

Table S1. Results of permutational multivariate analysis of variance (PERMANOVA) based on soil bacterial ASV counts using 999 permutations for different soil depths in the agrosilvopastoral and syntropic alley-cropping system

agrosilvopastoral agroforestry + open cropland					
	Df	Sum sqs	R^2	F	p-value
soil depth ^a	1	3.6748	0.2225	20.032	0.001
residual	70	12.8416	0.7775		
total	71	16.5164	1.0		

syntropic agroforestry					
	Df	Sum sqs	R^2	F	p-value
soil depth ^a	1	0.7483	0.1658	4.3731	0.001
residual	10	3.7643	0.8342		
total	11	4.5125	1.0		

Df = degrees of freedom; Sum Sq = sum of squares; R^2 = coefficient of determination; F = pseudo – F ratio; p-values indicating significant differences are printed in bold

^a = sampling depth of topsoil (0-30 cm) and subsoil (30-60 cm)

Table S2. Results of permutational multivariate analysis of variance (PERMANOVA) based on soil bacterial ASV counts using 999 permutations for different sampling locations in topsoil and subsoil of the agrosilvopastoral alley-cropping system

agrosilvopastoral agroforestry + open cropland topsoil					
	Df	Sum sqs	R^2	F	p-value
sampling location ^a	5	1.1809	0.2308	1.7999	0.001
residual	30	3.9368	0.7693		
total	35	5.1177	1.0		

agrosilvopastoral agroforestry + open cropland subsoil					
	Df	Sum sqs	R^2	F	p-value
sampling location ^a	5	1.4167	0.1834	1.3477	0.001
residual	30	6.3072	0.8166		
total	35	7.7238	1.0		

Df = degrees of freedom; Sum Sq = sum of squares; R^2 = coefficient of determination; F = pseudo – F ratio; p-values indicating significant differences are printed in bold

^a = sampling locations in the agrosilvopastoral (tree row, 1, 4, 8, and 18 m crop row and open cropland) and syntropic (tree row, 5 m crop row) alley-cropping system

Table S3. Results of permutational multivariate analysis of variance (PERMANOVA) based on soil bacterial ASV counts using 999 permutations for different sampling locations in topsoil and subsoil of the syntropic alley-cropping system

syntropic agroforestry topsoil					
	Df	Sum sqs	R^2	F	p-value
sampling location ^a	1	0.3209	0.2054	2.5847	0.001
residual	10	1.2414	0.7946		
total	11	1.5622	1.0		

syntropic agroforestry subsoil					
	Df	Sum sqs	R^2	F	p-value
sampling location ^a	1	0.4080	0.1853	2.2738	0.003
residual	10	1.7941	0.8148		
total	11	2.2021	1.0		

Df = degrees of freedom; Sum Sqs = sum of squares; R^2 = coefficient of determination; F = pseudo – F ratio; p-values indicating significant differences are printed in bold

^a = sampling locations in the agrosilvopastoral (tree row, 1, 4, 8, and 18 m crop row and open cropland) and syntropic (tree row, 5 m crop row) alley-cropping system

Table S4. Results of the pairwise permutational multivariate analysis of variance (PERMANOVA) based on soil bacterial ASV counts using 999 permutations for different sampling locations in topsoil and subsoil of the agrosilvopastoral alley-cropping system

agrosilvopastoral agroforestry + open cropland topsoil				
Pairwise comparison	F	R²	p-value unadj.	p-value adj.
tree row vs. 1 m crop row	1.4969	0.1302	0.016	0.0240
tree row vs. 4 m crop row	1.8200	0.1540	0.004	0.0075
tree row vs. 8 m crop row	2.1371	0.1761	0.003	0.0075
tree row vs. 18 m crop row	1.9387	0.1624	0.003	0.0075
tree row vs. open cropland	2.5941	0.2060	0.004	0.0075
1 m crop row vs. 4 m crop row	0.8054	0.0745	0.877	0.8770
1 m crop row vs. 8 m crop row	1.2475	0.1109	0.099	0.1325
1 m crop row vs. 18 m crop row	1.1557	0.1036	0.14	0.1500
1 m crop row vs. open cropland	2.2497	0.1837	0.004	0.0075
4 m crop row vs. 8 m crop row	1.2621	0.1121	0.106	0.1325
4 m crop row vs. 18 m crop row	1.1324	0.1017	0.128	0.1477
4 m crop row vs. open cropland	2.1927	0.1798	0.005	0.0083
8 m crop row vs. 18 m crop row	1.7180	0.1466	0.004	0.0075
8 m crop row vs. open cropland	3.2749	0.2467	0.002	0.0075
18 m crop row vs. open cropland	2.2027	0.1805	0.003	0.0075
agrosilvopastoral agroforestry + open cropland subsoil				
Pairwise comparison	F	R²	p-value unadj.	p-value adj.
tree row vs. 1 m crop row	1.0470	0.0948	0.311	0.4241
tree row vs. 4 m crop row	1.1581	0.1038	0.168	0.2800
tree row vs. 8 m crop row	1.6647	0.1427	0.02	0.0500
tree row vs. 18 m crop row	1.4509	0.1267	0.039	0.0788
tree row vs. open cropland	1.8628	0.1570	0.017	0.0500
1 m crop row vs. 4 m crop row	0.7994	0.0740	0.912	0.9120
1 m crop row vs. 8 m crop row	1.1157	0.1004	0.22	0.3300
1 m crop row vs. 18 m crop row	0.8669	0.0798	0.854	0.9120
1 m crop row vs. open cropland	1.7145	0.1464	0.011	0.0413
4 m crop row vs. 8 m crop row	0.8861	0.0814	0.751	0.8665
4 m crop row vs. 18 m crop row	1.0098	0.0917	0.407	0.5088
4 m crop row vs. open cropland	1.7095	0.1460	0.011	0.0413
8 m crop row vs. 18 m crop row	1.2587	0.1118	0.042	0.0788
8 m crop row vs. open cropland	1.9677	0.1644	0.004	0.0300
18 m crop row vs. open cropland	1.8136	0.1535	0.003	0.0300

Df = degrees of freedom; Sum Sqs = sum of squares; R² = coefficient of determination; F = pseudo – F ratio; p-values indicating significant differences are printed in bold

Table S5. Results of permutational multivariate analysis of variance (PERMANOVA) based on soil fungal ASV counts using 999 permutations for different soil depths in the agrosilvopastoral and syntropic alley-cropping system

agrosilvopastoral agroforestry + open cropland					
	Df	Sum sqs	R^2	F	p-value
soil depth ^a	1	1.453	0.0746	5.6388	0.001
residual	70	18.038	0.9255		
total	71	19.491	1.0		

syntropic agroforestry					
	Df	Sum sqs	R^2	F	p-value
soil depth ^a	1	0.3079	0.0530	1.2299	0.215
residual	10	5.5070	0.9471		
total	11	5.8148	1.0		

Df = degrees of freedom; Sum Sq = sum of squares; R^2 = coefficient of determination; F = pseudo – F ratio; p-values indicating significant differences are printed in bold

^a = sampling depth of topsoil (0-30 cm) and subsoil (30-60 cm)

Table S6. Results of permutational multivariate analysis of variance (PERMANOVA) based on soil fungal ASV counts using 999 permutations for different sampling locations in topsoil and subsoil of the agrosilvopastoral alley-cropping system

agrosilvopastoral agroforestry + open cropland topsoil					
	Df	Sum sqs	R^2	F	p-value
sampling location ^a	5	2.4345	0.3055	2.6396	0.001
residual	30	5.5339	0.6945		
total	35	7.9685	1.0		

agrosilvopastoral agroforestry + open cropland subsoil					
	Df	Sum sqs	R^2	F	p-value
sampling location ^a	5	2.1377	0.2123	1.617	0.001
residual	30	7.9320	0.7877		
total	35	10.0697	1.0		

Df = degrees of freedom; Sum Sq = sum of squares; R^2 = coefficient of determination; F = pseudo – F ratio; p-values indicating significant differences are printed in bold

^a = sampling locations in the agrosilvopastoral (tree row, 1, 4, 8, and 18 m crop row and open cropland) and syntropic (tree row, 5 m crop row) alley-cropping system

Table S7. Results of permutational multivariate analysis of variance (PERMANOVA) based on soil fungal ASV counts using 999 permutations for different sampling locations in topsoil and subsoil of the syntropic alley-cropping system

syntropic agroforestry topsoil					
	Df	Sum sqs	R^2	F	p-value
sampling location ^a	1	0.720	0.2669	3.6404	0.003
residual	10	1.9778	0.7331		
total	11	2.6978	1.0		

syntropic agroforestry subsoil					
	Df	Sum sqs	R^2	F	p-value
sampling location ^a	1	0.9944	0.3540	5.4796	0.002
residual	10	1.8148	0.6460		
total	11	2.8092	1.0		

Df = degrees of freedom; Sum Sqs = sum of squares; R^2 = coefficient of determination; F = pseudo – F ratio; p-values indicating significant differences are printed in bold

^a = sampling locations in the agrosilvopastoral (tree row, 1, 4, 8, and 18 m crop row and open cropland) and syntropic (tree row, 5 m crop row) alley-cropping system

Table S8. Results of the pairwise permutational multivariate analysis of variance (PERMANOVA) based on soil fungal ASV counts using 999 permutations for different sampling locations in topsoil and subsoil of the agrosilvopastoral alley-cropping system

agrosilvopastoral agroforestry + open cropland topsoil				
Pairwise comparison	F	R²	p-value unadj.	p-value adj.
tree row vs. 1 m crop row	3.1969	0.2422	0.003	0.0075
tree row vs. 4 m crop row	2.8704	0.2230	0.001	0.0050
tree row vs. 8 m crop row	3.4656	0.2574	0.002	0.0060
tree row vs. 18 m crop row	3.1228	0.2380	0.001	0.0050
tree row vs. open cropland	3.6211	0.2658	0.001	0.0050
1 m crop row vs. 4 m crop row	0.7701	0.0715	0.876	0.8760
1 m crop row vs. 8 m crop row	0.8517	0.0785	0.706	0.8146
1 m crop row vs. 18 m crop row	0.9006	0.0826	0.658	0.8146
1 m crop row vs. open cropland	3.9235	0.2818	0.005	0.0083
4 m crop row vs. 8 m crop row	0.8173	0.0756	0.79	0.8464
4 m crop row vs. 18 m crop row	0.9615	0.0877	0.548	0.7473
4 m crop row vs. open cropland	3.6297	0.2663	0.004	0.0075
8 m crop row vs. 18 m crop row	1.0066	0.0915	0.464	0.6960
8 m crop row vs. open cropland	4.9841	0.3326	0.002	0.0060
18 m crop row vs. open cropland	3.6748	0.2687	0.004	0.0075
agrosilvopastoral agroforestry + open cropland subsoil				
Pairwise comparison	F	R²	p-value unadj.	p-value adj.
tree row vs. 1 m crop row	1.3715	0.1206	0.072	0.1200
tree row vs. 4 m crop row	2.0275	0.1686	0.016	0.0300
tree row vs. 8 m crop row	1.9060	0.1601	0.008	0.0200
tree row vs. 18 m crop row	2.0750	0.1718	0.011	0.0236
tree row vs. open cropland	2.6636	0.2103	0.004	0.0188
1 m crop row vs. 4 m crop row	0.8901	0.0817	0.718	0.8285
1 m crop row vs. 8 m crop row	0.7661	0.0712	0.967	0.9670
1 m crop row vs. 18 m crop row	0.9774	0.0890	0.481	0.7215
1 m crop row vs. open cropland	2.1400	0.1763	0.007	0.0200
4 m crop row vs. 8 m crop row	0.9161	0.0839	0.691	0.8285
4 m crop row vs. 18 m crop row	0.9161	0.0839	0.596	0.8127
4 m crop row vs. open cropland	2.3215	0.1884	0.005	0.0188
8 m crop row vs. 18 m crop row	0.8220	0.0760	0.782	0.8379
8 m crop row vs. open cropland	2.3156	0.1880	0.002	0.0188
18 m crop row vs. open cropland	2.3022	0.1871	0.003	0.0188

Df = degrees of freedom; Sum Sqs = sum of squares; R² = coefficient of determination; F = pseudo – F ratio; p-values indicating significant differences are printed in bold