

Supplementary Material

Table S1: ANOVA results for comparison between throughfall reduction and control treatment. Values for F (between degrees of freedom; within degrees of freedom; F-value and resulting p-value are given for each trait and season following the throughfall installation. Traits are: Ψ_{PD} : pre-dawn water-potential; Ψ_{MD} : midday water-potential; Ψ_{TLP} : water-potential at turgor loss point; Ψ_{solute} : solute potential at full turgor; HV: Huber Value; LA: leaf area; SLA: specific leaf area.

Year	Season	Trait	F statistic	F-value	p-value
2017	summer	Ψ_{PD}	F(1,4)	0.24	0.650
2017	autumn	Ψ_{PD}	F(1,4)	0.09	0.779
2017	winter	Ψ_{PD}	F(1,4)	0.04	0.861
2017	spring	Ψ_{PD}	F(1,4)	3.35	0.141
2018	summer	Ψ_{PD}	F(1,4)	0.78	0.427
2018	spring	Ψ_{PD}	F(1,4)	0.19	0.687
2019	summer	Ψ_{PD}	F(1,4)	0.20	0.675
2017	summer	Ψ_{MD}	F(1,4)	0.04	0.858
2017	autumn	Ψ_{MD}	F(1,4)	0.86	0.406
2017	winter	Ψ_{MD}	F(1,4)	0.55	0.500
2017	spring	Ψ_{MD}	F(1,4)	2.60	0.182
2018	summer	Ψ_{MD}	F(1,4)	2.92	0.163
2018	spring	Ψ_{MD}	F(1,4)	0.46	0.537
2019	summer	Ψ_{MD}	F(1,4)	1.65	0.269
2017	summer	Ψ_{TLP}	F(1,4)	0.11	0.757
2017	autumn	Ψ_{TLP}	F(1,4)	3.18	0.149
2017	winter	Ψ_{TLP}	F(1,4)	2.01	0.230
2017	spring	Ψ_{TLP}	F(1,4)	0.73	0.441
2018	summer	Ψ_{TLP}	F(1,4)	0.39	0.566
2018	spring	Ψ_{TLP}	F(1,4)	0.70	0.449
2019	summer	Ψ_{TLP}	F(1,4)	0.19	0.689
2017	summer	Ψ_{solute}	F(1,4)	0.11	0.756
2017	autumn	Ψ_{solute}	F(1,4)	4.04	0.115
2017	winter	Ψ_{solute}	F(1,4)	0.75	0.435
2017	spring	Ψ_{solute}	F(1,4)	0.20	0.679
2018	summer	Ψ_{solute}	F(1,4)	1.04	0.366
2018	spring	Ψ_{solute}	F(1,4)	0.14	0.731
2019	summer	Ψ_{solute}	F(1,4)	0.16	0.714
2017	summer	HV	F(1,4)	11.58	0.027
2017	autumn	HV	F(1,4)	1.83	0.248
2017	winter	HV	F(1,4)	1.34	0.311
2017	spring	HV	F(1,4)	0.16	0.714
2018	summer	HV	F(1,4)	0.00	0.991
2018	spring	HV	F(1,4)	0.79	0.426
2019	summer	HV	F(1,4)	4.47	0.102
2017	summer	LA	F(1,4)	1.60	0.274
2017	autumn	LA	F(1,4)	2.50	0.189
2017	winter	LA	F(1,4)	0.13	0.735
2017	spring	LA	F(1,4)	0.48	0.527
2018	summer	LA	F(1,4)	5.30	0.083
2018	spring	LA	F(1,4)	1.20	0.336
2019	summer	LA	F(1,4)	7.30	0.054
2017	summer	SLA	F(1,4)	1.86	0.244
2017	autumn	SLA	F(1,4)	1.46	0.293
2017	winter	SLA	F(1,4)	0.78	0.426
2017	spring	SLA	F(1,4)	0.39	0.568
2018	summer	SLA	F(1,4)	0.11	0.755
2018	spring	SLA	F(1,4)	0.42	0.550
2019	summer	SLA	F(1,4)	0.47	0.529

Table S2: Effect size (Hedges' g), replication (N Group 1, N Group 2) and confidence interval (CI) for each water relations trait. Effect sizes for following traits are given: LA: leaf area; SLA: specific leaf area; HV: Huber Value; Ψ_{PD} : pre-dawn water-potential; Ψ_{MD} : midday water-potential; Ψ_{TLP} : water-potential at turgor loss point; Ψ_{solute} : solute potential at full turgor.

Trait	Group 1	Group 2	N Group 1	N Group 2	Heges'g	CI
Ψ_{PD}	2017	2016	36	72	0.36	-0.3 - 1.01
	autumn	winter	27	45	0.91	0.11 - 1.70
	spring	autumn	54	27	0.65	0.09 - 1.19
	spring	winter	54	45	1.45	0.84 - 2.05
	summer	autumn	45	27	2.24	1.48 - 2.98
	summer	spring	45	54	2.33	1.56 - 3.08
	summer	winter	45	45	2.77	1.94 - 3.59
Ψ_{MD}	2017	2016	36	72	0.44	-0.22 - 1.1
	autumn	winter	27	45	0.04	-0.72 - 0.79
	spring	autumn	54	27	2.22	1.53 - 2.89
	spring	winter	54	45	2.70	1.95 - 3.44
	summer	autumn	45	27	2.39	1.61 - 3.16
	summer	spring	45	54	1.13	0.49 - 1.75
	summer	winter	45	45	2.81	1.97 - 3.63
Ψ_{TLP}	2017	2016	40	72	0.61	-0.03 - 1.24
	autumn	winter	31	47	0.27	-0.44 - 0.97
	spring	autumn	52	31	0.62	0.06 - 1.17
	spring	winter	52	47	0.83	0.26 - 1.40
	summer	autumn	39	31	1.08	0.40 - 1.75
	summer	spring	39	52	0.40	-0.24 - 1.03
	summer	winter	39	47	1.28	0.58 - 1.96
Ψ_{solute}	2017	2016	40	72	0.50	-0.13 - 1.13
	autumn	winter	31	47	0.17	-0.54 - 0.87
	spring	autumn	52	31	0.43	-0.12 - 0.98
	spring	winter	52	47	0.56	0.01 - 1.11
	summer	autumn	39	31	0.90	0.23 - 1.55
	summer	spring	39	52	0.46	-0.18 - 1.09
	summer	winter	39	47	0.99	0.32 - 1.65
LA	2017	2016	36	78	0.89	0.20 - 1.57
	autumn	winter	33	45	0.25	-0.43 - 0.94
	spring	autumn	55	33	0.13	-0.40 - 0.65
	spring	winter	55	45	0.33	-0.20 - 0.86
	summer	autumn	45	33	0.06	-0.53 - 0.64
	summer	spring	45	55	0.17	-0.42 - 0.75
	summer	winter	45	45	0.19	-0.40 - 0.77
SLA	2017	2016	36	78	0.73	0.05 - 1.40
	autumn	winter	33	45	0.37	-0.32 - 1.06
	spring	autumn	55	33	0.69	0.15 - 1.24
	spring	winter	55	45	0.25	-0.28 - 0.78
	summer	autumn	45	33	0.54	-0.06 - 1.13
	summer	spring	45	55	1.13	0.49 - 1.75
	summer	winter	45	45	0.84	0.22 - 1.44
HV	2017	2016	36	78	0.58	-0.09 - 1.25
	autumn	winter	33	45	0.42	-0.27 - 1.11
	spring	autumn	54	33	0.56	0.01 - 1.10
	spring	winter	54	45	0.19	-0.34 - 0.73
	summer	autumn	45	33	0.59	-0.01 - 1.18
	summer	spring	45	54	0.12	-0.47 - 0.70
	summer	winter	45	45	0.29	-0.30 - 0.87

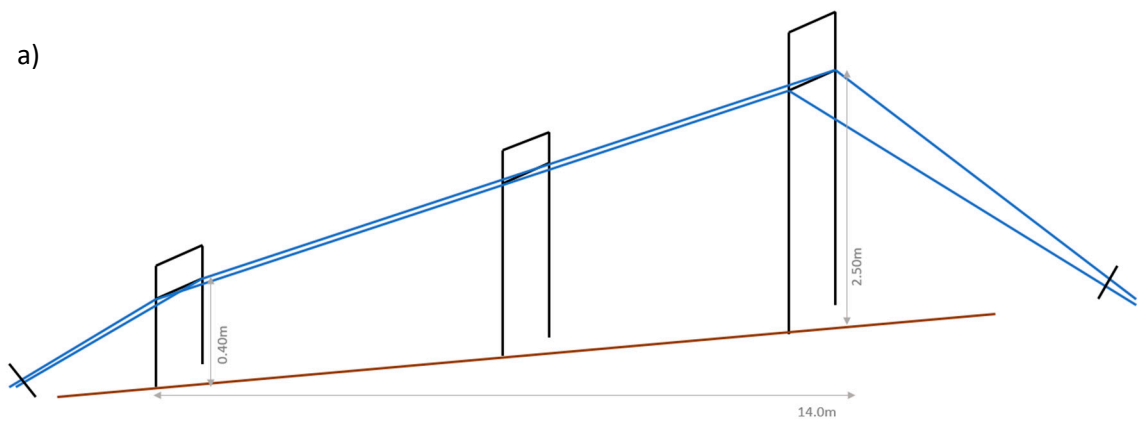


Figure S1: Throughfall reduction setup a) concept and b) implemented field setup in the Wombat State Forest.

Figure S2: Leaf hydraulic vulnerability for mature *Eucalyptus obliqua* populations. Individual measurements (circles, $n=18$ trees), Weibull fit (line) and $P_{50/88}$ (vertical dotted line) are given. Data published in Pritzkow et al, 2020.

References

Pritzkow C, Williamson V, Szota C, Trouvé R, Arndt SK. 2020. Phenotypic plasticity and genetic adaptation of functional traits influences intra-specific variation in hydraulic efficiency and safety. *Tree Physiology* **40**(2): 215-229.