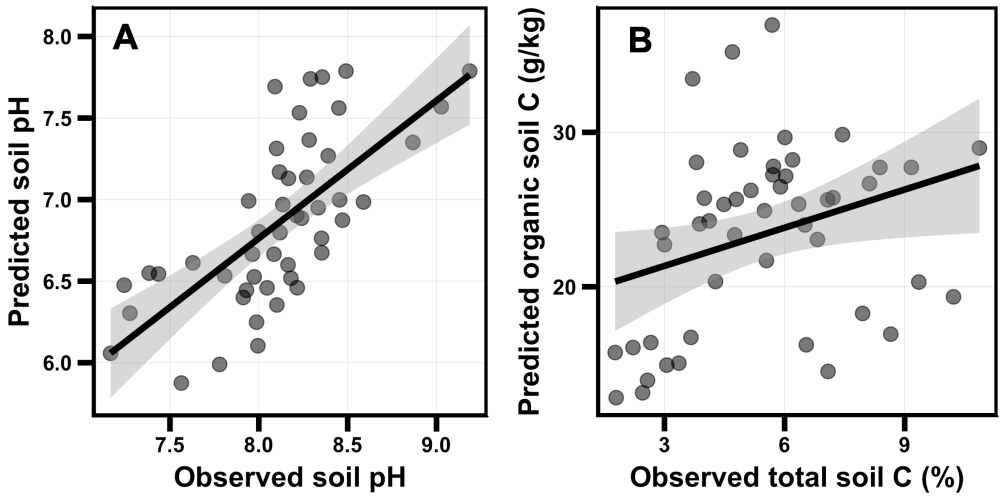
CHAPTER III: SUPPLEMENTAL MATERIAL

Supplementary Figure 1. Comparison of observed soil properties (field) and predicted soil properties (SoilGrid). Positive relationships between observed and predicted soil carbon and pH suggest the soil information from SoilGrids.org accurately captures these soil gradients in our study. Points represent individual tree samples, lines represent linear regressions, and shaded areas represent 95% confidence intervals.



Supplementary Table 1. Summary of quantile regression coefficients for field tree diameter (DBH) and environmental relationships.

Climate variables[a]	5th	10th	45th	50th	90th	95th
Annual Mean Temp. (°C)	0.02	-0.04	-0.02	-0.04	-0.04	-0.02
Mean Diurnal Range (°C)	-0.02	-0.05†	-0.05*	-0.05*	-0.09	-0.11*
Isothermality	-0.02	-0.06	-0.18***	-0.20***	-0.23	-0.37**
Temp. Seasonality	0.51***	0.44***	0.28*	0.26*	0.22*	0.20*
Max. Temp. Warmest Month (°C)	0.04	0.05	0.03	0.04	0.04	0.03
Min. Temp. Coldest Month (°C)	0.0	-0.05	0.03	0.01	-0.05	-0.11†
Temp. Annual Range (°C)	0.10*	0.11*	0.04	0.03	0.07	0.15*
Mean Temp. Wettest Quarter (°C)	0.01	-0.55	-0.38†	-0.21	-0.13†	-0.10
Mean Temp. Driest Quarter (°C)	0.07	0.02	0.30†	0.29*	0.20**	0.21*
Mean Temp. Warmest Quarter (°C)	0.03	0.04	0.0	-0.03	0.03	0.05
Mean Temp. Coldest Quarter (°C)	0.01	-0.16	-0.02	-0.05	-0.15**	-0.14**
Annual Precipitation (mm)	4.9*	3.7*	2.0	1.8	-1.5	-2.7
Precipitation Wettest Month (mm)	0.32*	0.32†	0.04	-0.03	-0.72*	-0.77***
Precipitation Driest Month (mm)	0.25†	0.09	0.13	0.12	0.11	0.8
Precipitation Seasonality	0.07	0.06	0.06	0.04	-0.61	-0.62*
Precipitation Wettest Quarter (mm)	1.0***	1.2**	0.20	0.07	-1.8***	-1.8***
Precipitation Driest Quarter (mm)	1.0†	0.4	0.58	0.70	-0.36	-0.64†
Precipitation Warmest Quarter (mm)	0.24†	0.31†	-1.1†	-1.1†	-1.6*	-1.7**
Precipitation Coldest Quarter (mm)	1.0	0.25	1.4†	1.3	-0.45	0.23
Soil variables[b]						
Bacteria:Fungi	0.03***	0.03***	0.03*	0.04*	0.04†	0.02
Bulk Density (kg/m^3)	-0.05	0.16	-0.59	-0.94	1.2	0.71
Carbon Stock (tonnes/ha)	0.26†	0.24	0.30	0.22	-0.04	-0.09
Cation Exchange Cap. (cmolc/kg)	0.0	0.13	0.17***	0.15**	0.16***	0.17***
Clay Content (% mass fraction)	0.07*	0.07	0.08	0.07	-0.12†	-0.16**
Organic Carbon (g/kg)	0.16	0.12	0.20	0.13	-0.18	-0.24
pH	0.02***	0.02*	0.0	0.0	0.01	0.01
Sand Content (% mass fraction)	0.05	0.04	0.07	0.07	-0.12	-0.19
Silt Content (% mass fraction)	0.15**	0.17*	0.16†	0.14	0.08†	0.10*

[a]Climate variables were gathered from the Worldclim database. [b]Soil variables were gathered from Soilgrids.org (except for Bacteria:Fungi ratios that were measured from individual soil samples). † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Supplementary Table 2. Summary of quantile regression coefficients for field SLA and environmental relationships.

Climate variables[a]	5th	10th	45th	50th	90th	95th
Annual Mean Temp. (°C)	0.02*	0.01	-0.03*	-0.02	0.02	0.02
Mean Diurnal Range (°C)	0.01	0.02*	0.02*	0.02*	0.01	-0.01
Isothermality	0.01	0.02	0.06***	0.05***	-0.05	-0.11†
Temp. Seasonality (SD *100)	0.11	0.11	-0.01	-0.03	-0.04	0.0
Max. Temp. Warmest Month (°C)	-0.02	-0.02	-0.04*	-0.03	-0.01	-0.02
Min. Temp. Coldest Month (°C)	0.0	-0.01	-0.05***	-0.06***	0.04	0.07*
Temp. Annual Range (°C)	-0.04†	0.0	0.01	0.01	0.02*	0.02**
Mean Temp. Wettest Quarter (°C)	0.26*	0.22**	0.13***	0.13***	0.04	0.03
Mean Temp. Driest Quarter (°C)	0.01	0.04	-0.02	-0.06	-0.08	0.04
Mean Temp. Warmest Quarter (°C)	0.01	0.01	-0.03**	-0.02	0.02	0.03†
Mean Temp. Coldest Quarter (°C)	0.03†	0.03	-0.03†	-0.02	0.0	0.02
Annual Precipitation (mm)	1.9	1.0	1.4**	1.4**	2.3***	2.5***
Precipitation Wettest Month (mm)	0.15†	0.25*	0.18*	0.17*	0.07	-0.17
Precipitation Driest Month (mm)	0.08	-0.02	0.06†	0.04	-0.01	-0.01
Precipitation Seasonality (SD * 100)	0.09***	0.10***	0.12***	0.11**	-0.32*	-0.36*
Precipitation Wettest Quarter (mm)	0.45*	0.54*	0.38†	0.29	0.47	-0.21
Precipitation Driest Quarter (mm)	0.30	0.40	0.23†	0.14	0.22†	0.22**
Precipitation Warmest Quarter (mm)	0.31*	0.37†	0.74***	0.67***	0.43	-0.15
Precipitation Coldest Quarter (mm)	0.30	0.64†	0.53*	0.53†	0.27*	0.21
Soil variables[b]						
Bacteria:Fungi	0.0	0.0	0.01*	0.01**	0.01	0.0
Bulk Density (kg/m^3)	0.45	0.10	-0.21	-0.35	0.68	1.1*
Carbon Stock (tonnes/ha)	0.15	0.04	0.15*	0.13	0.17†	0.16†
Cation Exchange Cap. (cmolc/kg)	-0.02	0.02	-0.02	-0.02	-0.03†	-0.04
Clay Content (% mass fraction)	0.02*	0.02	-0.01	-0.01	-0.06	-0.05
Organic Carbon (g/kg)	0.06	0.01	0.11*	0.10*	0.12**	0.12***
pH	-0.01*	-0.01*	-0.01	0.0	0.0	0.0
Sand Content (% mass fraction)	0.05†	0.03	0.0	0.0	-0.05	-0.08*
Silt Content (% mass fraction)	0.06***	0.05**	0.04†	0.04†	-0.01	-0.02

[a]Climate variables were gathered from the Worldclim database. [b]Soil variables were gathered from Soilgrids.org (except for Bacteria:Fungi ratios that were measured from individual soil samples). † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Supplementary Table 3. Quantile regression coefficients for common garden growth diameter and environmental relationships.

Climate variables[a]	5th	10th	45th	50th	90th	95th
Annual Mean Temp. (°C)	0.80	3.0	0.70	0.17	-2.0	-1.3
Mean Diurnal Range (°C)	0.20	0.0	-2.5†	-2.1	-8.4*	-8.3*
Isothermality	0.62	0.20	-10.4***	-9.8***	-19.5*	-30.6**
Temp. Seasonality	39.5***	36.9***	14.7**	15.5***	5.4	8.8
Max. Temp. Warmest Month (°C)	4.9†	7.2†	3.5	2.4	3.1†	3.9**
Min. Temp. Coldest Month (°C)	0.46	0.55	3.7	2.4	5.6†	5.6†
Temp. Annual Range (°C)	7.8*	7.4**	4.1	2.1	0.90	1.6
Mean Temp. Wettest Quarter (°C)	0.27	2.34	-18.2†	-21.6*	-5.5	-5.3
Mean Temp. Driest Quarter (°C)	0.38	0.92	14.9	11.3	6.0	0.89
Mean Temp. Warmest Quarter (°C)	1.3	5.2†	1.4	0.94	0.87	2.3
Mean Temp. Coldest Quarter (°C)	0.39	2.3	-0.91	0.40	-6.2*	-6.4*
Annual Precipitation (mm)	98.7	25.1	-179.1	-197.6†	-134.0	-235.6
Precipitation Wettest Month (mm)	3.0	12.4	-39.9**	-40.7**	-62.4*	-75.6**
Precipitation Driest Month (mm)	4.3	3.4	7.7	4.0	7.2	3.9
Precipitation Seasonality	4.8	3.7	-15.9	-18.9	-47.6	-24.3
Precipitation Wettest Quarter (mm)	9.5	-62.0	-81.6*	-75.6*	-150.5**	-160.7**
Precipitation Driest Quarter (mm)	15.6	39.4	24.7	10.8	-14.6	-23.0
Precipitation Warmest Quarter (mm)	4.7	1.9	-98.5***	-92.8**	-165.3**	-155.7*
Precipitation Coldest Quarter (mm)	15.6	14.8	24.5	22.9	-23.0	27.1
Soil variables[b]						
Bacteria:Fungi	2.1*	1.8**	2.1***	2.1**	2.8†	3.7*
Bulk Density (kg/m^3)	71.7	29.6	3.5	56.4	70.4	64.4
Carbon Stock (tonnes/ha)	9.8	-0.30	12.2	11.1	1.1	14.0
Cation Exchange Cap. (cmolc/kg)	-2.4	-5.6	3.1	5.2	7.9**	5.0*
Clay Content (% mass fraction)	2.1	2.2	0.08	3.0	-11.1*	-12.4**
Organic Carbon (g/kg)	6.8	-2.2	5.0	5.2	-8.0	-11.5
pH	1.6**	1.3*	0.53	0.52	1.5†	0.38
Sand Content (% mass fraction)	3.5	2.1	10.2†	11.2*	27.2*	19.3*
Silt Content (% mass fraction)	2.4	2.0	-0.87	-0.43	5.4*	4.4*

[a]Climate variables were gathered from the Worldclim database. [b]Soil variables were gathered from Soilgrids.org (except for Bacteria:Fungi ratios that were measured from individual soil samples). † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Supplementary Table 4. Summary of regression coefficients for common garden SLA and environmental relationships.

Climate variables[a]	5th	10th	45th	50th	90th	95th
Annual Mean Temp. (°C)	-0.08	-0.09	0.01	0.01	0.05	0.05
Mean Diurnal Range (°C)	0.07†	0.06†	-0.03	-0.04	-0.12*	-0.15*
Isothermality	0.04	0.08†	-0.14	-0.13	0.09	-0.28
Temp. Seasonality	0.22	-0.15	0.11	0.11	0.05	0.12
Max. Temp. Warmest Month (°C)	0.09†	0.11	0.08	0.08	0.03	0.02
Min. Temp. Coldest Month (°C)	0.01	0.01	0.14	0.12	0.14†	0.14*
Temp. Annual Range (°C)	-0.12*	0.10	0.03	0.02	-0.01	-0.04
Mean Temp. Wettest Quarter (°C)	-1.0*	-1.1***	-0.53**	-0.59***	0.12	0.09
Mean Temp. Driest Quarter (°C)	0.16	0.19	0.36†	0.36†	0.23*	0.28**
Mean Temp. Warmest Quarter (°C)	-0.02	-0.03	0.04	0.03	0.0	-0.01
Mean Temp. Coldest Quarter (°C)	-0.13†	-0.16*	0.02	0.04	0.14†	0.04
Annual Precipitation (mm)	5.2*	6.4*	5.5*	3.8*	0.49	-2.9
Precipitation Wettest Month (mm)	0.37	0.08	0.24	-0.08	0.09	-0.46
Precipitation Driest Month (mm)	0.16	0.09	0.37	0.18	0.32*	0.37**
Precipitation Seasonality	0.01	0.01	-0.33*	-0.27†	-0.69	-0.92†
Precipitation Wettest Quarter (mm)	0.81	-0.10	0.43	0.32	-0.61	-1.3
Precipitation Driest Quarter (mm)	1.5*	1.5*	1.2†	0.5	-0.09	-0.36
Precipitation Warmest Quarter (mm)	0.62	0.37	1.3†	1.6†	-0.86	-1.5
Precipitation Coldest Quarter (mm)	2.3†	2.8†	2.8***	2.6***	1.6	0.67
Soil variables[c]						
Bacteria:Fungi	0.01	0.04*	0.04***	0.04***	0.05***	0.04*
Bulk Density (kg/m^3)	-1.1	-0.33	-2.8*	-2.2	-3.4**	-4.3***
Carbon Stock (tonnes/ha)	0.47***	0.41**	0.52	0.43	0.34	0.22
Cation Exchange Cap. (cmolc/kg)	0.13**	0.14*	0.14†	0.18**	0.24**	0.11
Clay Content (% mass fraction)	0.17*	0.12	0.12†	0.08	0.16	-0.05
Organic Carbon (g/kg)	0.38***	0.35***	0.10	0.11	-0.07	-0.24
pH	0.03***	0.02*	-0.02	-0.02	-0.01	0.0
Sand Content (% mass fraction)	-0.04	-0.18†	-0.16	-0.10	0.18	0.24
Silt Content (% mass fraction)	0.24†	0.06	0.07	0.07	0.16†	0.14†

[a]Climate variables were gathered from the Worldclim database. [b]Soil variables were gathered from Soilgrids.org (except for Bacteria:Fungi ratios that were measured from individual soil samples). † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$