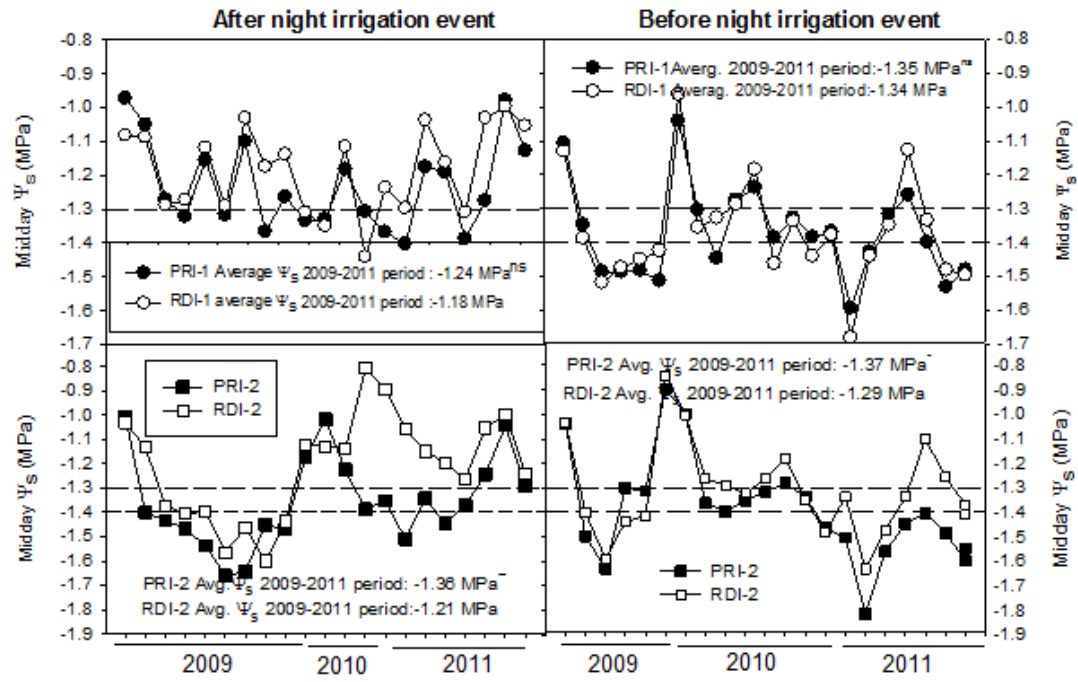


Fig. S3. Seasonal evolution of average midday stem water potential (Ψ_s) for the three years, in each treatment, following (A, B) and before (C, D) irrigation events. Each point is the average of six-eight measurements per treatment. Treatment differences are indicated thus: ns, not significant; * $P < 0.05$, ** $P < 0.01$. Separation by Duncan's multiple range test at the 95% confidence level.

Table S1. Mean values of different leaf water relations, gas exchange and isotopic discrimination parameters for each treatment in two important phenological periods in 2010

Gas exchange parameters were measured at early to mid-morning (8:30–10:30)

	Pre- <i>véraison</i> period, fruit set- <i>véraison</i> (early June-end of July)					Post- <i>véraison</i> period (end of July-mid-September)				
Parameter	PRD-1	RDI-1	PRI-2	RDI-2	ANOVA	PRD-1	RDI-1	PRI-2	RDI-2	ANOVA
Ψ_s	-1.14bc	-1.10ab	-1.16c	-1.08a	*	-1.28a	-1.28a	-1.33a	-1.13b	**
A	10.32	10.82	9.72	9.92	ns	9.13	9.30	9.57	9.72	ns
E	2.63ab	2.85a	2.45c	2.55bc	***	2.93	3.04	3.07	3.21	ns
g_s	0.14b	0.16a	0.13b	0.13b	***	0.12	0.12	0.12	0.13	ns
A/E	3.95	3.82	3.98	3.90	ns	3.13	3.09	3.13	3.04	ns
A/ g_s	75.04	71.13	76.74	74.65	ns	79.86	77.63	79.58	76.83	ns
$\delta^{15}\text{N}$	1.36	1.34	1.27	1.26	ns	—	—	—	—	
$\delta^{13}\text{C}$	-25.57	-25.23	-25.41	-25.48	ns	—	—	—	—	

Units: Ψ_s , MPa; A, $\mu\text{mol m}^{-2} \text{s}^{-1}$; E, $\text{mmol m}^{-2} \text{s}^{-1}$; g_s , $\text{mol m}^{-2} \text{s}^{-1}$; A/E, $\mu\text{mol mmol}^{-1}$; A/ g_s , $\mu\text{mol mol}^{-1}$; $\delta^{15}\text{N}$, ‰; $\delta^{13}\text{C}$, ‰; ns, not significant; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$. Separation by Duncan's multiple range test at the 95% confidence level.

Table S2. Mean values of midday stem water potential (Ψ_s) and gas exchange parameters for each treatment in two important phenological periods in 2012

Gas exchange parameters were measured at early to mid-morning (8:30–10:30)

Parameter	Year 2012														
	Budburst-fruit set (early April–early June)					Pre- <i>véraison</i> period (June–end of July)					Post- <i>véraison</i> period (end of July–mid-September)				
	PRD-1	RDI-1	PRI-2	RDI-2	ANOVA	PRD-1	RDI-1	PRI-2	RDI-2	ANOVA	PRD-1	RDI-1	PRI-2	RDI-2	ANOVA
Ψ_s	−0.66a	−0.70ab	−0.75bc	−0.79c	*	−1.21a	−1.23ab	−1.26b	−1.27b	*	−1.25a	−1.17ab	−1.13bc	−1.07c	**
A	15.44	14.74	14.24	14.44	ns	11.50a	11.18a	9.75b	10.70ab	*	9.64	9.10	10.03	9.52	ns
E	3.42	3.26	3.02	3.03	ns	3.07a	2.92a	2.52b	2.86ab	*	2.96	2.78	3.09	2.86	ns
g_s	0.183	0.171	0.153	0.159	ns	0.127a	0.119a	0.097b	0.114ab	*	0.107	0.099	0.113	0.104	ns
A/E	5.12	5.21	5.22	5.37	ns	3.82	3.91	3.95	3.84	ns	3.54	3.58	3.51	3.66	ns
A/ g_s	88.02	91.03	97.01	94.56	ns	97.03a	101.33ab	106.27b	99.85ab	*	95.44	98.14	93.85	98.09	ns

Units: Ψ_s , MPa; A, $\mu\text{mol m}^{-2} \text{s}^{-1}$; E, $\text{mmol m}^{-2} \text{s}^{-1}$; g_s , $\text{mol m}^{-2} \text{s}^{-1}$; A/E, $\mu\text{mol mmol}^{-1}$; A/ g_s , $\mu\text{mol mol}^{-1}$; ns, not significant; * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$. Separation by Duncan's multiple range test at the 95% confidence level.