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von Schmalz, K. E., Farias, R. S. de, Brito, V. N., França, I., Salm, R., & Hernández-Ruz, E. J. (2025). Efeitos da adição de biochar e fungos micorrízicos arbusculares ao substrato no crescimento de mudas cultivadas de *Theobroma speciosum*: um experimento preliminar. Heringeriana, 19(1), e918064.

Supplementary Material

The following material will be deposited on FigShare by the authors, together with the original databases and coding scripts.

Table S1: Physical and chemical properties of the enriched biochar from Biochar Brasil®, according to the manufacturer.

Element	**Concentration (mg/kg)**	**Concentration (%)**
Nitrogen (N)	4100	0.41
Phosphorus (P)	270	0.03
Potassium (K)	1000	0.10
Calcium (Ca)	2600	0.26
Magnesium (Mg)	70	0.07
Sulphur (S)	50	0.05
Iron (Fe)	1098	0.11
Copper (Cu)	2.8	0.0003
Zinc (Zn)	12	0.001
Manganese (Mn)	168	0.017
Boron (B)	13.6	0.001
Sodium (Na)	56.67	0.006
Density (kg/m^3)		
Wet	548	
Dry	573	

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Table S2: *Post hoc* results of Estimated Marginal Means tests and pairwise contrasts (Tukey mehod), with lower (Lower CL) and upper (Upper CL) bounds of the confidence interval of the effects of type of substrate on diameter growth of *Theobroma speciosum* seedlings.

Estimated Marginal Means					
Substrate	Emmean	SE	DF	Lower CL	Upper CL
T1	6.88	1.12	2.29	2.59	11.2
T2	7.14	1.12	2.29	2.84	11.4
T3	6.83	1.12	2.29	2.54	11.1
T4	7.54	1.12	2.29	3.24	11.8
T5	8.31	1.13	2.32	4.05	12.6
T6	7.28	1.12	2.29	2.99	11.6
Contrasts					
Contrast	Estimate	SE	DF	t-ratio	p-value
T1 - T2	-0.2567	0.410	53	-0.626	0.9886
T1 - T3	0.0473	0.410	53	0.115	1.0000
T1 - T4	-0.6567	0.410	53	-1.602	0.6011
T1 - T5	-1.4286	0.421	53	-3.392	0.0158
T1 - T6	-0.4020	0.410	53	-0.981	0.9221
T2 - T3	0.3040	0.410	53	0.741	0.9757
T2 - T4	-0.4000	0.410	53	-0.976	0.9237
T2 - T4	-0.4000	0.410	53	-0.976	0.9237
T2 - T5	-1.1719	0.421	53	-2.782	0.0762
T2 - T6	-0.1453	0.410	53	-0.354	0.9992
T3 - T4	-0.7040	0.410	53	-1.717	0.5269
T3 - T5	-1.4759	0.421	53	-3.504	0.0115
T3 - T6	-0.4493	0.410	53	-1.096	0.8808
T4 - T5	-0.7719	0.421	53	-1.833	0.4543
T4 - T6	0.2547	0.410	53	0.621	0.9890
T5 - T6	1.0266	0.421	53	2.437	0.1623

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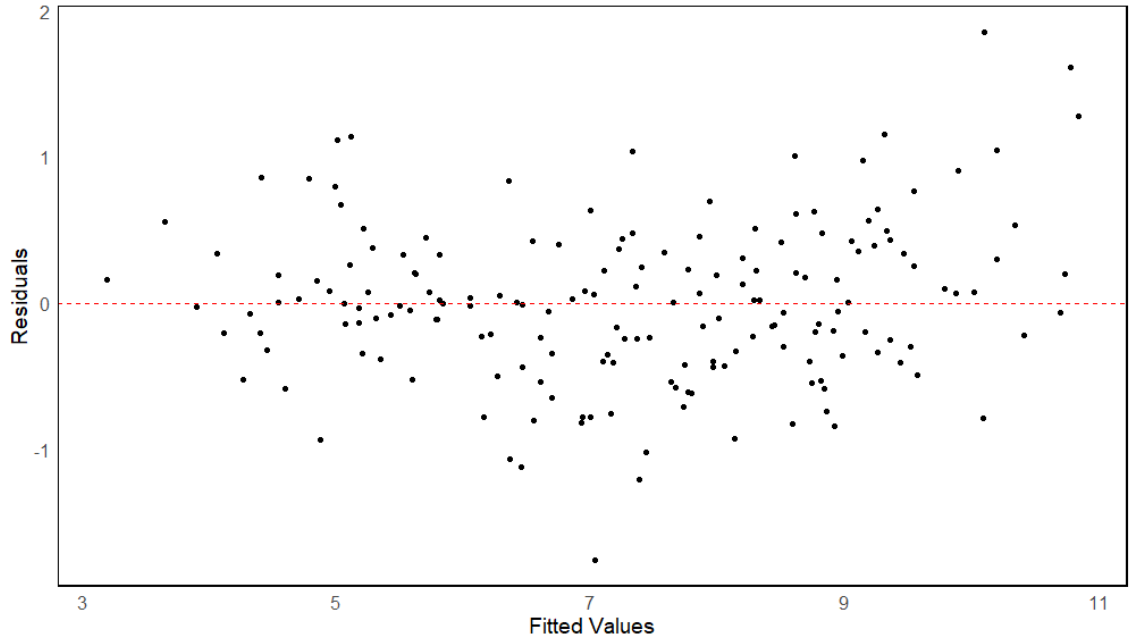


Figure S1: Scatterplot of residuals versus fitted values from the linear mixed-effects model (LMM) using restricted maximum likelihood (REML) estimation measuring the effects of six substrate types on the stem diameter of 59 individual *Theobroma speciosum* seedlings measured on baseline time, at three months and at six months. The residuals are controlled for repeated measures of individuals and time.

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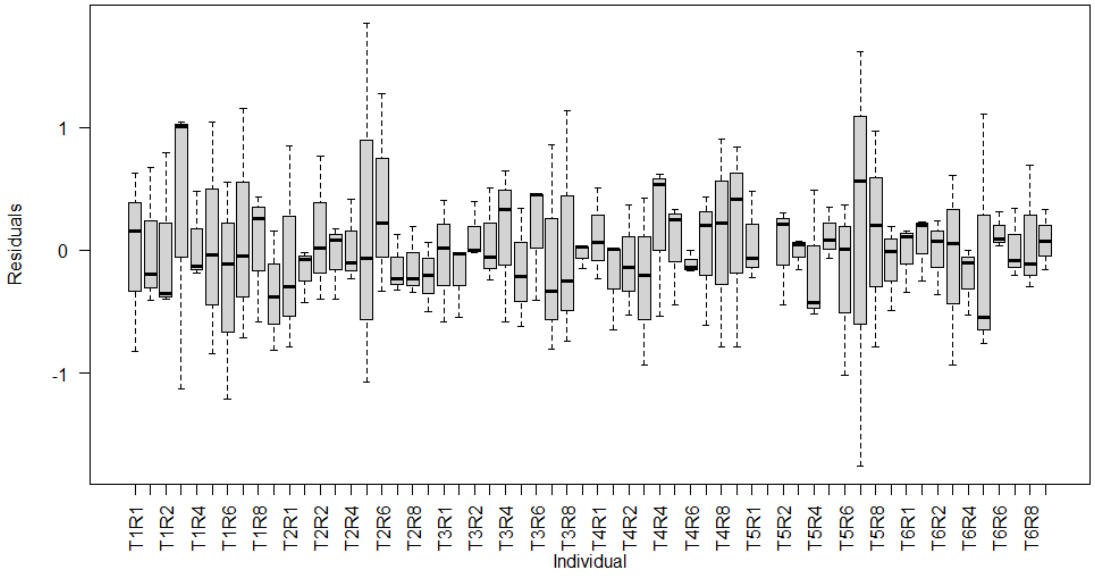


Figure S2: Boxplot of residual values from the linear mixed-effects model (LMM) using restricted maximum likelihood (REML) estimation measuring the effects of six substrate types on the stem diameter of 59 individual *Theobroma speciosum* seedlings measured on baseline time, at three months and at six months. The residuals are controlled for repeated measures of time.

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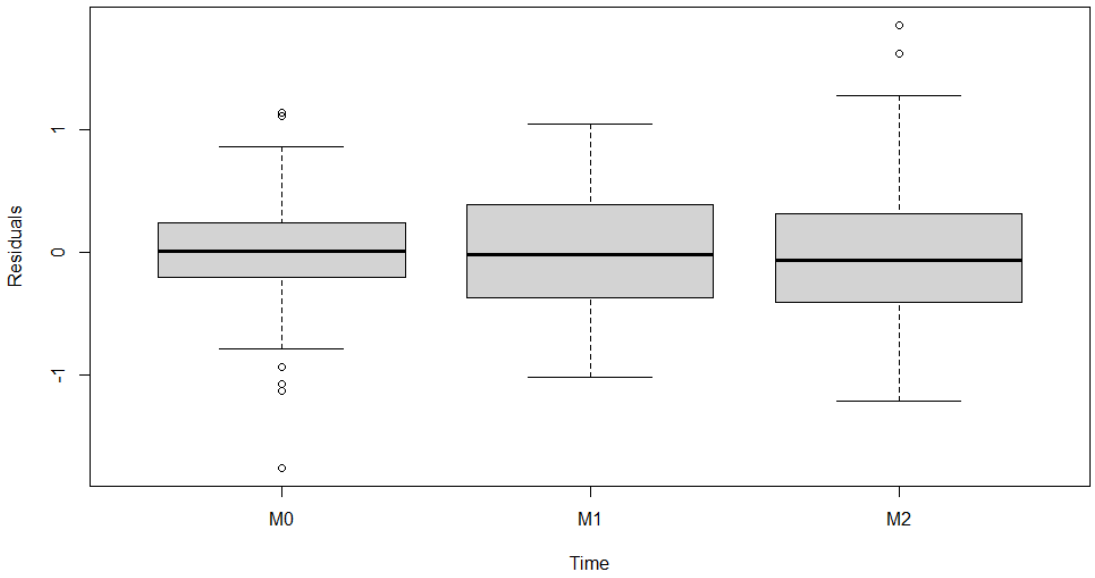


Figure S3: Boxplot of residual values from the linear mixed-effects model (LMM) using restricted maximum likelihood (REML) estimation measuring the effects of six substrate types on the stem diameter of 59 individual *Theobroma speciosum* seedlings measured on baseline time (M0), at three months (M1) and at six months (M2). The residuals are controlled for repeated measures of individual seedling.