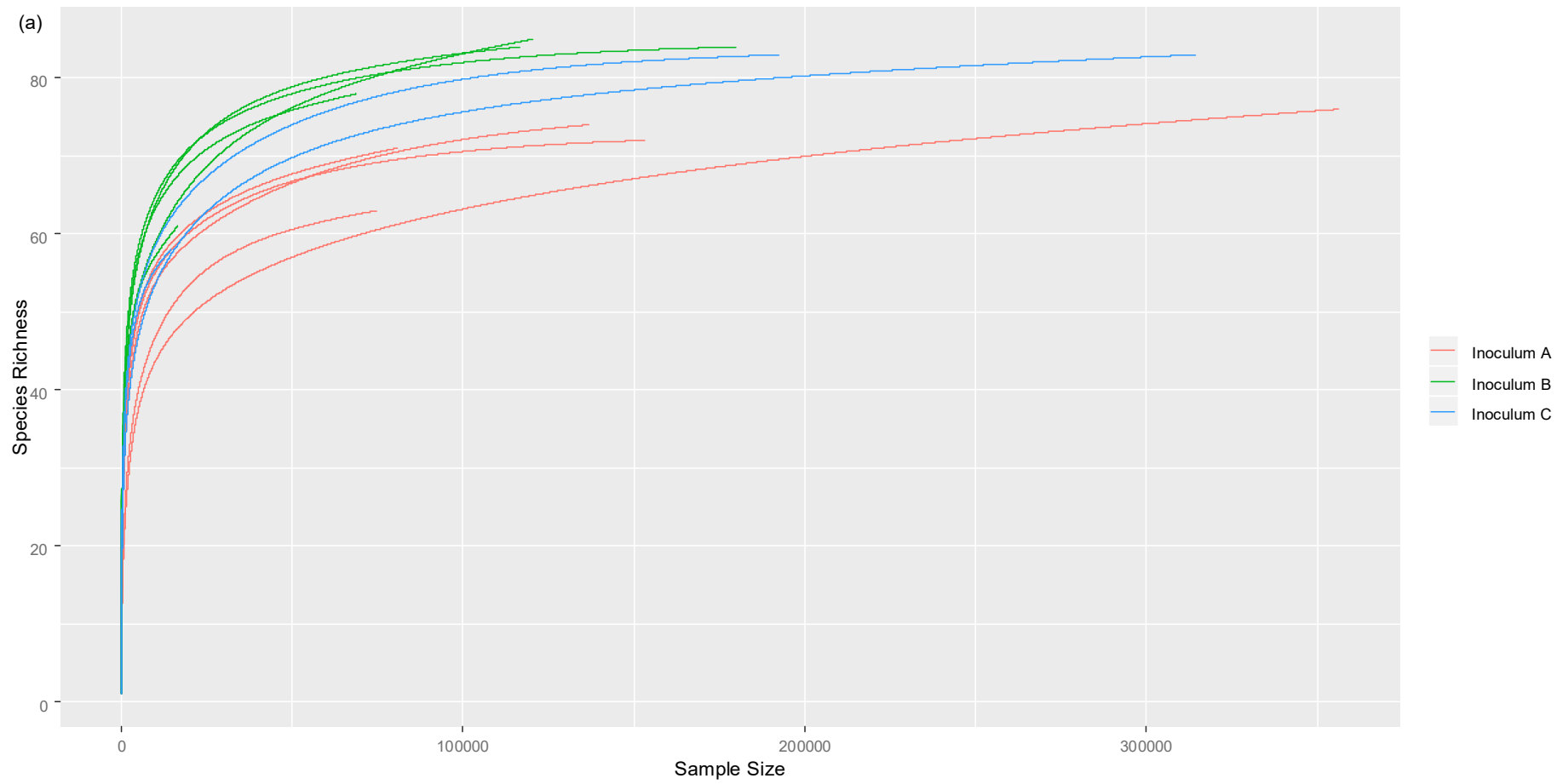
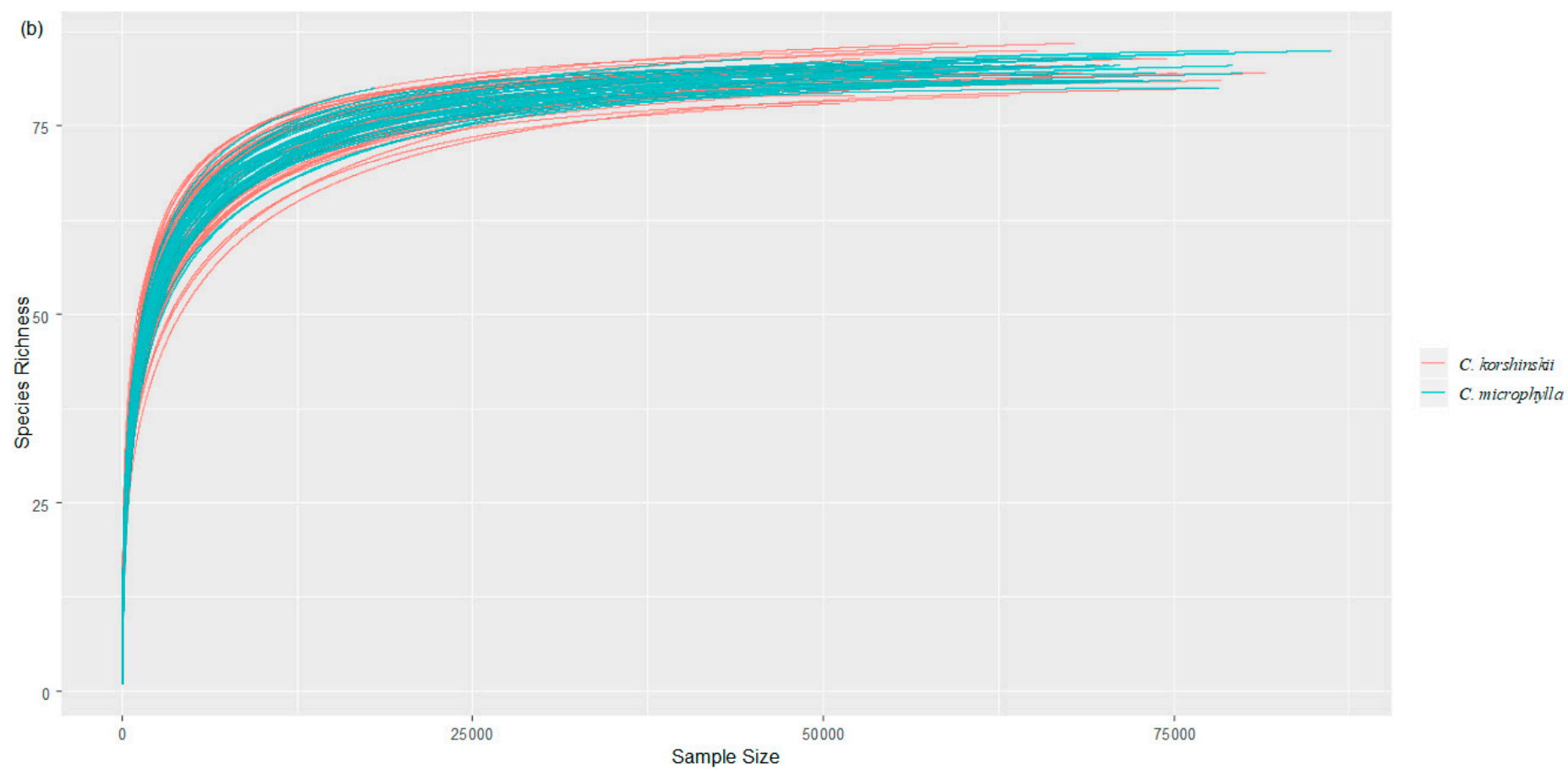
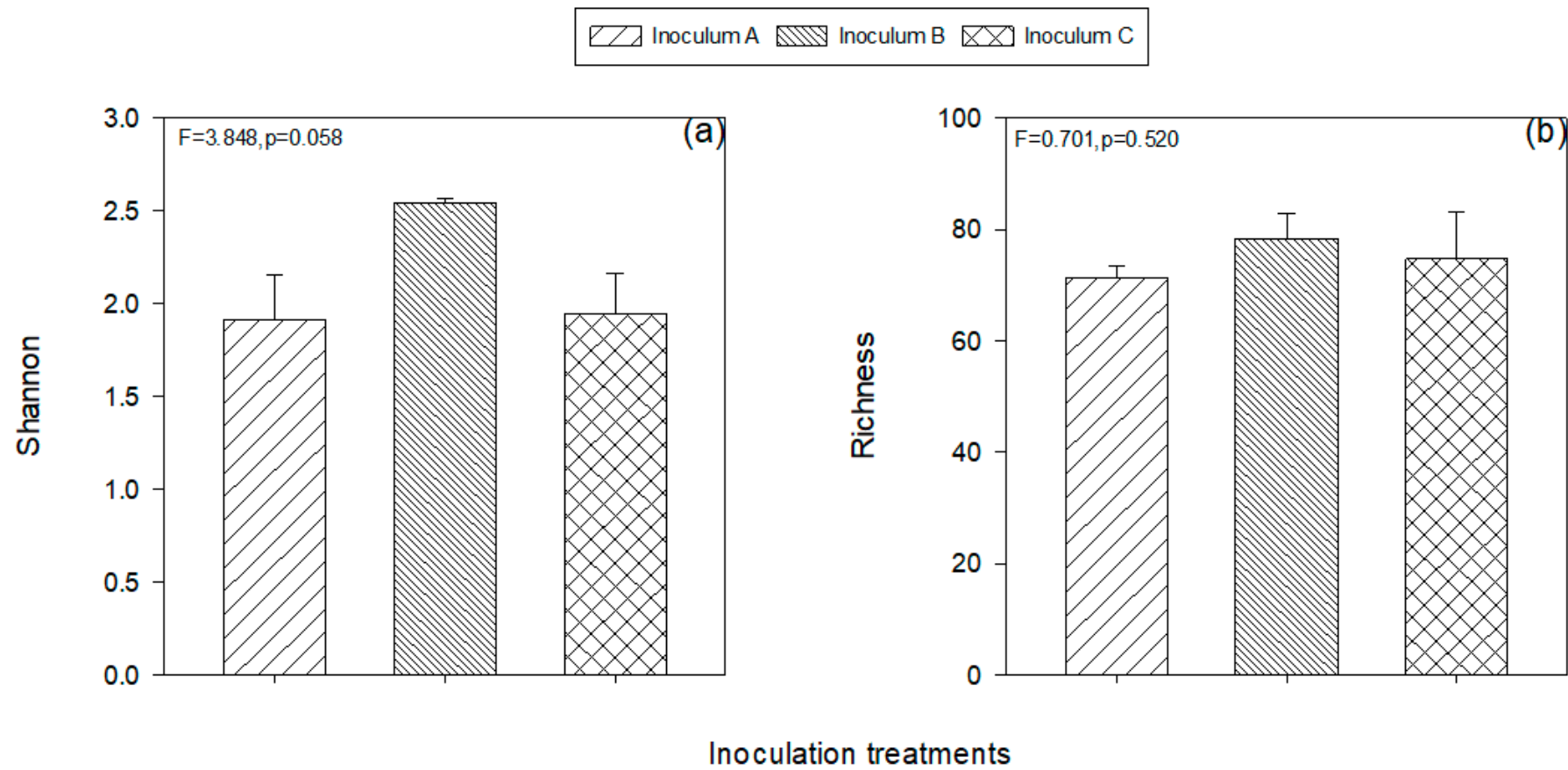


**Figure S1.** Spore density of AMF in soil samples taken in 2014 (a) and AMF inoculum *C. korshinskii* (A), *H. laeve* (B) and *C. microphylla* (C) prepared in 2016 (b). Spores were extracted from 20g soil samples and then counted.

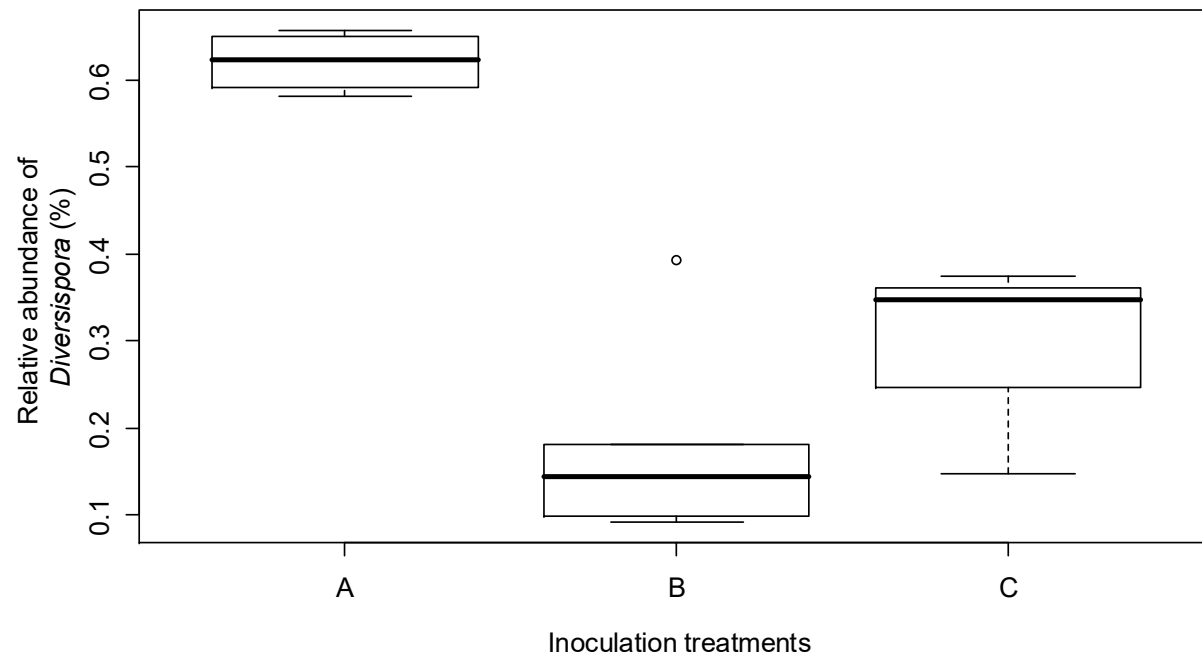




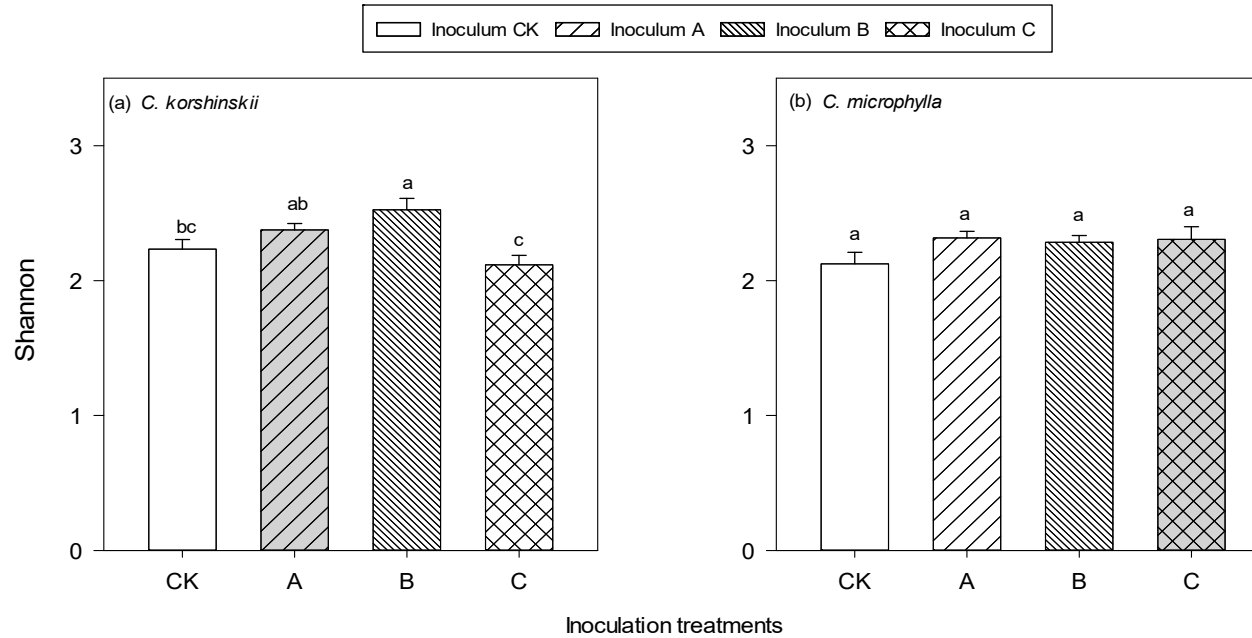
**Figure S2.** Rarefaction curves of AMF species richness along the number of sequences obtained from the 3 inocula (a) and rhizospheres of 2 *Caragana* plant roots (b). The rarefaction curve suggested that our sampling captured most of the AMF community.



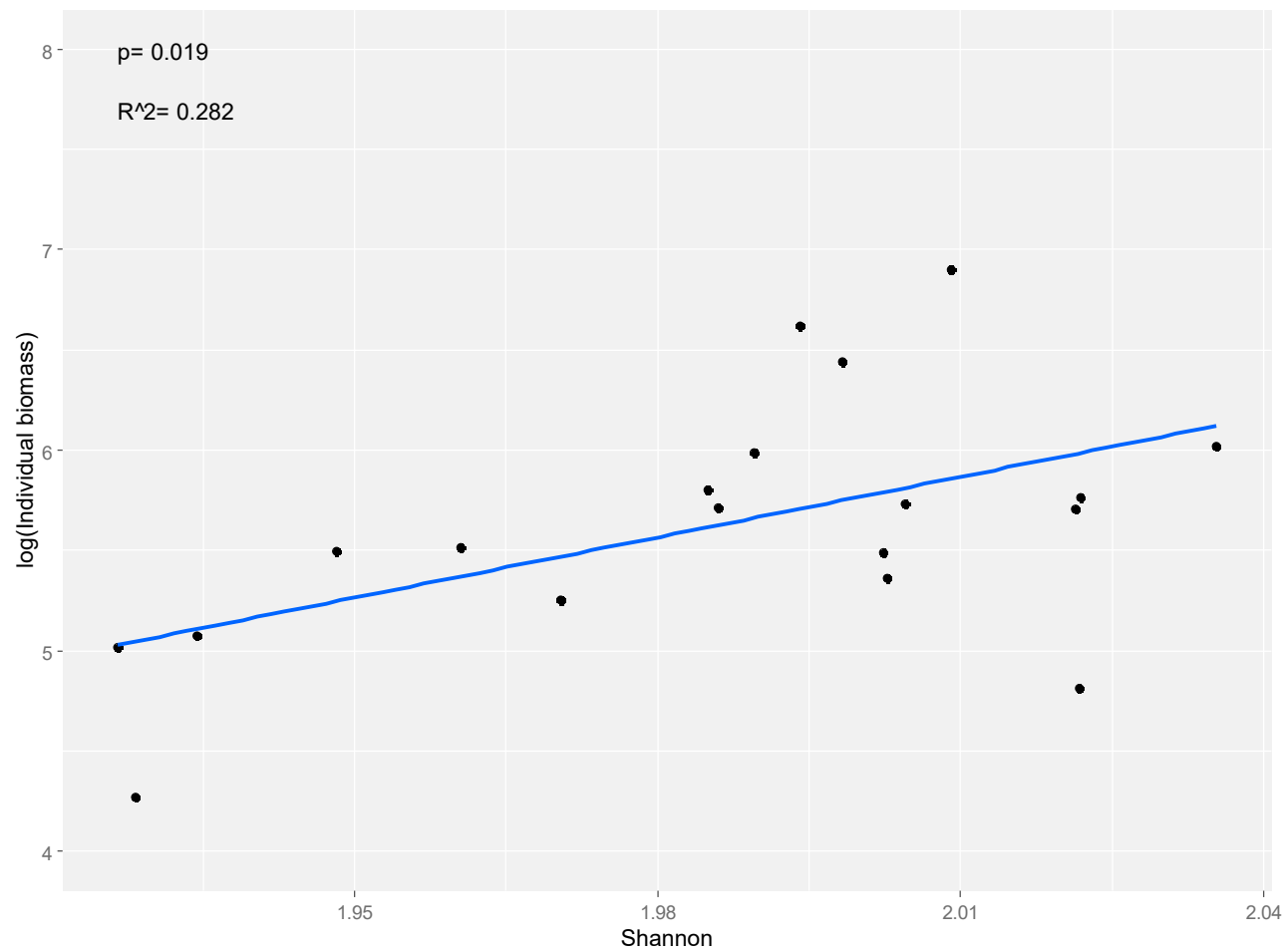
**Figure S3.** Shannon diversity (a) and species richness (b) of AMF community associated with inoculum A, B, and C. No significant difference was found among the inoculum A, B and C.



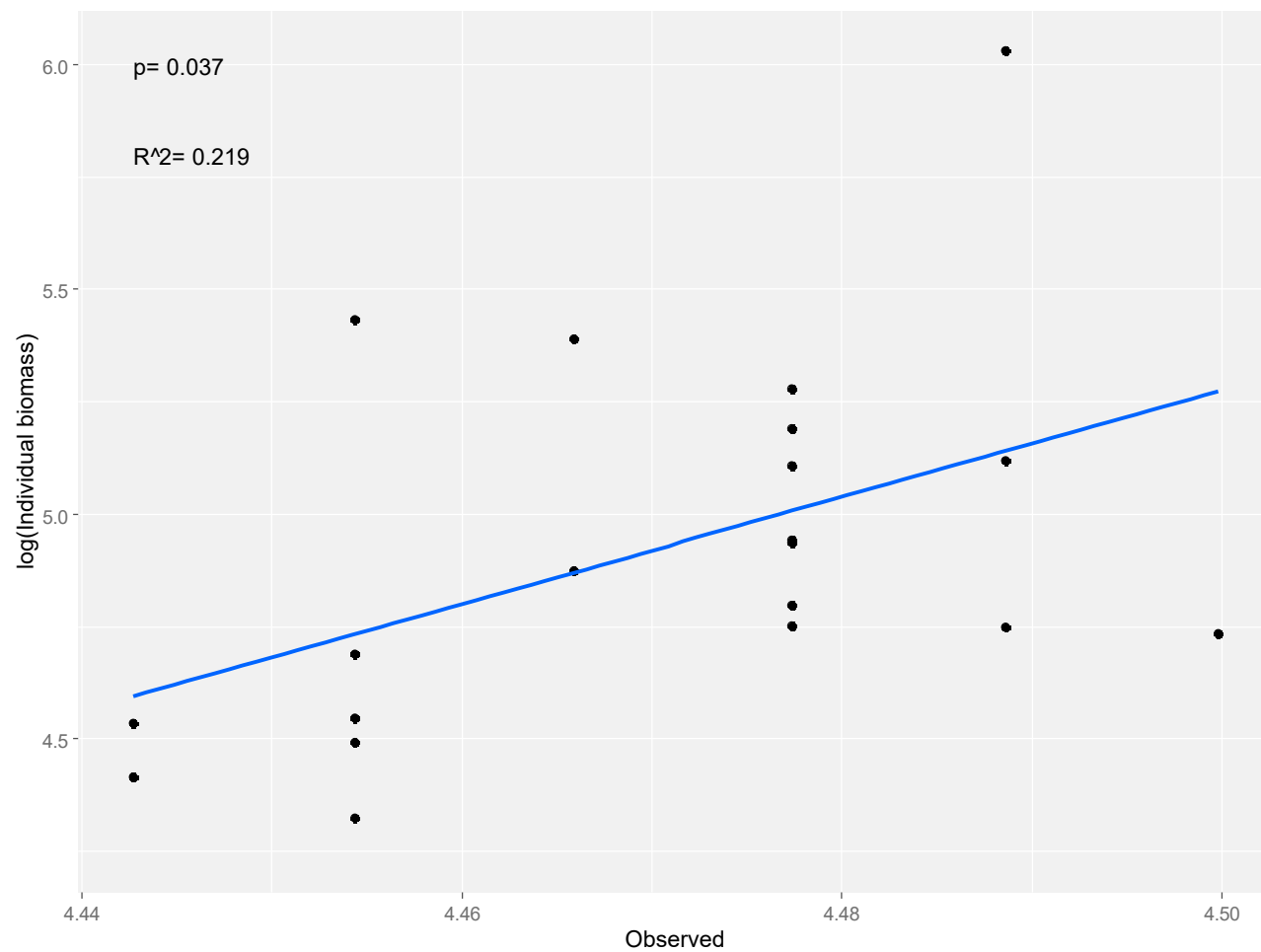
**Figure S4.** The relative abundance of AMF belonging to *Diversispora* associated with 3 inocula. Apparently, *Diversispora* was significantly enriched in inoculum A.



**Figure S5.** Shannon diversity of AMF associated with *C. korshinskii*, and *C. microphylla* plants with different AMF inoculation treatments. Inoculation treatments including inocula originating from rhizosphere of *C. korshinskii* (A), *H. leave* (B), *C. microphylla* (C), and sterilized control (CK). Bars indicate means with standard error (n=10). Different letters above bars indicated significant differences at  $P < 0.05$  level according to Tukey's test. Gray bars indicated home AMF and plant combinations. A two-way ANOVA revealed significant effects of inoculum sources ( $F=5.027$ ,  $P=0.003$ ) but not host plant species on the Shannon diversity of AMF. The interaction between host plant species and inoculum sources was not significant ( $F=3.901$ ,  $P=0.012$ ).



**Figure S6.** Linear regression indicating a significant positive relationship between *C. korshinskii* plant shoot biomass and the Shannon diversity of rhizosphere AMF community.



**Figure S7.** Linear regression indicating a significant positive relationship between *C. microphylla* plant shoot biomass and the richness of rhizosphere AMF community.



**Table S1.** Results of indicator species analysis of AMF genus associated with 3 inocula. Strongly correlated with the plant biomass, *Diversispora* was the indicator of inoculum A.

Genus	A	B	C	best	P
<i>Glomus</i>	0.9999	0.1245	0.0081	C	0.0241
<i>Diversispora</i>	0.0004	0.9866	0.8453	A	0.0012
<i>Claroideoglomus</i>	0.0003	0.9566	0.8882	A	0.0009
<i>Archaeospora</i>	0.9562	0.0001	0.9981	B	0.0003

**Table S2.** Results of indicator species analysis of AMF OTUs associated with two host species. Among 35 significant indicators OTUs, 17 OTUs were the indicator of *C. korshinskii* and 18 OTUs were the indicator of *C. microphylla*.

	<i>C.</i> <i>korshinskii</i>	<i>C.</i> <i>microphylla</i>	best	P
OTU_122	1.0000	0.0001	2	0.0002
OTU_10	1.0000	0.0001	2	0.0002
OTU_117	1.0000	0.0001	2	0.0002
OTU_101	1.0000	0.0002	2	0.0004
OTU_27	1.0000	0.0001	2	0.0002
OTU_23	0.9762	0.0239	2	0.0472
OTU_70	0.0003	0.9998	1	0.0006
OTU_3	0.0001	1.0000	1	0.0002
OTU_15	0.0005	0.9996	1	0.0010
OTU_174	0.0011	0.9990	1	0.0022
OTU_100	0.0016	0.9985	1	0.0032
OTU_107	0.0002	0.9999	1	0.0004
OTU_17	0.0002	0.9999	1	0.0004
OTU_45	0.0131	0.9875	1	0.0260
OTU_139	0.0241	0.9776	1	0.0476
OTU_181	0.9999	0.0002	2	0.0004
OTU_55	0.9999	0.0003	2	0.0006
OTU_124	0.9954	0.0047	2	0.0094
OTU_151	1.0000	0.0001	2	0.0002
OTU_190	1.0000	0.0001	2	0.0002

OTU_83	0.9983	0.0019	2	0.0038
OTU_143	1.0000	0.0001	2	0.0002
OTU_1	0.9990	0.0011	2	0.0022
OTU_183	0.9985	0.0017	2	0.0034
OTU_104	1.0000	0.0001	2	0.0002
OTU_148	1.0000	0.0001	2	0.0002
OTU_172	1.0000	0.0001	2	0.0002
OTU_42	0.0001	1.0000	1	0.0002
OTU_24	0.0001	1.0000	1	0.0002
OTU_73	0.0001	1.0000	1	0.0002
OTU_114	0.0001	1.0000	1	0.0002
OTU_16	0.0001	1.0000	1	0.0002
OTU_208	0.0178	0.9948	1	0.0353
OTU_6	0.0055	0.9979	1	0.0110
OTU_19	0.0156	0.9861	1	0.0310

---

**Table S3.** Standardized total effects of the SEM. According to the total effects, inoculum A influenced the *C. korshinskii* plant N, P uptake and shoot biomass.

	Inoculum A	<i>Diversispora</i>	Foliar.P	Foliar.N
Diversispora	0.480	0.000	0.000	0.000
Foliar.P	0.603	0.000	0.000	0.000
Foliar.N	0.436	0.000	0.000	0.000
Shoot biomass	0.486	0.667	0.465	-0.262