

Supplementary material**Table S1.** Locality number and name, altitude, geographical coordinates, mean annual temperature (MAT), mean annual precipitation (MAP) and soil group for the collecting populations.

Population	Altitude (m)	Lat N	Lon W	MAT (°C)	MAP (mm)	Soil group
1. Jesús del Monte	2118	19.6443333	-101.153389	16.2	951	Acrisol
2. San Miguel del Monte	2097	19.6321944	-101.140583	16.4	949	Leptosol
3. Presa Cointzio	2038	19.6312222	-101.251361	16.7	889	Acrisol
4. Las Cruces	2060	19.5840833	-101.250417	16.6	936	Luvisol
5. Carretera Pátzcuaro	2007	19.6325278	-101.272917	16.6	896	Leptosol
6. Tamanguio	2457	19.4639444	-101.374806	14.3	1145	Andosol
7. San Bartolomé Coro	2138	19.8921111	-100.867833	16.4	856	Phaeozem
8. San José del Rincón	2050	19.869	-100.775972	17.1	824	Andosol
9. San Nicolás Tumbastatiro	2285	19.9830833	-101.355889	16.0	805	Acrisol
10. San Isidro	2233	20.0116111	-101.35325	16.7	766	Vertisol
11. Fontezuelas	2191	19.5728611	-101.461222	15.6	974	Luvisol
12. Mina Arena	2422	19.4949722	-101.545306	15.2	1032	Leptosol
13. Rosa de Castilla	2218	19.8750833	-101.282056	16.0	840	Leptosol
14. Carretera Mil Cumbres	2048	19.6781583	-101.005172	16.3	945	Luvisol
15. Tiristarán	2226	19.7428611	-101.38525	15.8	868	Leptosol
16. Capula	2341	19.7134167	-101.449444	15.4	924	Andosol
17. Las Huertas	2196	19.7300528	-100.930372	15.5	1038	Acrisol
18. El Temazcal	2207	19.6509167	-100.954622	15.6	1067	Luvisol
19. Cerro El Remolino	2523	19.6169444	-101.335278	14.2	1087	Luvisol
20. Las Tablas	2259	19.5073222	-101.442847	15.4	1026	Andosol
21. Cerro Quinceo	2341	19.7666222	-101.275744	15.4	933	Luvisol
22. Carretera Ucareo	2369	19.8548694	-100.732603	15.3	990	Andosol

Table S2. Loadings of climate variables into the first two axes of pRDA1 and their significance.

Variable	df	pRDA1			
		Axis 1	Axis 2	F	P
B1	1	-0.04	-0.41	4.3	0.006
B2	1	0.04	-0.44	3.9	0.005
B6	1	0.17	-0.29	4.5	0.002
B7	1	0.09	-0.39	3.3	0.021
B12	1	0.01	0.40	7.9	0.001
B14	1	0.14	0.18	3.3	0.013
B15	1	0.01	0.02	1.5	0.182
B17	1	-0.05	0.5	6.1	0.002
WHC	1	0.08	-0.05	1.8	0.108

Functional trait variation in *Quercus castanea*

Table S3. Mean and standard error (SE) values of the six functional traits in *Q. castanea* for the 22 populations sampled.

Population	Chlorophyll concentration (SPAD values)		Leaf area (cm ²)		Leaf mass per area (g·cm ⁻²)		Leaf thickness (mm)		Huber value	
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
1	41.7	1.3424	16.24	1.3140	0.0164	0.0005	0.24	0.0087	3	0.4
2	41.6	1.0538	17	1.1835	0.0152	0.0004	0.2	0.0082	3	0.4
3	43.6	1.0453	14.86	1.4543	0.0145	0.0007	0.18	0.0101	3	0.5
4	45.5	0.8920	14.23	1.6471	0.0150	0.0003	0.22	0.0093	4	0.5
5	44.4	1.7506	14.06	1.1567	0.0155	0.0005	0.2	0.0064	3	0.3
6	44.5	1.8296	15.93	1.8593	0.0165	0.0006	0.19	0.0057	4	0.6
7	45.4	1.1111	14.58	1.2394	0.0148	0.0002	0.13	0.0033	3	0.6
8	45.8	1.0829	18.62	1.6216	0.0155	0.0007	0.13	0.0060	3	0.5
9	51	1.0631	13.49	1.5629	0.0150	0.0004	0.14	0.0066	3	0.3
10	48.8	0.9609	15.21	1.5229	0.0148	0.0015	0.11	0.0023	3	0.4
11	50.4	1.2816	11.96	1.5634	0.0167	0.0003	0.15	0.0059	6	0.4
12	49	0.8224	11.3	1.0165	0.0162	0.0004	0.15	0.0083	4	0.5
13	45.8	1.0814	9.58	1.0584	0.0171	0.0006	0.17	0.0127	5	0.6
14	50.3	0.9641	11.93	0.9246	0.0165	0.0006	0.16	0.0117	5	0.7
15	49.1	1.3095	9.38	0.4236	0.0183	0.0005	0.22	0.0086	6	0.8
16	48.7	1.2813	10.28	0.6541	0.0164	0.0006	0.16	0.0090	5	0.7
17	46.8	1.7164	14.92	2.1658	0.0161	0.0003	0.15	0.0076	4	0.7
18	43.5	1.2037	15.39	1.3439	0.0134	0.0005	0.13	0.0065	3	0.4
19	49.3	0.7264	24.71	2.1366	0.0155	0.0005	0.19	0.0096	3	0.3
20	45.9	1.8663	11.72	1.3522	0.0177	0.0009	0.15	0.0119	6	0.10
21	46.8	0.8652	10.88	1.4385	0.0177	0.0008	0.16	0.0120	7	0.15
22	42.8	1.0265	18.49	1.6714	0.0166	0.0007	0.15	0.0124	4	0.5