Table 1: Responses of plant and leaf characterisitics of *Eucalyptus tereticornis* seedlings to soil volume treatments. Each value reflects the mean(standard error) for each treatment. Seedling mass, SRL, root nitrogen and leaf $\delta^{13}C$ values are from final harvest. Values of leaf starch, sugars, nitrogen and SLA represent overall means across measurement campaigns (n=6). Different letters represent significant differences between treatments. The container effect P value represents the overall difference between seedlings with soil volume restriction and the control seedlings.

Volume (L)	Seedling mass (g)	$SLA_{TNC\text{-}free}$ (m^2 kg^{-1})	Leaf Starch (%)	Leaf Sugars (%)	Leaf Nitrogen (%)	Root Nitrogen (%)	SRL (m g^{-1})	Leaf $\delta^{13}C$ (‰)
5	14.8 (1.82) a	11.8 (0.32) a	12.7 (0.97) b	6.4 (0.28) a	1.1 (0.02) a	0.78 (0.04) ab	73.0 (6.73) ab	-30.1 (0.26) a
10	20.0 (2.38) ab	11.7 (0.31) a	9.4 (0.75) ab	6.7 (0.25) a	1.3 (0.04) ab	0.75 (0.02) a	99.6 (8.70) b	-30.2 (0.25) a
15	25.4 (2.49) ab	12.7 (0.48) a	7.3 (0.73) a	7.2 (0.28) a	1.4 (0.06) ab	0.71 (0.02) a	74.6 (6.98) ab	-30.3 (0.36) a
20	23.4 (1.63) ab	11.8 (0.37) a	9.5 (0.88) ab	6.6 (0.26) a	1.4 (0.05) ab	0.76 (0.04) a	85.8 (7.37) ab	-29.7 (0.28) a
25	30.4 (5.49) ab	12.4 (0.40) a	9.8 (0.71) ab	6.9 (0.24) a	1.3 (0.06) ab	0.74 (0.02) a	82.5 (15.02) ab	-29.7 (0.25) a
35	52.2 (9.55) b	13.5 (0.46) ab	9.8 (0.65) ab	6.8 (0.22) a	1.5 (0.08) b	0.77 (0.03) ab	63.1 (6.47) a	-30.6 (0.38) a
Free	174.5 (18.02) c	15.1 (0.47) b	6.8 (0.65) a	7.4 (0.25) a	2.4 (0.09) c	0.9 (0.03) b	50.9 (5.00) a	-30.0 (0.34) a
Container Effect (P)	0.001	0.001	0.039	0.128	0.001	0.015	0.001	0.458

Table 2: Responses of leaf level gas exchange parameters of *Eucalyptus tereticornis* seedlings to soil volume treatments. Each value reflects the mean(standard error) for each treatment. Units for A_{max} and R_{dark} are μmol m^{-2} s^{-1} and g_s are mol m^{-1} s^{-1}, each at at 25°C. Values of A_{max}, g_s and g_1 represent overall means across measurement campaigns (n=6). R_{dark}, J_{max} and Vc_{max} values are means of two measurement campaigns at beginning and end of gas exchange measurements. Different letters represent significant differences between treatments. The container effect P value represents the overall difference between seedlings with soil volume restriction and the control seedlings.

Volume (L)	A_{max}	R_{dark}	J_{max}	Vc_{max}	g_s	g_1
5	21.2 (0.9) a	0.61 (0.04) a	104.5 (3.3) a	63.3 (2.5) a	0.30 (0.01) a	5.1 (0.1) bc
10	22.3 (1.4) ab	0.79 (0.06) a	116.5 (7.5) a	69.4 (4.7) a	0.36 (0.01) ab	5.4 (0.1) cd
15	23.3 (1.2) ab	0.70 (0.05) a	125.4 (7.8) a	80.8 (5.1) ab	0.42 (0.01) ab	5.8 (0.1) d
20	26.1 (0.7) b	0.73 (0.11) a	131.5 (8.6) a	82.1 (4.7) ab	0.37 (0.01) ab	4.9 (0.1) ac
25	23.9 (0.9) ab	0.53 (0.13) a	132.8 (13.1) a	79.0 (8.7) a	0.30 (0.01) a	4.5 (0.1) a
35	25.0 (1.0) ab	0.61 (0.04) a	127.2 (6.1) a	82.4 (3.6) a	0.31 (0.01) a	4.4 (0.2) a
Free	33.1 (0.7) c	0.64 (0.07) a	169.0 (8.2) b	100.4 (3.3) b	0.44 (0.01) b	4.5 (0.1) ab
Container Effect (P)	0.001	0.039	0.001	0.002	0.001	0.079

Table 3: Seedling Growth Model Default Parameters

Variable	Description	Default Value	Units	Source
Leaf area_i	initial leaf area	0.035	m^2	this study
Leaf mass_i	initial leaf mass	3.45	g	this study
Stem mass_i	initial stem mass	1.51	g	this study
Root mass_i	initial root mass	0.99	g	this study
ε_c	biomass conversion efficiency	.65	g C g mass^{-1}	Makela (1997)
$R_{\text{coarse root}}$	coarse root respiration	0.00124	g C g root^{-1}	Marsden et al. (2008)
$R_{\text{fine root}}$	fine root respiration	0.010368	g C g root^{-1}	Ryan et al. (2010)
R_{stem}	stem respiration	0.00187	g C g stem^{-1}	Drake et al. (unpublished)
C_{day}	Daily Leaf Carbon Assimilation	5.4-7.6	g C m^{-2} d^{-1}	this study
Λ	tissue turnover	1/365	yr^{-1}	theoretical