

Table S2. Correlation between leaf traits across species. The standardized major axis (SMA) test was applied for real values (A) and log₁₀-transformed values (B). The phylogenetic independent contrast (PIC) analysis was applied for log₁₀-transformed values (C).

Y	X	n	A) SMA test for real values				B) SMA test for log-transformed values				C) PIC analysis for log-transformed values	
			R ²	P	Slope	Interc	R ²	P	Slope	Interc	R ²	P
LLS	LMA	21	0.716	***	0.0562	-2.136	0.781	***	2.406	-4.357	0.689	***
P _{area}	LMA	26	0.291	**	-0.1733	23.36	0.361	***	-0.8773	2.569	0.090	ns
P _{mass}	LMA	26	0.518	***	-8.037	815.9	0.821	***	-1.695	5.259	0.672	***
PNUE	LMA	26	0.492	***	-2.011	246.9	0.742	***	-0.983	3.724	0.504	***
N _{area}	LMA	26	0.377	***	0.0007	0.06431	0.5	***	0.4455	-1.739	0.533	***
N _{mass}	LMA	26	0.653	***	-0.0356	5.274	0.819	***	-0.7605	1.765	0.723	***
g _s	LMA	26	0.273	**	-0.0127	1.166	0.566	***	-1.833	2.522	0.325	**
C _i /C _a	LMA	26	0.518	***	-0.0032	0.9075	0.666	***	-0.282	0.334	0.462	***
R _{area}	LMA	23	0.051	ns	0.0197	0.9383	0.059	ns	0.651	-0.817	0.152	+
R _{mass}	LMA	23	0.462	***	-0.0007	0.08663	0.659	***	-1.053	0.396	0.490	***
RNF	LMA	23	0.061	ns	-0.0016	0.3178	0.09	ns	-0.4863	0.172	0.020	ns
RBUE	LMA	23	0.454	***	-0.0933	12.18	0.682	***	-0.9185	2.347	0.640	***
WM	LMA	23	0.914	***	0.6384	-9.356	0.908	***	1.302	-0.876	0.903	***
WMF	LMA	23	0.231	*	0.0032	0.2535	0.248	*	0.456	-1.147	0.029	ns
WN	LMA	23	0.71	***	0.0002	-0.0068	0.657	***	1.45	-4.762	0.608	***
WNF	LMA	23	0.599	***	0.0018	-0.0459	0.48	***	1.392	-3.708	0.384	***
WNC	LMA	23	0.001	ns	0.004	0.1087	0.009	ns	-0.7379	0.798	0.004	ns
P _{area}	LLS	21	0.235	*	-2.96	16.29	0.558	***	-0.3808	0.973	0.410	**
P _{mass}	LLS	21	0.276	*	-129.8	474.6	0.842	***	-0.7207	2.175	0.846	***
PNUE	LLS	21	0.273	*	-35.52	169.2	0.764	***	-0.4318	1.938	0.740	***
N _{area}	LLS	21	0.127	ns	0.0129	0.08957	0.211	*	0.1911	-0.95	0.212	*
N _{mass}	LLS	21	0.485	***	-0.5351	3.636	0.808	***	-0.3139	0.38	0.689	***
g _s	LLS	21	0.148	+	-0.2412	0.7385	0.635	***	-0.819	-0.804	0.624	***
C _i /C _a	LLS	21	0.31	**	-0.0555	0.7831	0.652	***	-0.1252	-0.177	0.608	***
R _{area}	LLS	18	0	ns	0.3295	1.646	0.012	ns	-0.2757	0.283	0.001	ns
R _{mass}	LLS	18	0.334	*	-0.0104	0.0543	0.733	***	-0.4449	-1.53	0.757	***
RNF	LLS	18	0.051	ns	-0.0274	0.2636	0.211	+	-0.2143	-0.694	0.260	*
RBUE	LLS	18	0.311	*	-1.366	7.689	0.674	***	-0.3698	0.66	0.624	***
WM	LLS	18	0.815	***	11.33	16.09	0.88	***	0.4968	1.506	0.828	***
WMF	LLS	18	0.295	*	0.0545	0.3814	0.338	*	0.196	-0.321	0.078	ns
WN	LLS	18	0.597	***	0.0044	0.00202	0.422	**	0.5908	-2.108	0.314	*
WNF	LLS	18	0.559	***	0.0337	0.02472	0.318	*	0.5613	-1.153	0.185	+
WNC	LLS	18	0	ns	-0.0779	0.49	0.054	ns	-0.3662	-0.514	0.040	ns
P _{mass}	P _{area}	26	0.699	***	46.36	-267.3	0.777	***	1.932	0.296	0.608	***
PNUE	P _{area}	26	0.751	***	11.6	-24.11	0.8	***	1.12	0.845	0.689	***
N _{area}	P _{area}	26	0	ns	0.0043	0.05588	0	ns	0.5078	-1.505	0.053	ns
N _{mass}	P _{area}	26	0.603	***	0.2056	0.4712	0.648	***	0.8668	-0.462	0.360	**
g _s	P _{area}	26	0.726	***	0.0734	-0.5485	0.877	***	2.089	-2.844	0.792	***
C _i /C _a	P _{area}	26	0.59	***	0.0184	0.4785	0.604	***	0.3214	-0.492	0.410	***
R _{area}	P _{area}	23	0.114	ns	0.1096	0.7472	0.147	+	0.6932	-0.423	0.123	ns
R _{mass}	P _{area}	23	0.592	***	0.0039	-0.0064	0.698	***	1.121	-2.611	0.593	***
RNF	P _{area}	23	0.221	*	0.0087	0.1087	0.214	*	0.5178	-1.217	0.194	*
RBUE	P _{area}	23	0.564	***	0.5185	-0.2215	0.591	***	0.9781	-0.276	0.490	***
WM	P _{area}	23	0.32	**	-3.55	75.54	0.46	***	-1.386	2.841	0.336	**
WMF	P _{area}	23	0.243	*	-0.0178	0.6793	0.297	**	-0.4855	0.155	0.185	*
WN	P _{area}	23	0.148	+	-0.0013	0.0245	0.274	*	-1.544	-0.622	0.116	ns
WNF	P _{area}	23	0.178	*	-0.0102	0.197	0.33	**	-1.482	0.267	0.152	+
WNC	P _{area}	23	0.046	ns	0.0224	0.0696	0.023	ns	0.7857	-1.309	0.040	ns
PNUE	P _{mass}	26	0.936	***	0.2502	42.75	0.955	***	0.5801	0.673	0.903	***
N _{area}	P _{mass}	26	0.193	*	-9E-05	0.1401	0.163	*	-0.2629	-0.356	0.109	ns
N _{mass}	P _{mass}	26	0.839	***	0.0044	1.656	0.927	***	0.4488	-0.595	0.828	***
g _s	P _{mass}	26	0.735	***	0.0016	-0.1256	0.886	***	1.0814	-3.164	0.810	***
C _i /C _a	P _{mass}	26	0.781	***	0.0004	0.5843	0.806	***	0.1664	-0.541	0.689	***
R _{area}	P _{mass}	23	0.003	ns	0.0025	1.358	0.007	ns	0.3687	-0.551	0.000	ns
R _{mass}	P _{mass}	23	0.768	***	9E-05	0.0153	0.839	***	0.5965	-2.817	0.757	***
RNF	P _{mass}	23	0.248	*	0.0002	0.1574	0.179	*	0.2754	-1.312	0.123	ns
RBUE	P _{mass}	23	0.678	***	0.0119	2.669	0.776	***	0.5203	-0.456	0.723	***
WM	P _{mass}	23	0.44	**	-0.0811	55.75	0.825	***	-0.7372	3.096	0.792	***

WMF	P_{mass}	23	0.236 *	-0.0004	0.5801	0.346 **	-0.2583	0.244	0.130 +
WN	P_{mass}	23	0.203 *	-3E-05	0.01721	0.552 ***	-0.8211	-0.338	0.423 **
WNF	P_{mass}	23	0.193 *	-0.0002	0.1404	0.502 ***	-0.7884	0.539	0.348 **
WNC	P_{mass}	23	0.055 ns	0.0005	0.1947	0.018 ns	0.4179	-1.453	0.006 ns
N_{area}	PNUE	26	0.2 *	-0.0004	0.156	0.19 *	-0.4531	-0.051	0.123 +
N_{mass}	PNUE	26	0.682 ***	0.0177	0.8985	0.782 ***	0.7734	-1.115	0.533 ***
g_s	PNUE	26	0.827 ***	0.0063	-0.396	0.911 ***	1.8643	-4.42	0.884 ***
C_i/C_a	PNUE	26	0.769 ***	0.0016	0.5167	0.818 ***	0.2869	-0.734	0.740 ***
R_{area}	PNUE	23	0.001 ns	0.0097	0.9519	0.005 ns	0.6344	-0.978	0.002 ns
R_{mass}	PNUE	23	0.663 ***	0.0003	0.00089	0.773 ***	1.026	-3.509	0.624 ***
RNF	PNUE	23	0.272 *	0.0008	0.125	0.218 *	0.4739	-1.631	0.137 +
RBUE	PNUE	23	0.697 ***	0.046	0.7472	0.777 ***	0.8951	-1.058	0.774 ***
WM	PNUE	23	0.417 **	-0.3146	68.91	0.727 ***	-1.268	3.95	0.640 ***
WMF	PNUE	23	0.171 +	-0.0016	0.6461	0.25 *	-0.4444	0.543	0.048 ns
WN	PNUE	23	0.194 *	-0.0001	0.02206	0.454 ***	-1.413	0.613	0.281 *
WNF	PNUE	23	0.171 +	-0.0009	0.178	0.377 **	-1.356	1.452	0.194 *
WNC	PNUE	0	0.241 **	0.0013	-0.02	0.033 ns	0.7191	-1.938	0.029 ns
N_{mass}	N_{area}	26	0.107 ns	-47.74	8.344	0.116 +	-1.707	-1.203	0.068 ns
g_s	N_{area}	26	0.072 ns	-17.04	2.261	0.057 ns	-4.1135	-4.632	0.017 ns
C_i/C_a	N_{area}	26	0.174 *	-4.265	1.182	0.197 *	-0.6329	-0.767	0.160 *
R_{area}	N_{area}	23	0.418 **	26.87	-0.8101	0.428 **	1.424	1.69	0.533 ***
R_{mass}	N_{area}	23	0.066 ns	-0.9539	0.1487	0.056 ns	-2.304	-3.66	0.017 ns
RNF	N_{area}	23	0.018 ns	-2.144	0.4573	0.009 ns	-1.064	-1.701	0.010 ns
RBUE	N_{area}	23	0.117 ns	-127.2	20.45	0.15 +	-2.009	-1.19	0.221 *
WM	N_{area}	23	0.169 +	870.6	-66	0.254 *	2.847	4.137	0.260 *
WMF	N_{area}	23	0.001 ns	-4.368	0.9324	0.001 ns	-0.9974	-1.325	0.130 +
WN	N_{area}	23	0.098 ns	0.3208	-0.0276	0.173 *	3.171	0.821	0.023 ns
WNF	N_{area}	23	0.024 ns	2.492	-0.208	0.028 ns	3.044	1.652	0.020 ns
WNC	N_{area}	23	0.007 ns	-5.505	0.9646	0.011 ns	-1.614	-2.043	0.000 ns
g_s	N_{mass}	26	0.449 ***	0.3569	-0.7167	0.74 ***	2.4096	-1.732	0.504 ***
C_i/C_a	N_{mass}	26	0.731 ***	0.0893	0.4364	0.682 ***	0.3708	-0.321	0.436 ***
R_{area}	N_{mass}	23	0.017 ns	0.5697	0.4159	0.007 ns	0.8244	-0.061	0.078 ns
R_{mass}	N_{mass}	23	0.788 ***	0.0202	-0.0181	0.815 ***	1.334	-2.025	0.774 ***
RNF	N_{mass}	23	0.162 +	0.0455	0.08223	0.112 ns	0.6158	-0.946	0.533 ***
RBUE	N_{mass}	23	0.571 ***	2.696	-1.79	0.68 ***	1.163	0.236	0.410 **
WM	N_{mass}	23	0.626 ***	-18.46	86.27	0.849 ***	-1.648	2.116	0.846 ***
WMF	N_{mass}	23	0.402 **	-0.0926	0.7332	0.435 **	-0.5774	-0.099	0.260 *
WN	N_{mass}	23	0.354 **	-0.0068	0.02846	0.617 ***	-1.836	-1.429	0.548 ***
WNF	N_{mass}	23	0.375 **	-0.0528	0.2277	0.616 ***	-1.763	-0.509	0.548 ***
WNC	N_{mass}	23	0.012 ns	0.1167	0.00173	0.005 ns	0.9344	-0.898	0.004 ns
C_i/C_a	g_s	26	0.605 ***	0.2503	0.6158	0.861 ***	0.1539	-0.054	0.792 ***
R_{area}	g_s	23	0.016 ns	1.507	1.573	0.06 ns	0.3418	0.527	0.040 ns
R_{mass}	g_s	23	0.415 **	0.0535	0.02293	0.736 ***	0.5531	-1.074	0.689 ***
RNF	g_s	23	0.172 *	0.1202	0.1745	0.221 *	0.2553	-0.507	0.221 *
RBUE	g_s	23	0.566 ***	7.131	3.686	0.682 ***	0.4824	1.065	0.593 ***
WM	g_s	23	0.227 *	-48.81	48.79	0.603 ***	-0.6835	0.941	0.518 ***
WMF	g_s	23	0.134 +	-0.2449	0.5452	0.333 **	-0.2395	-0.511	0.137 +
WN	g_s	23	0.094 ns	-0.018	0.01465	0.336 **	-0.7613	-2.738	0.176 +
WNF	g_s	23	0.09 ns	-0.1397	0.1205	0.344 **	-0.7309	-1.766	0.160 +
WNC	g_s	23	0.063 ns	0.3087	0.2387	0.044 ns	0.3875	-0.232	0.053 ns
R_{area}	C_i/C_a	23	0.007 ns	6.626	-2.592	0.004 ns	2.392	0.667	0.000 ns
R_{mass}	C_i/C_a	23	0.615 ***	0.2352	-0.1249	0.656 ***	3.87	-0.848	0.593 ***
RNF	C_i/C_a	23	0.201 *	0.5287	-0.1578	0.165 +	1.787	-0.403	0.185 *
RBUE	C_i/C_a	23	0.61 ***	31.36	-16.02	0.666 ***	3.376	1.262	0.548 ***
WM	C_i/C_a	23	0.503 ***	-214.7	183.7	0.716 ***	-4.783	0.661	0.624 ***
WMF	C_i/C_a	23	0.363 **	-1.077	1.222	0.388 **	-1.676	-0.609	0.123 +
WN	C_i/C_a	23	0.222 *	-0.0791	0.06436	0.411 **	-5.327	-3.049	0.260 **
WNF	C_i/C_a	23	0.213 *	-0.6144	0.5066	0.363 **	-5.115	-2.064	0.185 *
WNC	C_i/C_a	23	0.043 ns	1.357	-0.6144	0.04 ns	2.712	-0.073	0.029 ns
R_{mass}	R_{area}	23	0.117 ns	0.0355	-0.0329	0.132 +	1.618	-1.927	0.144 +
RNF	R_{area}	23	0.388 **	0.0798	0.04904	0.465 ***	0.747	-0.901	0.548 ***
RBUE	R_{area}	23	0.085 ns	-4.733	16.62	0.08 ns	-1.411	1.195	0.168 +
WM	R_{area}	23	0.031 ns	32.4	-39.75	0.032 ns	1.9996	0.758	0.068 ns
WMF	R_{area}	23	0.007 ns	-0.1625	0.8008	0.006 ns	-0.7003	-0.142	0.116 ns

WN	R _{area}	23	0.063	ns	0.0119	-0.018	0.067	ns	2.2267	-2.941	0.102	ns
WNF	R _{area}	23	0.014	ns	0.0927	-0.1329	0.008	ns	2.1381	-1.962	0.008	ns
WNC	R _{area}	23	0.093	ns	0.2049	-0.0835	0.028	ns	1.1335	-0.829	0.026	ns
RNF	R _{mass}	23	0.558	***	2.248	0.123	0.495	***	0.4617	-0.011	0.490	***
RBUE	R _{mass}	23	0.256	*	133.3	0.6286	0.384	**	0.8722	2.002	0.240	*
WM	R _{mass}	23	0.42	**	-912.7	69.72	0.653	***	-1.2359	-0.386	0.563	***
WMF	R _{mass}	23	0.209	*	-4.579	0.6501	0.263	*	-0.4329	-0.976	0.185	*
WN	R _{mass}	23	0.191	*	-0.3363	0.02236	0.396	***	-1.3765	-4.216	0.314	**
WNF	R _{mass}	23	0.191	*	-2.612	0.1804	0.372	**	-1.3215	-3.185	0.325	**
WNC	R _{mass}	23	0.09	ns	5.771	0.1064	0.035	ns	0.7008	0.521	0.003	ns
RBUE	RNF	23	0	ns	59.31	-6.667	0	ns	-1.889	-0.507	0.012	ns
WM	RNF	23	0.034	ns	-406	119.7	0.059	ns	-2.6767	-0.416	0.020	ns
WMF	RNF	23	0.004	ns	-2.037	0.9007	0.002	ns	-0.9381	-0.987	0.023	ns
WN	RNF	23	0	ns	0.1496	-0.0253	0.003	ns	-2.9815	-4.249	0.000	ns
WNF	RNF	23	0	ns	-1.162	0.3233	0.001	ns	-2.862	-3.217	0.000	ns
WNC	RNF	23	0.217	*	2.567	-0.2094	0.105	ns	1.5175	0.537	0.044	ns
WM	RBUE	23	0.436	**	-6.846	74.02	0.701	***	-1.417	2.45	0.608	***
WMF	RBUE	23	0.25	*	-0.0343	0.6717	0.299	**	-0.4965	0.018	0.029	ns
WN	RBUE	23	0.244	*	-0.0025	0.02395	0.531	***	-1.5783	-1.057	0.336	**
WNF	RBUE	23	0.224	*	-0.0196	0.1927	0.459	***	-1.5154	-0.152	0.212	*
WNC	RBUE	23	0.001	ns	0.0433	0.07919	0.002	ns	0.8032	-1.088	0.005	ns
WMF	WM	23	0.462	***	0.005	0.3004	0.534	***	0.3503	-0.841	0.212	*
WN	WM	23	0.789	***	0.0004	-0.0033	0.721	***	1.114	-3.786	0.656	***
WNF	WM	23	0.723	***	0.0029	-0.0192	0.602	***	1.069	-2.772	0.518	***
WNC	WM	23	0.002	ns	0.0063	0.1679	0.008	ns	-0.5669	0.302	0.004	ns
WN	WMF	23	0.24	*	0.0734	-0.0254	0.354	**	3.1797	-1.114	0.090	ns
WNF	WMF	23	0.303	**	0.5705	-0.1905	0.444	**	3.0525	-0.206	0.240	*
WNC	WMF	23	0.007	ns	-1.26	0.9259	0.005	ns	-1.618	-1.059	0.001	ns
WNF	WN	23	0.958	***	7.768	0.00667	0.914	***	0.9601	0.863	0.884	***
WNC	WN	23	0.177	*	17.16	0.2249	0.199	*	0.509	0.668	0.397	**
WNC	WNF	23	0.209	*	2.21	0.2102	0.256	*	0.5301	0.211	0.449	***

LMA, leaf mass per area (g m^{-2}); LLS, leaf life span (year); P_{area}, photosynthetic rate per area ($\mu\text{mol m}^{-2} \text{s}^{-1}$); P_{mass}, photosynthetic rate per mass ($\text{nmol g}^{-1} \text{s}^{-1}$); PNUE, photosynthetic nitrogen use efficiency ($\mu\text{mol mol}^{-1} \text{s}^{-1}$); N_{area}, leaf nitrogen per area (mol m^{-2}); N_{mass}, leaf nitrogen per mass (%); g_s, stomatal conductance for water vapour ($\text{mol m}^{-2} \text{s}^{-1}$); C_i/C_a, the ratio of CO₂ concentration at intercellular space to that at air; R_{area}, Rubisco per area (g m^{-2}); R_{mass}, Rubisco per leaf mass (g g^{-1}); RNF, Rubisco nitrogen per leaf nitrogen (mol mol^{-1}); RBUE, photosynthetic rate per Rubisco ($\mu\text{mol g}^{-1} \text{s}^{-1}$); WM, cell wall mass per area (g m^{-2}); WMF, cell wall mass per leaf mass (g g^{-1}); WN, cell wall nitrogen per area (mol m^{-2}); WNF, cell wall nitrogen per leaf nitrogen (mol mol^{-1}); WNC, nitrogen concentration of cell wall (%); NA, not available. ns, P \geq 0.1; +, P<0.1; *, P<0.05; **, P<0.01; ***, P<0.001