

Supplementary Material

Jesús Fernández-Habas ¹, Daniel Real ², Tom Vanwalleghem ³ and Pilar Fernández-Rebollo ^{1,*}

¹ Department of Forest Engineering, University of Cordoba, Spain

² Department of Primary Industries and Regional Development (DPIRD), Perth, WA 6151, Australia

³ Department of Agronomy, Hydraulic Engineering Area, University of Cordoba, Spain

* Correspondence: ir1ferep@uco.es

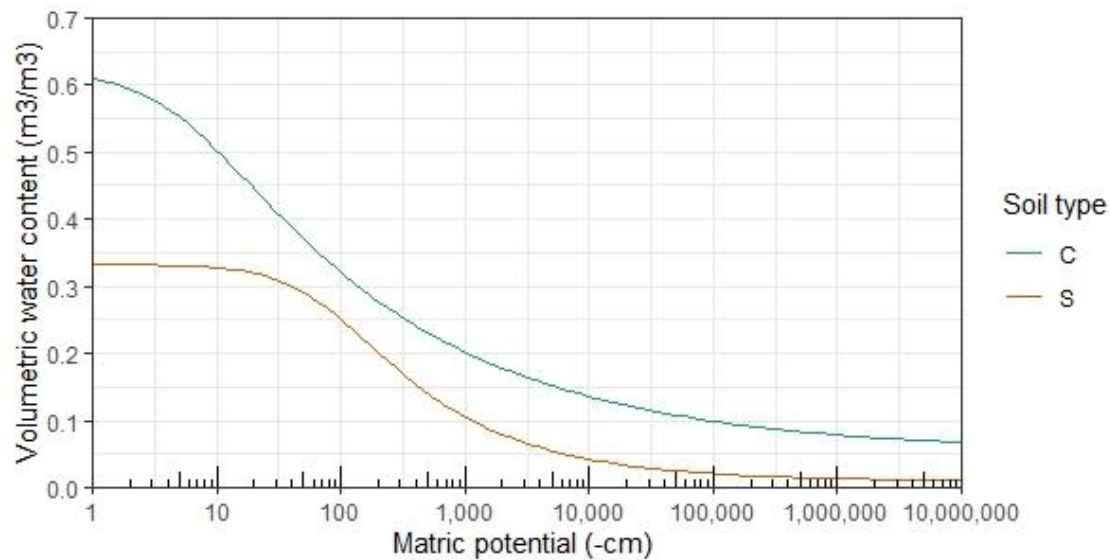


Figure S1. Water retention curves for loamy sand (S) and clay (C) soils adjusted to Van Genuchten equation. Van Genuchten parameters for S soil: $\theta_s = 0.33$, $\theta_r = 0.01$, $\alpha = 0.013$, $n = 1.47$. Van Genuchten parameters for C soil: $\theta_s = 0.62$, $\theta_r = 0.05$, $\alpha = 0.186$, $n = 1.26$

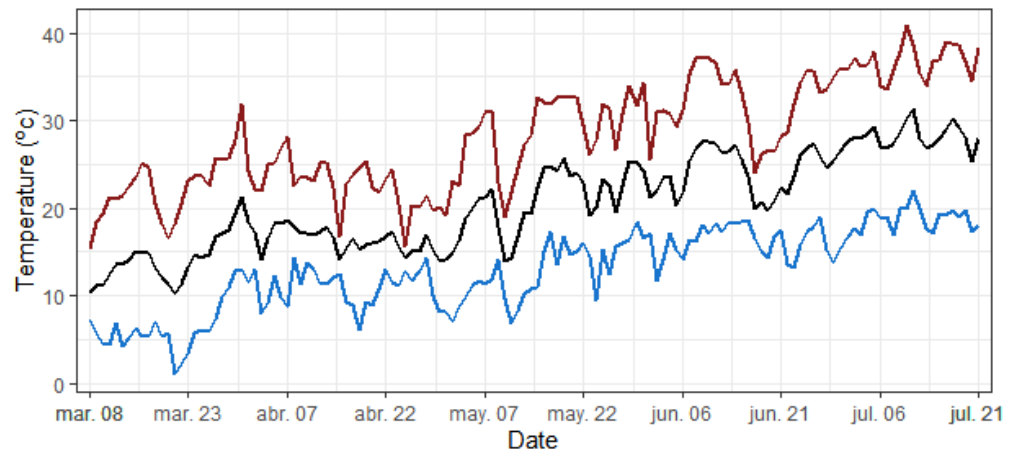


Figure S2. Daily mean (black), maximum (red) and minimum (blue) temperatures during the experiment.



Figure S3. Example of roots of LANZA® and *L. multiflorum* grown in the same pot (Competition).

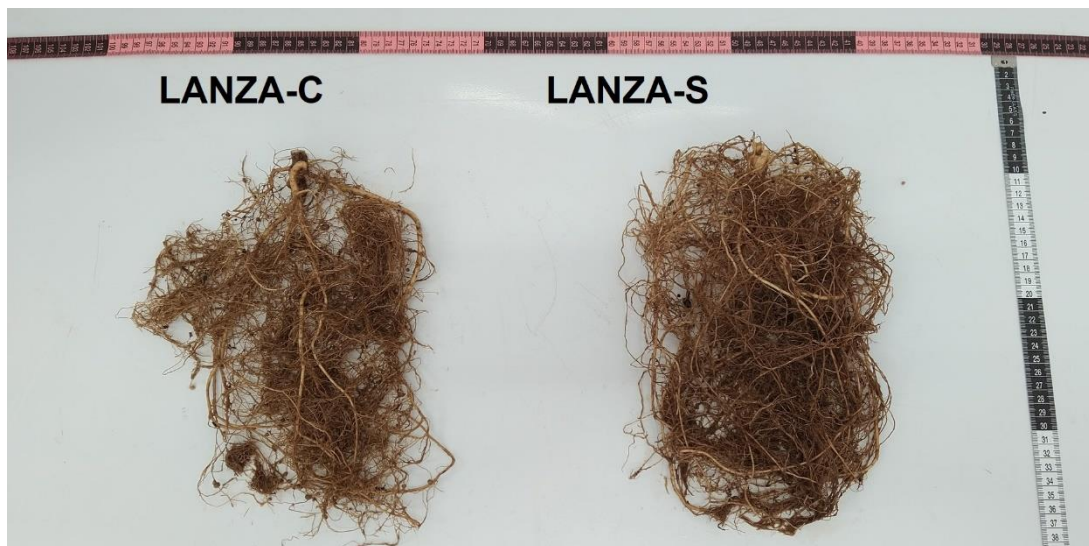


Figure S4. Example of roots after separation from soil in two plants of LANZA® grown in clay soil (left) and grown in loamy sand soil (right).

Table S1. Cumulative link mixed model fitted for phenology analysis.

Term	LR Chisq	d.f.	p
Competition (Comp)	45.89	1	<0.01
Soil type (Soil)	15.15	1	<0.001
Date	595.39	18	<0.001
Comp x Soil	3.67	1	0.055
Comp x Date	124.93	18	<0.001
Soil x Date	26.06	18	0.099

d.f. = degrees of freedom, LR Chisq = likelihood ratio chi square. Level of significance $p = 0.05$.

Table S2. Summary results of the two-way ANOVA evaluating the effects of Competition, soil type and their interaction on shoot mass production and leaf to stem ratio of LANZA®.

Variable	Source of variation	d.f.	SS	F	p
Phytovolume 12 May	Competition (Comp)	1	2.4x10 ⁸	44.04	<0.001
	Soil type (Soil)	1	4.8x10 ⁷	7.71	<0.05
	Comp x Soil	1	8.7x10 ⁶	1.39	0.253
	Error	20	1.2x10 ⁸		
Phytovolume 21 July*	Competition (Comp)	1	5.83	86.04	<0.001
	Soil type (Soil)	1	0.18	2.677	0.117
	Comp x Soil	1	0.06	0.910	0.351
	Error	20	1.36		
Shoot dry mass	Competition (Comp)	1	4093.0	137.56	<0.001
	Soil type (Soil)	1	109.24	3.97	0.060
	Comp x Soil	1	13.68	0.50	0.489
	Error	20	550.09		
Leaf:Stem ratio	Competition (Comp)	1	0.23	14.46	<0.01
	Soil type (Soil)	1	0.05	3.20	0.089
	Comp x Soil	1	0.06	3.58	0.073
	Error	20	0.32		
SLA	Competition (Comp)	1	1107.85	1.18	0.291
	Soil type (Soil)	1	117.15	0.12	0.728
	Comp x Soil	1	73.36	0.08	0.783
	Error	20	18806.89		
Mean leaf area	Competition (Comp)	1	5.98	9.53	<0.01
	Soil type (Soil)	1	0.14	0.22	0.641
	Comp x Soil	1	1.09	1.74	0.202
	Error	20	12.56		
Thick roots*	Competition (Comp)	1	38.65	91.22	<0.001
	Soil type (Soil)	1	1.12	2.65	0.119
	Comp x Soil	1	0.71	1.68	0.210
	Error	20	8.47		

d.f. = degrees of freedom, SS= sum of squares, MS= Mean of squares. Level of significance $p = 0.05$. * log-transformed variables.

Table S3. Summary results of the two-way ANOVA evaluating the effect of soil type and Competition on net photosynthesis per area (A_{area}), stomatal conductance per area (g_{Sarea}), water use efficiency (WUE), specific leaf area (SLA) and mean leaf area of LANZA measured at the end of the experiment

Variable	Source of variation	d.f.	SS	F	<i>p</i>
A _{area}	Competition (Comp)	1	173.44	14.81	0.001
	Soil type (Soil)	1	7.79	0.67	0.424
	Comp x Soil	1	50.77	4.34	0.050
	Error	20	234.19		
g _{Sarea}	Competition (Comp)	1	0.08	29.84	<0.001
	Soil type (Soil)	1	0.01	2.00	0.173
	Comp x Soil	1	0.01	5.43	<0.050
	Error	20	0.05		
WUE*	Competition (Comp)	1	0.04	18.91	<0.001
	Soil type (Soil)	1	0.00	1.74	0.202
	Comp x Soil	1	0.00	0.39	0.540
	Error	20	0.05		
RWC	Competition (Comp)	1	3.43	0.67	0.423
	Soil type (Soil)	1	2.20	0.43	0.520
	Comp x Soil	1	9.31	1.81	0.193
	Error	20	102.57		

d.f. = degrees of freedom, SS= sum of squares. Level of significance *p* = 0.05. * log-transformed variables.

Table S4. Summary results of the one-way ANOVA evaluating the effect of soil type on thin roots, thick roots and thin roots proportion of LANZA®.

Variable	Source of variation	d.f.	SS	F	<i>p</i>
Thin roots dry mass	Soil type	1	48.26	5.57	<0.05
	Error	10	86.58		
Thick roots dry mass	Soil type	1	0.13	0.02	0.884
	Error	10	56.95		
Thin roots proportion	Soil type	1	0.05	8.78	<0.05
	Error	10	0.06		

d.f. = degrees of freedom, SS= sum of squares. Level of significance *p* = 0.05.

Table S5. Summary results of the two-way ANOVA evaluating the effect of soil type and Competition on leaf content of macronutrients and C N⁻¹ and N P⁻¹ ratios.

Variable	Source of variation	d.f.	SS	F	<i>p</i>
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N	Competition (Comp)	1	1.63	7.44	<0.05
	Soil type (Soil)	1	0.38	1.75	0.202
	Comp x Soil	1	0.02	0.09	0.077
	Error	19	4.16		
P*	Competition (Comp)	1	0.009	0.430	0.519
	Soil type (Soil)	1	1.301	66.197	<0.001
	Comp x Soil	1	0.061	3.104	0.093
	Error	20	0.393		
C N ⁻¹	Competition (Comp)	1	61.635	8.536	<0.01
	Soil type (Soil)	1	11.014	1.525	0.232
	Comp x Soil	1	0.008	0.001	0.974
	Error	19	137.199		
N P ⁻¹	Competition (Comp)	1	41.65	2.071	0.166
	Soil type (Soil)	1	1307.58	65.033	<0.001
	Comp x Soil	1	8.77	0.436	0.517
	Error	19	382.02		
K	Competition (Comp)	1	0.228	1.245	0.278
	Soil type (Soil)	1	0.462	2.528	0.128
	Comp x Soil	1	0.371	2.029	0.170
	Error	20	3.659		
Ca	Competition (Comp)	1	0.0177	0.162	0.691
	Soil type (Soil)	1	0.0096	0.087	0.770
	Comp x Soil	1	0.0003	0.003	0.959
	Error	20	2.1856		
Mg**	Competition (Comp)	1	0.017	0.358	0.557
	Soil type (Soil)	1	0.075	1.609	0.220
	Comp x Soil	1	0.512	11.062	<0.01
	Error	19	0.880		
S	Competition (Comp)	1	0.0180	18.935	<0.001
	Soil type (Soil)	1	0.005	4.979	<0.05
	Comp x Soil	1	0.0001	0.109	0.745
	Error	19	0.0181		

d.f. = degrees of freedom, SS= sum of squares. Level of significance $p = 0.05$. * log-transformed variables, **power-transformed variables.