

**Journal:** Ecology

**Appendix S1**

**Soil microbial influences over coexistence potential in multispecies plant communities in a subtropical forest**

Weitao Wang, Hangyu Wu, Tingting Wu, Zijing Luo, Wei Lin, Hanlun Liu, Junli Xiao, Wenqi Luo, Yuanzhi Li, Youshi Wang, Chuliang Song, Gaurav Kandlikar, Chengjin Chu

**Table S1** Information of species selected. AM, arbuscular mycorrhizal fungal species; EcM, ectomycorrhizal fungal species. Abundance was extracted from the census data of the 50-ha forest plot.

<b>Species</b>	<b>Abbreviation</b>	<b>Mycorrhizal type</b>	<b>Abundance</b>
<i>Artocarpus styracifolius</i>	ASTY	AM	2881
<i>Cryptocarya concinna</i>	CCON	AM	17922
<i>Cyclobalanopsis hui</i>	CHUI	EcM	842
<i>Castanopsis hystrix</i>	CHYS	EcM	785
<i>Cyclobalanopsis pachyloma</i>	CPAC	EcM	44

**Table S2** Regression coefficients of the total biomass with height, basal diameter and leaf count for each species.

<b>Species</b>	<b>Intercept</b>	<b>Height</b>	<b>Basal diameter</b>	<b>Leaf count</b>	<b>F</b>	<b><i>p</i></b>	<b>R<sup>2</sup></b>
ASTY	-0.0236	0.0064	\	0.0025	12.43	0.00047	0.5461
CCON	-0.1188	0.0166	0.2473	\	19.73	0.001	0.6755
CHUI	-0.1121	\	0.5732	\	12.20	0.0026	0.3708
CHYS	-0.2071	0.0079	0.2454	0.0310	12.98	0.00015	0.6541
CPAC	0.0846	\	0.3033	\	11.18	0.0036	0.3488

**Table S3** Size of feasibility domain for communities with different species

compositions for microbial inoculation ( $\Omega_{\text{inoculated}}$ ) and sterilization ( $\Omega_{\text{sterilized}}$ ),

along with the intersection size ( $\Omega_{\text{shared}}$ ) between them.

<b>Species composition</b>	<b><math>\Omega_{\text{inoculated}}</math></b>	<b><math>\Omega_{\text{sterilized}}</math></b>	<b><math>\Omega_{\text{shared}}</math></b>
ASTY-CCON	0.441	0.377	0.377
ASTY-CHUI	0.454	0.289	0
ASTY-CHYS	0.418	0.308	0
ASTY-CPAC	0.495	0.429	0.429
CCON-CHUI	0.400	0.146	0
CCON-CHYS	0.036	0.272	0
CCON-CPAC	0.487	0.174	0.174
CHUI-CHYS	0.324	0.193	0.118
CHUI-CPAC	0.089	0.48	0.089
CHYS-CPAC	0.183	0.125	0
ASTY-CCON-CHUI	0.185	0.128	0
ASTY-CCON-CHYS	0.019	0.217	0
ASTY-CCON-CPAC	0.379	0.164	0
ASTY-CHUI-CHYS	0.306	0.129	0
ASTY-CHUI-CPAC	0.167	0.473	0
ASTY-CHYS-CPAC	0.272	0.081	0
CCON-CHUI-CHYS	0.388	0.070	0.070
CCON-CHUI-CPAC	0.090	0.039	0
CCON-CHYS-CPAC	0.231	0.067	0
CHUI-CHYS-CPAC	0.011	0.053	0
ASTY-CCON-CHUI-CHYS	0.027	0.064	0
ASTY-CCON-CHUI-CPAC	0.039	0.037	0
ASTY-CCON-CHYS-CPAC	0.323	0.05	0
ASTY-CHUI-CHYS-CPAC	0.034	0.034	0
CCON-CHUI-CHYS-CPAC	0.006	0.023	0
ASTY-CCON-CHUI-CHYS-CPAC	0.005	0.018	0

**Table S4** Bayesian-derived interaction coefficients ( $a_{ij}$ ) from the Ricker model for pairwise species interactions. The table presents the mean, standard deviation (SD), and the 2.50% and 97.50% quantiles of the posterior distribution for each coefficient across two soil treatments: sterilized and inoculated.

Species <i>i</i>	Species <i>j</i>	Soils	Mean	SD	2.50%	97.50%
ASTY	ASTY	sterilized	-1.543	0.174	-1.882	-1.191
		inoculated	-0.717	1.224	-3.130	1.672
ASTY	CCON	sterilized	0.360	0.176	0.010	0.707
		inoculated	0.230	0.168	-0.099	0.561
ASTY	CHUI	sterilized	0.067	0.213	-0.354	0.489
		inoculated	0.216	0.175	-0.125	0.560
ASTY	CHYS	sterilized	0.184	0.197	-0.206	0.572
		inoculated	0.160	0.174	-1.134	1.163
ASTY	CPAC	sterilized	0.100	0.174	-0.178	0.505
		inoculated	0.207	0.204	-0.197	0.609
CCON	ASTY	sterilized	0.042	0.13	-0.218	0.299
		inoculated	0.019	0.133	-0.238	0.281
CCON	CCON	sterilized	-0.371	0.129	-0.622	-0.116
		inoculated	-0.097	1.242	-2.537	2.312
CCON	CHUI	sterilized	-0.207	0.136	-0.473	0.060
		inoculated	0.103	0.134	-0.162	0.366
CCON	CHYS	sterilized	-0.081	0.145	-0.367	0.202
		inoculated	-0.073	0.149	-0.365	0.222
CCON	CPAC	sterilized	-0.043	0.129	-0.296	0.214
		inoculated	0.077	0.134	-0.183	0.335
CHUI	ASTY	sterilized	-0.197	0.231	-0.651	0.256
		inoculated	-0.431	0.166	-0.758	-0.098
CHUI	CCON	sterilized	0.113	0.198	-0.283	0.499
		inoculated	-0.203	0.149	-0.498	0.086
CHUI	CHUI	sterilized	0.558	0.199	0.145	0.921
		inoculated	0.056	1.227	-2.330	2.480

<b>Species <i>i</i></b>	<b>Species <i>j</i></b>	<b>Soils</b>	<b>Mean</b>	<b>SD</b>	<b>2.50%</b>	<b>97.50%</b>
CHUI	CHYS	sterilized	-0.015	0.188	-0.383	0.363
		inoculated	0.043	0.157	-0.266	0.350
CHUI	CPAC	sterilized	-0.230	0.209	-0.646	0.183
		inoculated	-0.018	0.179	-0.366	0.332
CHYS	ASTY	sterilized	-0.165	0.231	-0.628	0.297
		inoculated	0.137	0.203	-0.263	0.533
CHYS	CCON	sterilized	0.139	0.23	-0.315	0.602
		inoculated	0.042	0.203	-0.363	0.432
CHYS	CHUI	sterilized	-0.237	0.207	-0.649	0.172
		inoculated	-0.122	0.211	-0.533	0.283
CHYS	CHYS	sterilized	-0.361	0.232	-0.818	0.109
		inoculated	0.054	1.223	-2.370	2.480
CHYS	CPAC	sterilized	-0.166	0.219	-0.598	0.268
		inoculated	-0.064	0.214	-0.489	0.357
CPAC	ASTY	sterilized	-0.113	0.106	-0.321	0.098
		inoculated	-0.143	0.152	-0.437	0.159
CPAC	CCON	sterilized	-0.061	0.106	-0.268	0.150
		inoculated	-0.050	0.135	-0.320	0.215
CPAC	CHUI	sterilized	-0.068	0.119	-0.303	0.165
		inoculated	0.275	0.138	0.011	0.553
CPAC	CHYS	sterilized	-0.175	0.112	-0.396	0.049
		inoculated	0.239	0.152	-0.057	0.539
CPAC	CPAC	sterilized	0.057	0.106	-0.152	0.266
		inoculated	0.047	1.232	-2.396	2.461

**FIGURE S1** Boxplot of species-level structural niche differences ( $\omega$ ) for tree seedling communities composed of 2, 3, 4 and 5 species in sterilized and inoculated soils. The mean values are marked with dots in the graph and the specific values are shown below the dots. The Kruskal–Wallis tests by ranks were used to compare the differences between sterilized and inoculated soils for each level of species richness.

