

Supplementary Information

Co-regulation of photosynthetic capacity by nitrogen, phosphorus and magnesium in a subtropical Karst forest in China

Jing Wang^{1,2,3}; Xuefa Wen^{1,2*}, Xinyu Zhang^{1,2*}, Shenggong Li^{1,2}, Da-Yong Zhang³

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Supplementary Table S7. Characteristics of soil and leaf in this study site. TN, Total nitrogen; TP, total phosphorus; TCa, total calcium; TMg, total magnesium; TK, total potassium; TNa, total sodium; AN, available soil nitrogen; AP, available soil phosphorus.

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Supplementary Table S1. The area-based and dry mass-based light saturated assimilation rates (A_{sat}), maximum rate of photosynthetic carboxylation (V_{cmax}), and maximum rate of photosynthetic electron transport (J_{max}) of dominant species (n=63) selected from a subtropical mature forest in the Karst critical zone in Southwestern China.

Species	A_{sat} ($\mu\text{mol m}^{-2} \text{s}^{-1}$)	V_{cmax} ($\mu\text{mol m}^{-2} \text{s}^{-1}$)	J_{max} ($\mu\text{mol m}^{-2} \text{s}^{-1}$)	A_{sat} ($\text{nmol g}^{-1} \text{s}^{-1}$)	V_{cmax} ($\text{nmol g}^{-1} \text{s}^{-1}$)	J_{max} ($\text{nmol g}^{-1} \text{s}^{-1}$)
<i>Ligustrum lucidum</i> Ait.	11.73±0.91	54.39±3.72	93.71±10.54	149.43±11.56	692.68±47.34	1193.47±7.33
<i>Rhamnus leptophylla</i> Schneid.	12.53±0.4	55.5±3.42	107.27±5.29	187.11±6.03	828.61±51.07	1601.41±7.11
<i>Lindera communis</i> Hemsl.	9.09±0.38	39.71±3.5	60.11±1.52	93.12±3.86	406.82±35.84	615.81±0.82
<i>Itea yunnanensis</i> Franch	6.91±0.77	35.61±3.75	80.67±3.84	72.82±8.08	375.23±39.55	850.12±1.84
<i>Pittosporum brevicalyx</i> (Oliv.) Gagnep	7.36±0.77	39.39±3.6	79.46±11.27	112.12±11.75	600.42±54.81	1211.33±15.38
<i>Litsea rubescens</i> Lec.	11.9±1.54	63.74±6.8	125.42±8.59	320.8±41.5	1718.29±183.39	3381.03±28.75
<i>Broussonetia papyifera</i> (Linn.) L'Hert. ex Vent.	15.67±1.55	70.85±10.45	112.86±7.02	236.41±23.39	1069.04±157.75	1703.03±15.13
<i>Machilus microcarpa</i> Hemsl.	7.69±2.05	37.06±6.33	64.75±5.64	171.3±45.77	825.6±140.89	1442.28±12.34
<i>Rhus chinensis</i> Mill.	14.9±0.3	69.31±0.66	103.12±22.19	187.6±3.78	872.64±8.28	1298.31±25.99
<i>Melia azedarach</i> L.	14.13±1.44	73.09±6.32	121.38±13.43	146.68±14.91	758.53±65.55	1259.77±14.64
<i>Populus × canadensis</i> Moench.	9.64±1.34	42.39±4.47	70.86±5.69	80.21±11.11	352.67±37.22	589.57±2.5
<i>Camptotheca acuminata</i> Decne.	10.16±1.81	48.57±1.89	91.35±0.65	169.97±30.25	812.19±31.56	1527.7±1.01
<i>Cinnamomum bodinieri</i> Levl.	13.07±2.26	65.65±3.81	122.71±13.1	143.16±24.75	719.24±41.79	1344.44±6.79
<i>Catalpa ovata</i> G. Don	23.67±1.33	99.56±10.68	147.64±20.04	441.09±24.82	1855.61±199.12	2751.74±40.47
<i>Toona sinensis</i> (A. Juss.) Roem.	9±1.94	42.35±7.07	79.13±3.01	361.72±78.08	1702.16±284.28	3180.52±8.32
<i>Sapium sebiferum</i> (Linn.) Roxb.	14.47±2.74	65.21±6.74	98.95±7.5	192.57±36.51	867.99±89.72	1317.17±9.19
<i>Alangium chinense</i> (Lour.) Harms	11.16±0.62	57.84±5.56	104.6±9.08	127.44±7.13	660.55±63.51	1194.53±11.33
<i>Cladrastis platycarpa</i> (Maxim.) Makino	11.55±1.62	59.29±5.66	116.21±10.78	234.66±32.92	1204.17±114.89	2360.25±12.66
<i>Ulmus pumila</i> L.	10.77±1.19	43.17±12.11	57.84±15.4	157.42±17.34	630.83±176.98	845.31±17.61
<i>Ilex macrocarpa</i> Oliv.	6.29±0.3	38.75±0.97	90.17±2.85	76.28±3.61	469.95±11.76	1093.47±1.98
<i>Ziziphus jujuba</i> Mill. var. <i>spinosa</i> (Bunge) Hu ex H. F. Chow	15.17±0.55	62.11±2.07	96.58±4.97	107.03±3.89	438.29±14.58	681.54±4.63

<i>Vitex canescens</i> Kurz	10.7±1.91	56.15±5.67	84.21±5.02	219.85±39.2	1153.67±116.47	1730.17±8.59
<i>Eriobotrya japonica</i> (Thunb.) Lindl.	10.87±0.06	51.22±2.77	94.13±4.91	122.28±0.65	576.33±31.15	1059.2±4.46
<i>Morus alba</i> L.	13.3±2.72	64.18±11.74	102.4±17.98	484.69±99.2	2338.8±427.94	3731.84±42.67
<i>Prunus salicina</i> Lindl.	12.93±1.12	54.66±5.34	105.05±12.44	242.64±20.92	1025.36±100.12	1970.72±21.99
<i>Eucommia ulmoides</i> Oliver	10.19±0.71	48.19±9.4	109.39±6.54	181.05±12.58	856.55±167.1	1944.29±15.72
<i>Platycarya strobilacea</i> Sieb. et Zucc.	11.27±1	44.09±3.13	92.09±4.45	246.52±21.92	964.67±68.56	2014.9±13.88
<i>Kalopanax septemlobus</i> (Thunb.) Koidz.	11.47±2.27	62.99±13.46	95.25±10.96	340.74±67.31	1870.81±399.87	2828.86±30.61
<i>Zanthoxylum armatum</i> DC.	13.13±2.86	72.76±4.92	123.69±30.27	100.15±21.86	555.12±37.55	943.64±18.91
<i>Pyrus calleryana</i>	8.68±0.85	40.78±2.17	71.86±5.48	110.6±10.88	519.38±27.6	915.21±7.18
<i>Amygdalus persica</i> L. var.	16.45±1.06	73.36±1.56	117.6±3.28	222.4±14.38	992.1±21.06	1590.33±2.7
<i>Euonymus meaacckii</i> Rupr.	9.74±0.16	55.27±2.57	117.33±6.66	81.07±1.35	459.84±21.35	976.2±3.96
<i>Zanthoxylum ovalifolium</i> Wight	9.33±1.23	56.71±3.05	114.9±5.8	104.18±13.69	632.97±34	1282.49±3.64
<i>Cerasus scopulorum</i> (Koehne) Yu et Li	13.47±0.83	55.01±3.66	106.21±4.67	178.42±11.03	728.76±48.5	1407.16±4.57
<i>Carpinus pubescens</i> Burk.	5.72±0.66	26.8±0	52.28±0	145.71±16.93	682.59±31.06	1331.75±8.09
<i>Lithocarpus confinis</i> Huang	11.28±1.78	53.98±4.59	81.33±4.09	76.97±12.15	368.34±31.35	555±2.14
<i>Celtis sinensis</i> Pers.	10.35±2.56	47.8±11.87	87.64±18.25	82.92±20.46	382.82±95.07	701.95±15.3
<i>Evodia rutaecarpa</i> (Juss.) Benth.	9.79±0.97	57.9±6.55	111.13±9.44	74.83±7.42	442.67±50.11	849.7±5.73
<i>Machilus cavaleriei</i> Levl.	8.38±0.49	37.17±1.63	71.78±10.95	65.07±3.78	288.74±12.65	557.54±7.39
<i>Diospyros kaki</i> Thunb.						
var. <i>silvestris</i> Makino	10.74±2.04	47.24±5.17	81.13±3.51	123.92±23.59	545.1±59.67	936.14±5.24
<i>Rubus inopertus</i> (Diels) Focke	14.5±2.23	59.77±7.87	95.34±9.07	380.28±58.59	1567.48±206.28	2500.36±17.52
<i>Coriaria nepalensis</i> Wall.	13.46±0.8	65.34±4.17	119.16±5.28	104.38±6.18	506.58±32.3	923.89±6.83
<i>Celastrus orbiculatus</i> Thunb.	5.23±0.27	28.25±2.57	61.19±4.98	33.81±1.73	182.69±16.59	395.74±2.7
<i>Wikstroemia scytophylla</i> Diels	12.51±2.89	66.31±7.24	108.41±10.2	364.7±84.11	1932.99±211	3160.37±28.24
<i>Viburnum foetidum</i> Wall.						
var. <i>ceanothoides</i> (C. H. Wright)						
Hand.-Mazz.	9.02±0.99	39.43±5.56	63.86±8.45	306.03±33.48	1338.25±188.67	2167.54±14.42
<i>Hedera nepalensis</i> K. Koch	6.66±2.52	31.91±9.37	54.01±27.19	139.05±52.72	666.33±195.64	1127.71±48.5

var. <i>sinensis</i> (Tobl.) Rehd.						
<i>Debregeasia longifolia</i> (Burm. f.) Wedd.	16.23±1.16	69.84±7.83	107.47±13.75	231.79±16.55	997.18±111.81	1534.51±16.88
<i>Rubus parvifolius</i> L.	16.33±0.87	76.48±11.57	111.05±9.32	287.08±15.36	1344.18±203.26	1951.78±12.97
<i>Rosa roxbunghii</i>	12.1±0.7	52.38±2.92	102.72±5.91	95.28±5.51	412.49±23.02	808.87±5.25
<i>Mallotus repandus</i> (Willd.) Muell. Arg.	7.09±1.3	36.97±8	70.24±15.58	160.51±29.47	836.61±181.08	1589.29±26.93
<i>Mahonia bealei</i> (Fort.) Carr.	4.83±0.32	23.67±1.11	45.9±2.32	45.11±2.95	221.22±10.4	428.98±2.16
<i>Fallopia multiflora</i> (Thunb.) Harald.	16.63±4.23	78.54±8.48	153.18±32.54	352.5±89.72	1664.4±179.74	3246.29±63.99
<i>Conyza canadensis</i> (L.) Cronq.	13.9±0.35	60.34±2.54	97.64±4.62	562.03±14.01	2439.93±102.77	3948.1±5.36
<i>Ipomoea batatas</i> (L.) Lam.	17.37±0.85	71.7±1.28	122.29±4.51	276.31±13.53	1140.81±20.43	1945.76±3.71
<i>Senecio scandens</i> Buch.-Ham. ex D. Don	12.27±1.23	55.9±5.2	97.48±6.98	227.97±22.94	1038.87±96.68	1811.57±10.95
<i>Vitis piasezkii</i> Maxim.	12.53±1.37	59.12±3.85	103.33±11.85	366.25±39.89	1727.55±112.49	3019.52±31.39
<i>Clematis urophylla</i> Franch.	8.1±1.06	35.63±1.05	76.61±1.57	55.45±7.28	244.04±7.17	524.65±0.44
<i>Bauhinia glauca</i> (Wall. ex Benth.) Benth.	7.84±1.12	35.41±4.54	68.07±3.73	157.3±22.56	710.65±91.17	1366.2±1.01
<i>Caesalpinia decapetala</i> (Roth) Alston	11.27±1.42	52.8±4.24	94.84±29.96	198.3±24.91	929.31±74.66	1669.13±49.22
<i>Paederia scandens</i> (Lour.) Merr.	10.14±0.66	42.62±4.37	69.68±9.52	250.6±16.33	1053.64±108.02	1722.51±21.09
<i>Cyclosorus parasiticus</i> (L.) Farwell.	7.59±1.3	35.4±4.2	72.38±8.91	185.74±31.71	866.4±102.71	1771.27±24.29
<i>Cyrtomium fortunei</i> J. Sm.	3.24±0.47	16.72±3	36.58±6.56	95.64±13.76	493.49±88.57	1079.82±24.58
<i>Pteris vittata</i> L.	9±2.95	49.2±12	84.99±29.55	155.39±50.97	849.69±207.18	1467.88±50.61

Table S2. The averaged leaf nutrient concentrations, leaf mass per area (LMA), and leaf thickness (*LT*).

Species	N (mg g ⁻¹)	P (mg g ⁻¹)	Ca (mg g ⁻¹)	Mg (mg g ⁻¹)	K (mg g ⁻¹)	Na (mg g ⁻¹)	LMA (mg m ⁻²)	<i>LT</i> (mm)
<i>Ligustrum lucidum</i> Ait.	1.328	0.771	15.244	5.170	9.658	0.036	78.519	0.222
<i>Rhamnus leptophylla</i> Schneid.	2.339	0.826	31.390	3.635	9.484	0.037	66.983	0.140
<i>Lindera communis</i> Hemsl.	1.739	0.799	6.355	1.415	7.025	0.031	97.613	0.203
<i>Itea yunnanensis</i> Franch	1.705	0.789	19.636	1.125	8.501	0.032	94.892	0.267
<i>Pittosporum brevicalyx</i> (Oliv.) Gagnep	1.521	0.615	16.309	3.802	13.883	0.198	65.598	0.127
<i>Litsea rubescens</i> Lec.	2.559	1.179	10.181	6.394	12.255	0.044	37.095	0.108
<i>Broussonetia papyifera</i> (Linn.) L'Hert. ex Vent.	2.592	2.163	31.759	9.203	19.722	0.037	66.270	0.406
<i>Machilus microcarpa</i> Hemsl.	2.216	1.135	10.402	2.889	10.037	0.059	44.892	0.146
<i>Rhus chinensis</i> Mill.	1.893	0.783	16.367	1.933	10.814	0.035	79.426	0.311
<i>Melia azedarach</i> L.	2.850	1.263	27.791	2.969	12.448	0.061	96.355	NAN
<i>Populus × canadensis</i> Moench.	2.730	0.825	12.114	11.061	1.382	0.212	120.189	NAN
<i>Camptotheca acuminata</i> Decne.	1.816	1.016	21.425	7.259	13.014	0.061	59.795	0.159
<i>Cinnamomum bodinieri</i> Levl.	1.627	0.771	15.880	2.948	9.077	0.020	91.271	0.222
<i>Catalpa ovata</i> G. Don	3.192	2.494	15.033	3.021	11.264	0.025	53.655	0.216
<i>Toona sinensis</i> (A. Juss.) Roem.	3.669	1.146	21.508	3.747	14.082	0.033	24.881	0.089
<i>Sapium sebiferum</i> (Linn.) Roxb.	3.100	1.474	24.371	3.168	5.630	0.050	75.124	NAN
<i>Alangium chinense</i> (Lour.) Harms	2.553	1.343	18.508	2.695	10.388	0.019	87.566	0.171
<i>Cladrastis platycarpa</i> (Maxim.) Makino	3.111	1.161	41.009	3.584	10.338	0.048	49.234	0.152
<i>Ulmus pumila</i> L.	1.659	0.620	20.336	3.022	5.512	0.057	68.427	0.127
<i>Ilex macrocarpa</i> Oliv.	1.530	0.554	28.395	6.573	39.634	0.008	82.459	NAN
<i>Ziziphus jujuba</i> Mill. var. <i>spinosa</i> (Bunge) Hu ex H. F. Chow	3.290	1.112	3.565	1.744	7.390	0.001	141.703	NAN
<i>Vitex canescens</i> Kurz	1.290	2.358	7.376	9.730	18.223	0.057	48.669	NAN
<i>Eriobotrya japonica</i> (Thunb.) Lindl.	1.200	0.539	19.454	4.230	12.478	0.040	88.868	0.248
<i>Morus alba</i> L.	3.521	1.129	23.645	5.478	13.924	0.058	27.440	0.095

<i>Prunus salicina</i> Lindl.	1.754	0.936	25.255	3.432	18.318	0.067	53.303	0.121
<i>Eucommia ulmoides</i> Oliver	2.304	1.182	6.191	1.854	15.270	0.052	56.264	0.254
<i>Platycarya strobilacea</i> Sieb. et Zucc.	2.266	0.622	21.852	6.706	4.004	0.019	45.703	0.152
<i>Kalopanax septemlobus</i> (Thunb.) Koidz.	1.664	0.945	17.731	5.708	7.267	0.041	33.671	0.121
<i>Zanthoxylum armatum</i> DC.	1.857	1.471	22.775	4.117	13.244	0.030	131.075	0.368
<i>Pyrus calleryana</i>	1.862	0.835	14.544	4.445	6.919	0.047	78.514	0.159
<i>Amygdalus persica</i> L. var.	1.974	0.943	23.177	8.613	5.234	0.056	73.947	0.140
<i>Euonymus meaacckii</i> Rupr.	2.120	2.585	32.244	9.182	11.999	0.096	120.189	NAN
<i>Zanthoxylum ovalifolium</i> Wight	1.974	0.640	22.740	3.734	8.625	0.053	89.589	0.203
<i>Cerasus scopulorum</i> (Koehne) Yu et Li	1.792	1.652	10.153	3.535	16.632	0.080	75.477	NAN
<i>Carpinus pubescens</i> Burk.	2.044	0.750	22.611	3.221	4.535	0.075	39.256	0.108
<i>Lithocarpus confinis</i> Huang	1.233	0.504	9.907	2.305	4.035	0.051	146.543	0.298
<i>Celtis sinensis</i> Pers.	1.505	0.582	33.395	6.018	4.746	0.028	124.857	0.267
<i>Evodia rutaecarpa</i> (Juss.) Benth.	1.710	1.052	20.553	5.206	3.350	0.046	130.785	NAN
<i>Machilus cavaleriei</i> Levl.	1.799	0.736	4.576	2.295	3.873	0.033	128.742	0.292
<i>Diospyros kaki</i> Thunb. var. <i>silvestris</i> Makino	2.208	0.898	18.892	5.146	19.487	0.038	86.670	0.140
<i>Rubus inopertus</i> (Diels) Focke	2.267	1.022	13.004	6.362	9.592	0.032	38.130	0.146
<i>Coriaria nepalensis</i> Wall.	1.975	1.007	10.740	6.598	4.386	0.034	128.977	0.254
<i>Celastrus orbiculatus</i> Thunb.	1.587	0.645	57.751	8.028	6.108	0.063	154.611	0.286
<i>Wikstroemia scytophylla</i> Diels	2.891	1.463	32.171	5.807	17.781	0.039	34.302	0.178
<i>Viburnum foetidum</i> Wall. var. <i>ceanothoides</i> (C. H. Wright) Hand.-Mazz.	2.052	1.010	11.120	3.524	15.708	0.093	29.463	0.127
<i>Hedera nepalensis</i> K. Koch var. <i>sinensis</i> (Tobl.) Rehd.	1.776	0.990	22.427	3.897	12.692	0.052	47.895	0.241
<i>Debregeasia longifolia</i> (Burm. f.) Wedd.	1.750	2.185	27.551	4.012	17.235	0.052	70.036	NAN
<i>Rubus parvifolius</i> L.	1.609	1.187	17.718	7.172	6.001	0.037	56.895	0.203
<i>Rosa roxbunghii</i>	2.710	0.851	14.005	2.576	6.710	0.035	126.989	NAN
<i>Mallotus repandus</i> (Willd.) Muell. Arg.	2.279	1.065	38.617	6.274	9.152	0.058	44.193	0.165
<i>Mahonia bealei</i> (Fort.) Carr.	1.588	1.128	3.668	1.921	12.520	0.035	107.006	0.356
<i>Fallopia multiflora</i> (Thunb.) Harald.	1.774	1.170	17.305	14.264	15.485	0.038	47.187	0.216

<i>Conyza canadensis</i> (L.) Cronq.	4.065	1.634	15.811	4.141	17.740	0.986	24.732	0.108
<i>Ipomoea batatas</i> (L.) Lam.	1.865	1.129	24.040	5.482	23.532	0.061	62.852	0.279
<i>Senecio scandens</i> Buch.-Ham. ex D. Don	2.662	2.717	16.101	3.235	18.597	0.017	53.808	0.140
<i>Vitis piasezkii</i> Maxim.	1.916	1.128	11.997	3.851	16.682	0.038	34.221	0.140
<i>Clematis urophylla</i> Franch.	1.748	1.005	18.976	6.320	16.973	0.051	146.013	0.102
<i>Bauhinia glauca</i> (Wall. ex Benth.) Benth.	2.288	0.816	29.374	3.691	6.523	0.075	49.821	0.127
<i>Caesalpinia decapetala</i> (Roth) Alston	2.545	1.000	27.642	3.815	11.993	0.053	56.817	0.184
<i>Paederia scandens</i> (Lour.) Merr.	2.137	0.933	14.203	6.100	16.184	0.035	40.450	0.191
<i>Cyclosorus parasiticus</i> (L.) Farwell.	2.316	1.120	8.950	6.256	19.523	0.066	40.863	0.152
<i>Cyrtomium fortunei</i> J. Sm.	2.725	0.976	4.746	4.508	21.281	0.100	33.878	0.121
<i>Pteris vittata</i> L.	2.261	0.830	4.202	2.218	11.766	0.035	57.897	0.140

Note that all auxiliary dataset were shared from “Functional Trait database of terrestrial ecosystems in China (China_Trait)”, and the associated data presented in this table were averaged values.

Supplementary Table S3. Pearson correlations of the area-based photosynthetic capacity (A_{sat} , V_{cmax} , and J_{max}) with leaf nutrient contents and leaf thickness (LT). A_{sat} : the light-saturated net photosynthesis; V_{cmax} : the maximum carboxylation rate; J_{max} : the maximum electron transport rate.

	N	P	Ca	Mg	K	Na	LT	LMA
A_{sat}	-0.008	0.258*	-0.103	0.089	0.018	-0.087	0.146	-0.113
V_{cmax}	0.016	0.287*	-0.052	0.117	0.025	-0.104	0.186	-0.070
J_{max}	0.095	0.292*	0.008	0.178	0.106	-0.101	0.167	-0.029

** $P < 0.01$ (2-tailed), * $P < 0.05$ (2-tailed).

Supplementary Table S4. Coefficients of multivariate stepwise regression. V_{cmax} : the maximum carboxylation rate; J_{max} : the maximum electron transport rate.

Variance	V_{cmax}			J_{max}		
	AIC	P	R^2	AIC	P	R^2
N	-62.26	<0.001	0.275	-2.15	<0.001	0.299
N,Mg	-69.71	<0.001	0.395	-12.31	<0.001	0.440
N,Mg, LT	-73.59	<0.001	0.431	-12.22	<0.001	0.490
N,Mg, LT ,P	-66.54	<0.001	0.491	-9.34	<0.001	0.530

Supplementary Table S5. Pearson correlations of mass-based leaf nutrient contents and leaf thickness (*LT*)

	N	P	Ca	Mg	K	Na	<i>LT</i>	<i>LMA</i>
N	1	0.476**	0.023	-0.081	0.419**	0.394**	-0.414**	-0.400**
P		1	-0.039	0.080	0.480**	0.131	0.066	-0.269*
Ca			1	0.317**	-0.121	-0.048	0.065	0.094
Mg				1	0.093	-0.033	-0.160	0.003
K					1	0.198	0.003	-0.085
Na						1	-0.211	-0.213
<i>LT</i>							1	0.594**
<i>LMA</i>								1

** $P < 0.01$ (2-tailed), * $P < 0.05$ (2-tailed).

Supplementary Table S6. Pearson correlations of mass-based photosynthetic capacity (V_{cmax} and J_{max}) with leaf nutrient contents and leaf thickness (LT). A_{sat} : the light-saturated net photosynthesis; V_{cmax} : the maximum carboxylation rate; J_{max} : the maximum electron transport rate.

	N	P	Ca	Mg	K	Na	LT	LMA
A_{sat}	0.525**	0.455**	-0.005	0.298*	0.310*	0.395*	-0.391**	-0.722**
V_{cmax}	0.524**	0.436**	0.014	0.303*	0.299*	0.356**	-0.401**	-0.727**
J_{max}	0.546**	0.403**	0.020	0.330**	0.336**	0.339*	-0.442**	-0.759**

** $P < 0.01$ (2-tailed), * $P < 0.05$ (2-tailed).

Supplementary Table S7. Characteristics of soil and leaf in this study site. TN, Total nitrogen; TP, total phosphorus; TCa, total calcium; TMg, total magnesium; TK, total potassium; TNa, total sodium; AN, available soil nitrogen; AP, available soil phosphorus.

	TN	TP	TCa	TMg	Tk	TNa	AN	AP
Soil Content (mg g ⁻¹)	7.30±0. 66	1.18± 0.35	36.48±3 4.95	22.64±1 4.51	—	—	69.76± 5.96	9.05± 5.64
Soil storage (t hm ⁻²)	12.04	1.68	—	—	—	—	1.2	1.26
Leaf content (mg g ⁻¹)	23.39± 6.72	1.11± 0.50	19.25±1 0.33	4.61± 2.39	12.00± 6.15	0.07± 0.12	—	—

The nutrient storage of soil was reported by Chen et al. (Chen & Zhou 2017) in this study site.

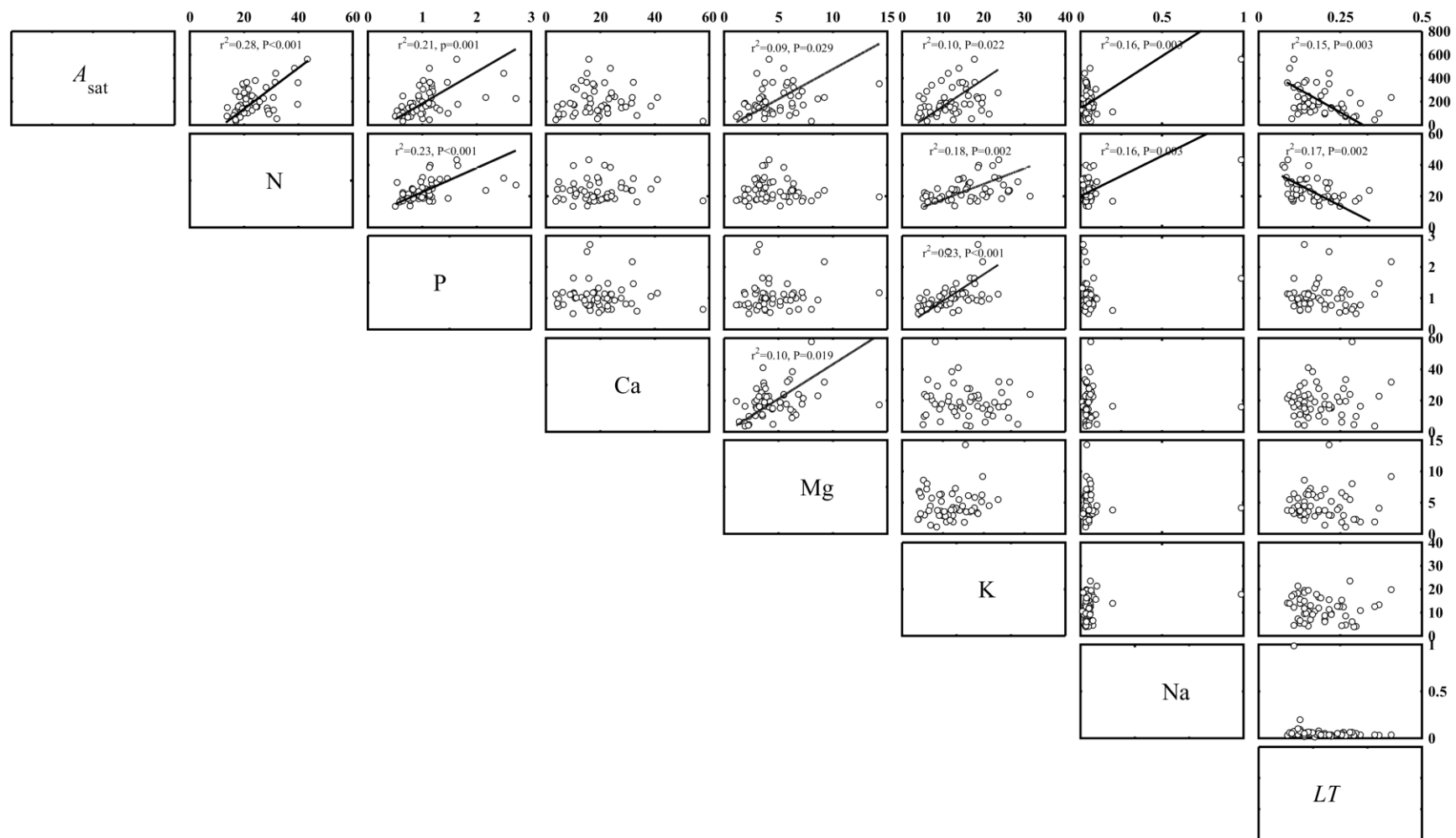


Figure S1. Relationships between of the A_{sat} (nmol g⁻¹ s⁻¹) and leaf traits. A_{sat} , the light-saturated net photosynthesis; LT , leaf thickness (mm); Leaf nutrients (mg g⁻¹).

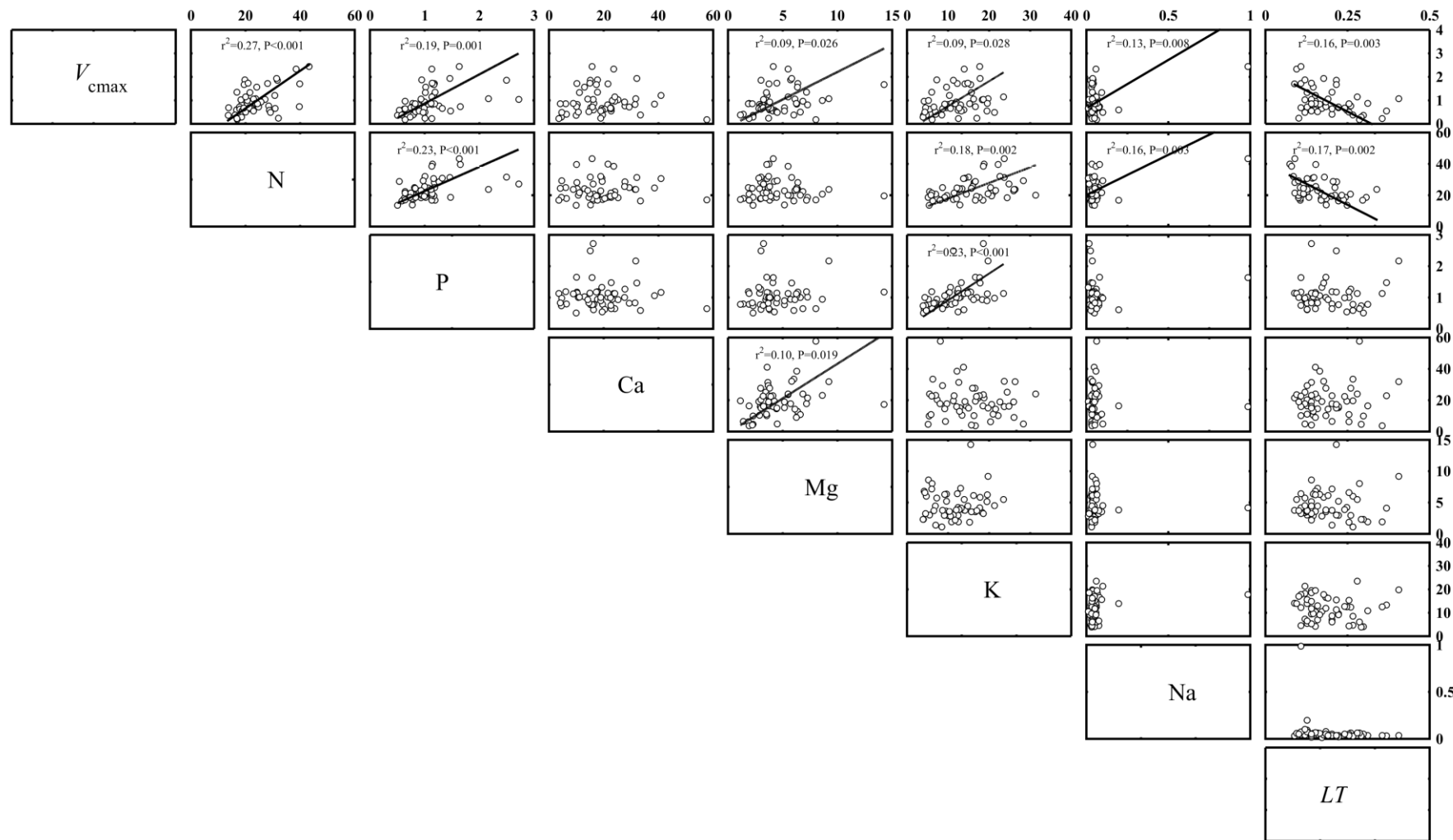


Figure S2. Relationships between of V_{cmax} ($\mu\text{mol g}^{-1} \text{s}^{-1}$) and leaf traits. V_{cmax} , the maximum carboxylation rate; LT , leaf thickness (mm); Leaf nutrients (mg g^{-1}).

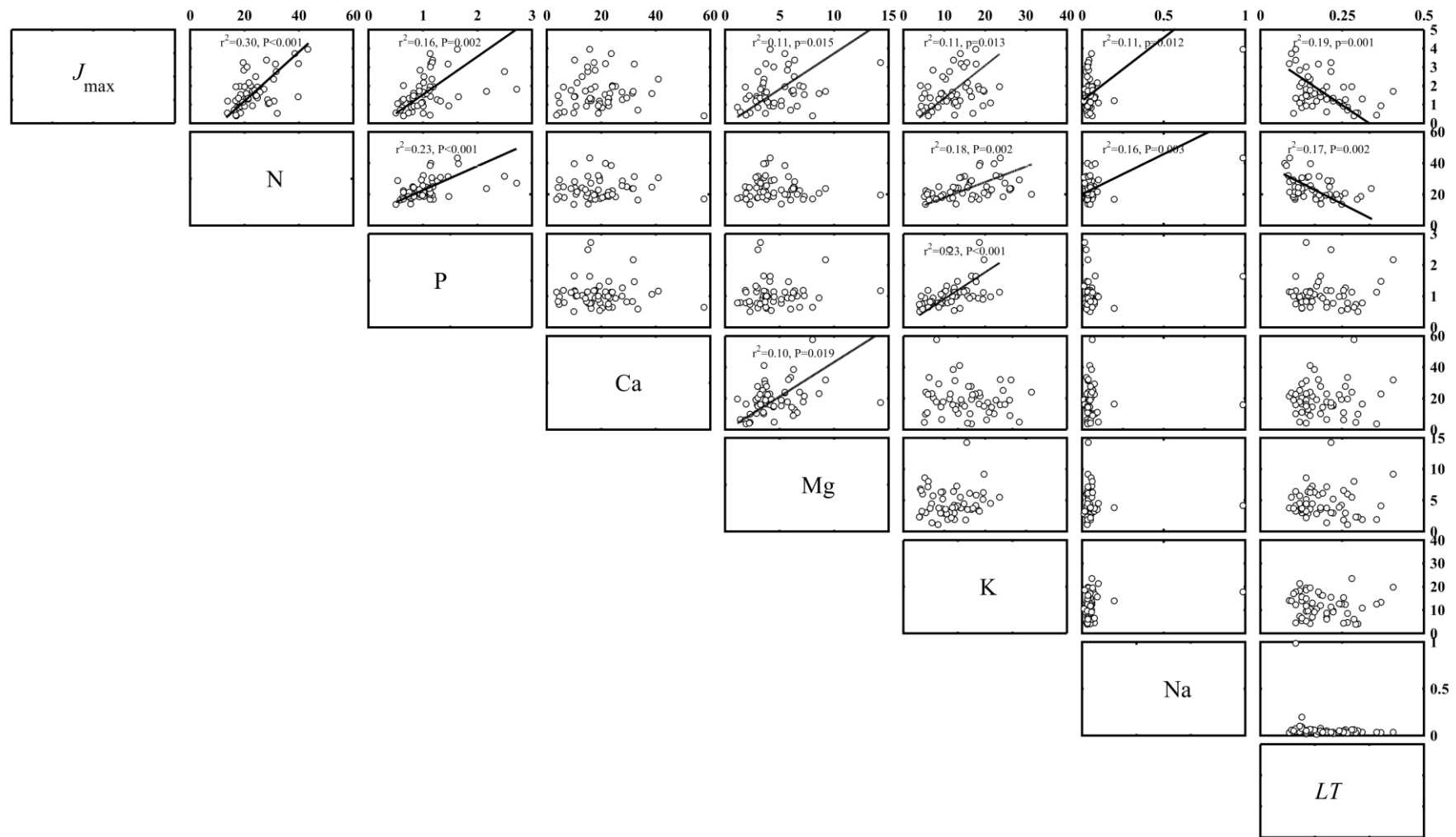


Figure S3. Relationships between of J_{\max} ($\mu\text{mol g}^{-1} \text{s}^{-1}$) with leaf traits(mg g^{-1}). J_{\max} , the maximum electron transport rate; LT , leaf thickness (mm); Leaf nutrients (mg g^{-1}).

Reference

Chen, P. & Zhou, Y. (2017). Soil nutrient capacity and forest tree sustainability in plateau Karst region. *Earth and Enviroment*, 45, 32-37 (2017). (In Chinese)