Supplementary Material

Table S1. Results of statistical analyses for leaf traits.

Leaf traits	Parameters	F value	*P*	Sig.	Parameters	F value	*P*	Sig.	Parameters	F value	*P*	Sig.
CHl	RD	5.89	0.0156	*	LH	86.278	2E-16	*	MT	62.217	1.86E-14	*
CHl	SR	1.218	0.3024	ns	SR	0.927	0.427	ns	SR	0.716	0.543	ns
CHl	RD*SR	3.511	0.0152	*	LH*SR	0.949	0.416	ns	MT*SR	2.83	0.038	*
SLA	RD	76.323	2E-16	*	LH	407.461	2E-16	*	MT	292.579	2E-16	*
SLA	SR	8.129	0.0000269	*	SR	17.845	4.95E-11	*	SR	7.573	0.0000578	*
SLA	RD*SR	1.157	0.326	ns	LH*SR	3.337	0.0192	*	MT*SR	0.332	0.082	ns
LA	RD	9.096	0.002688	*	LH	35.439	4.88E-09	*	MT	5.777	4.15E-09	*
LA	SR	6.457	0.000269	*	SR	5.317	0.00129	*	SR	4.37	0.00473	*
LA	RD*SR	1.201	0.308858	ns	LH*SR	0.457	0.71224	ns	MT*SR	1.306	0.27185	ns
LDMC	RD	71.694	2.65E-16	*	LH	213.724	2E-16	*	MT	693.306	2E-16	*
LDMC	SR	5.66	0.000806	*	SR	9.075	0.0000073	*	SR	4.137	0.00649	*
LDMC	RD*SR	0.623	0.600563	ns	LH*SR	1.272	0.283	s	MT*SR	1.531	0.20553	ns
LN	RD	6.25	0.01273	*	LH	62.484	1.65E-14	*	MT	0.632	0.42711	ns
LN	SR	3.981	0.00804	*	SR	4.694	0.00303	*	SR	4.299	0.00521	*
LN	RD*SR	5.326	0.00128	*	LH*SR	5.121	0.00169	*	MT*SR	4.25	0.00557	*
LP	RD	89.779	2E-16	*	LH	94.658	2E-16	*	MT	61.118	3.06E-14	*
LP	SR	7.385	0.0000749	*	SR	8.032	0.0000307	*	SR	8.476	0.0000167	*
LP	RD*SR	6.218	0.000374	*	LH*SR	1.546	0.202	ns	MT*SR	0.825	0.48	ns

Note: The "ns" indicates no significant ($P > 0.05$), whereas the " * " indicates a significant difference ($P < 0.05$) among different trait categories, species richness, and the interactions between trait categories and species richness (Tukey's HSD). Root depth (RD), species richness (SR), leaf habit (LH), mycorrhizal type (MT), chlorophyll (CHL), specific leaf area (SLA), leaf area (LA), leaf dry matter content (LDMC), leaf nitrogen (LN), and leaf phosphorus (LP).

Table S2. Results of statistical analyses for absorptive root traits.

Absorptive root traits	Parameters	F value	*P*	Sig.	Parameters	F value	*P*	Sig.	Parameters	F value	*P*	Sig.
DIA	RD	0.318	0.573	ns	LH	8.377	0.00408	*	MT	0.97	0.326	ns
DIA	SR	1.02	0.384	ns	SR	0.655	0.58026	ns	SR	1.01	0.389	ns
DIA	RD*SR	0.261	0.854	ns	LH*SR	2.215	0.08645	ns	MT*SR	0.215	0.886	ns
SRL	RD	6.261	0.012882	*	LH	2.572	0.10983	ns	MT	2.663	0.10376	ns
SRL	SR	7.102	0.000127	*	SR	7.049	0.000136	*	SR	7.242	0.000105	*
SRL	RD*SR	1.278	0.281941	ns	LH*SR	3.776	0.011022	*	MT*SR	2.77	0.041882	*
SRA	RD	4.836	0.0286	*	LH	0	0.99665	ns	MT	1.462	0.2277	ns
SRA	SR	3.378	0.0187	*	SR	3.966	0.00855	*	SR	3.499	0.0159	*
SRA	RD*SR	0.7	0.5529	ns	LH*SR	4.676	0.0033	*	MT*SR	1.709	0.1653	ns
RTD	RD	2.922	0.0884	ns	LH	2.783	0.09633		MT	0.076	0.783	ns
RTD	SR	3.328	0.02	*	SR	3.955	0.00867	*	SR	3.253	0.0221	*
RTD	RD*SR	1.007	0.3901	ns	LH*SR	3.173	0.0246	*	MT*SR	0.291	0.8321	ns
RN	RD	1.415	0.235	ns	LH	9.135	0.00273	*	MT	2.074	0.151	ns
RN	SR	0.969	0.408	ns	SR	1.275	0.28314	ns	SR	1.327	0.266	ns
RN	RD*SR	0.559	0.642	ns	LH*SR	0.626	0.59892	ns	MT*SR	1.009	0.389	ns
RP	RD	6.615	0.0106	*	LH	1.841	0.1759	ns	MT	3.896	0.0493	*
RP	SR	3.435	0.0174	*	SR	3.818	0.0104	*	SR	3.021	0.0301	*
RP	RD*SR	1.788	0.1495	ns	LH*SR	2.72	0.0447	*	MT*SR	1.24	0.2953	ns

Note: The "ns" indicates no significant ($P > 0.05$), whereas the " * " indicates a significant difference ($P < 0.05$) among different trait categories, species richness, and the interactions between trait categories and species richness (Tukey's HSD). Root depth (RD), species richness (SR), leaf habit (LH), mycorrhizal type (MT), root diameter (DIA), specific root length (SRL), specific root surface area (SRA), root tissue density (RTD), root nitrogen (RN), and root phosphorus (RP).

Table S3. Results of statistical analyses for transport root traits.

Transport root traits	Parameters	F value	*P*	Sig.	Parameters	F value	*P*	Sig.	Parameters	F value	*P*	Sig.
DIA	RD	0.071	0.789559	ns	LH	0.23	0.6318119	ns	MT	0.105	0.745737	ns
DIA	SR	6.451	0.000304	*	SR	6.276	0.000385	*	SR	6.594	0.000251	*
DIA	RD*SR	0.397	0.755599	ns	LH*SR	1.257	0.289177	ns	MT*SR	0.73	0.534872	ns
SRL	RD	0.414	0.5206	ns	LH	0.77	0.3808	ns	MT	0.263	0.6085	ns
SRL	SR	3.233	0.0227	*	SR	2.904	0.0351	*	SR	3.271	0.0216	*
SRL	RD*SR	2.434	0.065	ns	LH*SR	0.879	0.4525	ns	MT*SR	0.5	0.6824	ns
SRA	RD	0.604	0.4377	ns	LH	0.408	0.5237	ns	MT	0.039	0.8437	ns
SRA	SR	3.255	0.0221	*	SR	3.206	0.0235	*	SR	3.253	0.0221	*
SRA	RD*SR	2.071	0.1041	ns	LH*SR	0.596	0.6182	ns	MT*SR	0.364	0.7793	ns
RTD	RD	0.079	0.77872	ns	LH	0.114	0.73607	ns	MT	0.075	0.7842	ns
RTD	SR	4.508	0.00414	*	SR	4.61	0.00361	*	SR	4.571	0.0038	*
RTD	RD*SR	1.176	0.31914	ns	LH*SR	3.105	0.02693	*	MT*SR	0.34	0.7963	ns
RN	RD	0.361	0.5481	ns	LH	1.826	0.1777	ns	MT	2.176	0.1413	ns
RN	SR	2.97	0.0322	*	SR	3.587	0.0142	*	SR	3.688	0.0124	*
RN	RD*SR	1.078	0.3588	ns	LH*SR	0.846	0.4698	ns	MT*SR	2.094	0.1011	ns
RP	RD	0.105	0.7464	ns	LH	0.202	0.6534	ns	MT	1.614	0.205	ns
RP	SR	2.406	0.0674	ns	SR	2.454	0.0634	ns	SR	2.203	0.0878	ns
RP	RD*SR	0.215	0.8858	ns	LH*SR	0.4041	0.4041	ns	MT*SR	0.662	0.5757	ns

Note: The "ns" indicates no significant ($P > 0.05$), whereas the " * " indicates a significant difference ($P < 0.05$) among different trait categories, species richness, and the interactions between trait categories and species richness (Tukey's HSD). Root depth (RD), species richness (SR), leaf habit (LH), mycorrhizal type (MT), root diameter (DIA), specific root length (SRL), specific root surface area (SRA), root tissue density (RTD), root nitrogen (RN), and root phosphorus (RP).

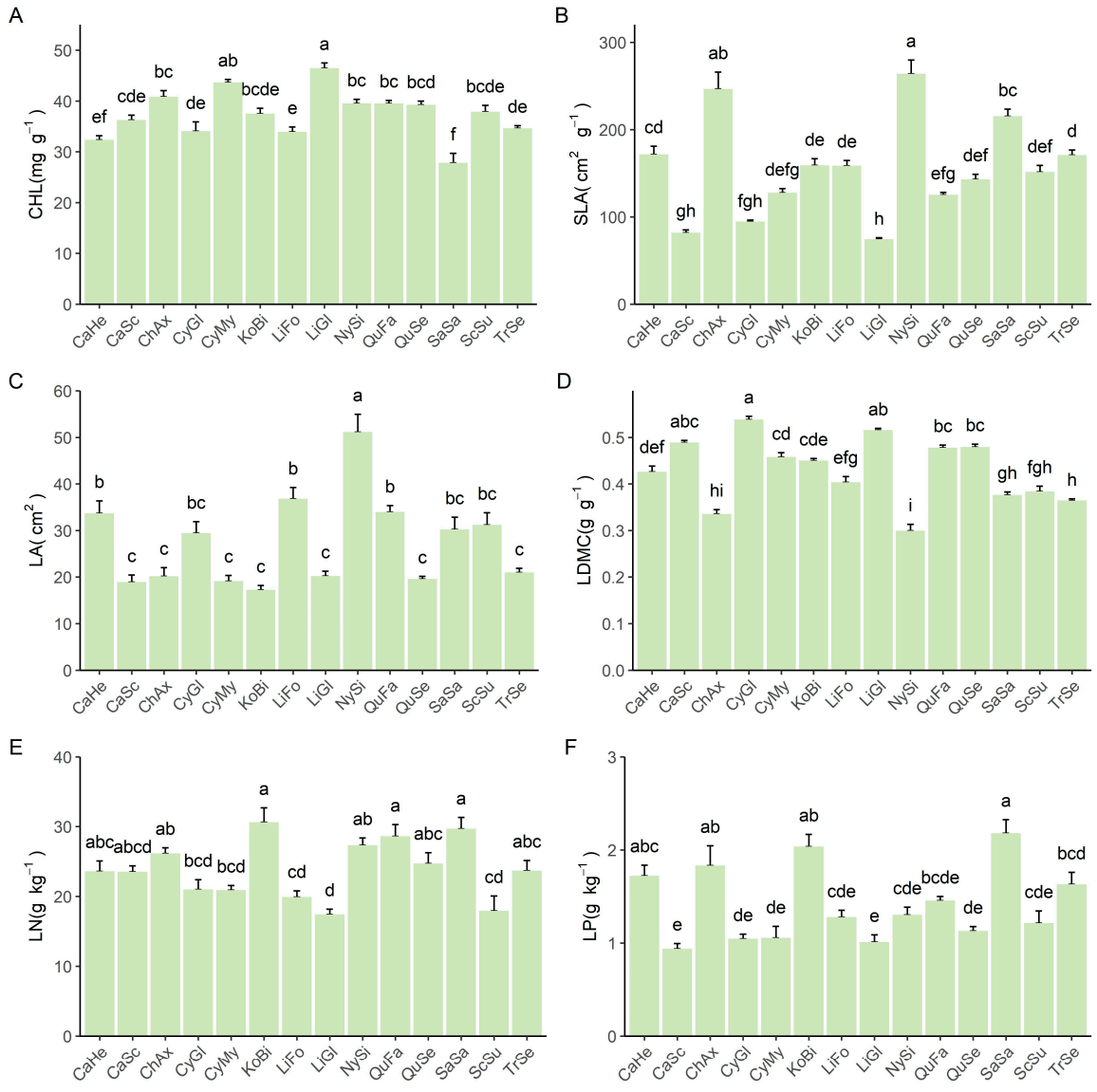

Figure S1. Variations of leaf traits across different species in monocultures.

Note: The lowercase letters mean the differences among different species ($P < 0.05$). Chlorophyll (CHL), specific leaf area (SLA), leaf area (LA), leaf dry matter content (LDMC), leaf nitrogen (LN), and leaf phosphorus (LP). *Castanea henryi* (CaHe), *Castanopsis sclerophylla* (CaSc), *Choerospondias axillaris* (ChAx), *Cyclobalanopsis glauca* (CyGl), *Cyclobalanopsis myrsinifolia* (CyMy), *Koelreuteria bipinnata* (KoBi), *Liquidambar formosana* (LiFo), *Lithocarpus glaber* (LiGl), *Nyssa sinensis* (NySi), *Quercus fabri* (QuFa), *Quercus serrata* (QuSe), *Sapindus saponaria* (SaSa), *Schima superba* (ScSu), *Triadica sebifera* (TrSe).

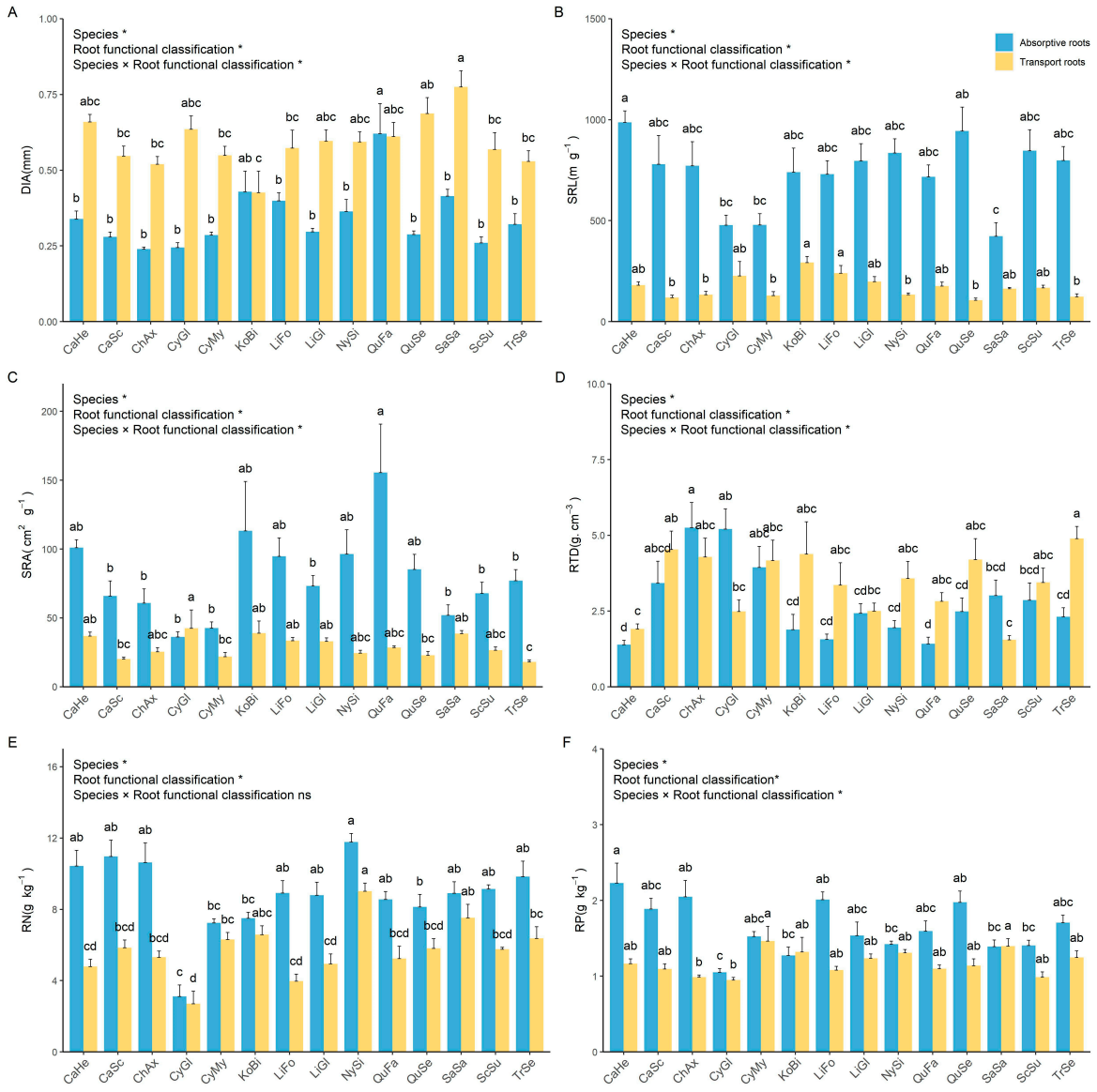

Figure S2. Variations of fine root traits across different species in monocultures.

Note: The lowercase letters mean the differences among different species ($P < 0.05$). The lowercase letters mean the differences among different species. The"ns" indicates no significant ($P > 0.05$), whereas the " * " indicates a significant difference ($P < 0.05$) among different species, root functional classification, and the interactions between species and root functional classification (Tukey's HSD). Root diameter (DIA), specific root length (SRL), specific root surface area (SRA), root tissue density (RTD), root nitrogen (RN), and root phosphorus (RP). *Castanea henryi* (CaHe), *Castanopsis sclerophylla* (CaSc), *Choerospondias axillaris* (ChAx), *Cyclobalanopsis glauca* (CyGl), *Cyclobalanopsis myrsinifolia* (CyMy), *Koelreuteria bipinnata* (KoBi), *Liquidambar formosana* (LiFo), *Lithocarpus glaber* (LiGl), *Nyssa sinensis* (NySi), *Quercus fabri* (QuFa), *Quercus serrata* (QuSe), *Sapindus saponaria* (SaSa), *Schima superba* (ScSu), *Triadica sebifera* (TrSe).

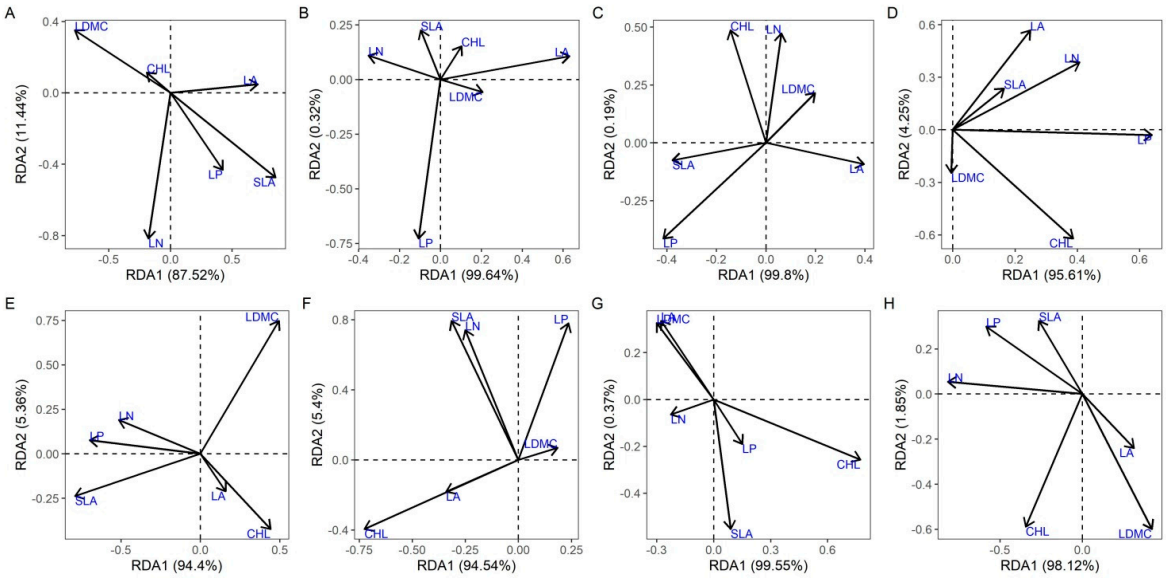

Figure S3. Redundancy analysis (RDA) about the relationships between leaf traits and root traits in deep-rooted and shallow-rooted species at different species richness. Note: Deep-rooted species of monocultures (A), 2 (B), 4 (C) and 8 (D) species mixtures; Shallow-rooted species of monocultures (E), 2 (F), 4 (G) and 8 (H) species mixtures. Chlorophyll (CHL), specific leaf area (SLA), leaf area (LA), leaf dry matter content (LDMC), leaf nitrogen (LN), and leaf phosphorus (LP).

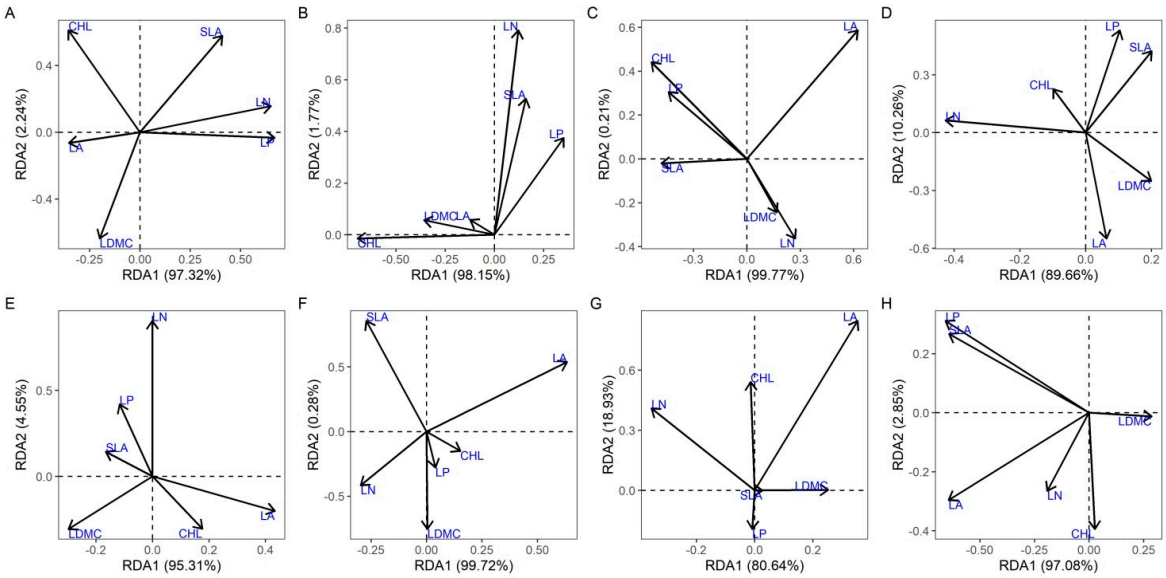

Figure S4. Redundancy analysis (RDA) about the relationships between leaf traits and root traits in deciduous and evergreen species at different species richness. Note: Deciduous species of monocultures (A), 2 (B), 4 (C) and 8 (D) species mixtures; Evergreen species of monocultures (E), 2 (F), 4 (G) and 8 (H) species mixtures. Chlorophyll (CHL), specific leaf area (SLA), leaf area (LA), leaf dry matter content (LDMC), leaf nitrogen (LN), and leaf phosphorus (LP).

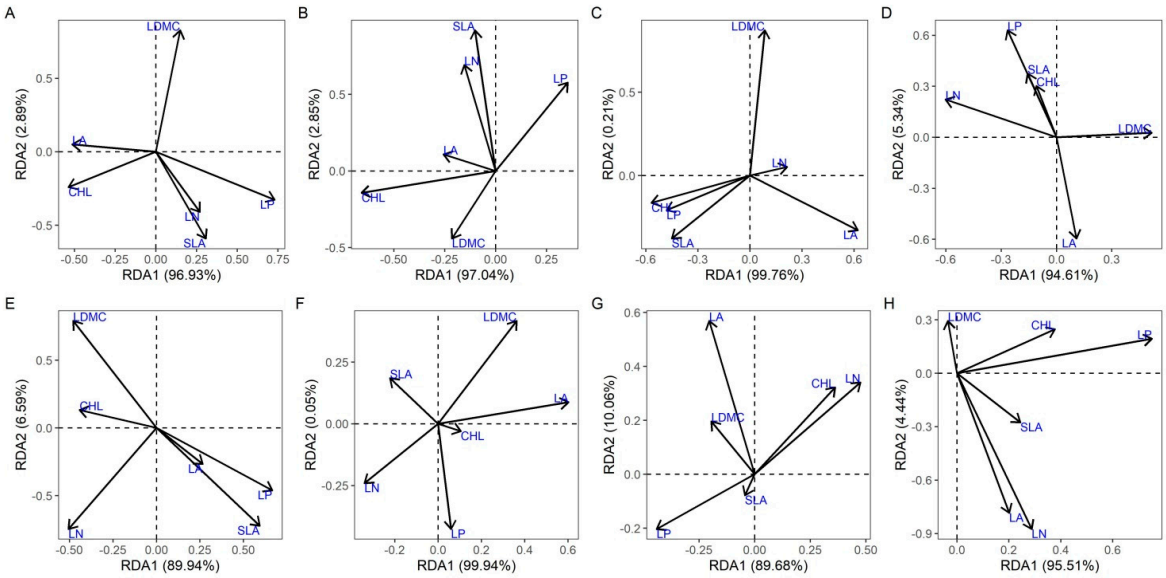

Figure S5. Redundancy analysis (RDA) about the relationships between leaf traits and root traits in AM and ECM species at different species richness. Note: AM species of monocultures (A), 2 (B), 4 (C) and 8 (D) species mixtures; ECM species of monocultures (E), 2 (F), 4 (G) and 8 (H) species mixtures. Chlorophyll (CHL), specific leaf area (SLA), leaf area (LA), leaf dry matter content (LDMC), leaf nitrogen (LN), and leaf phosphorus (LP).