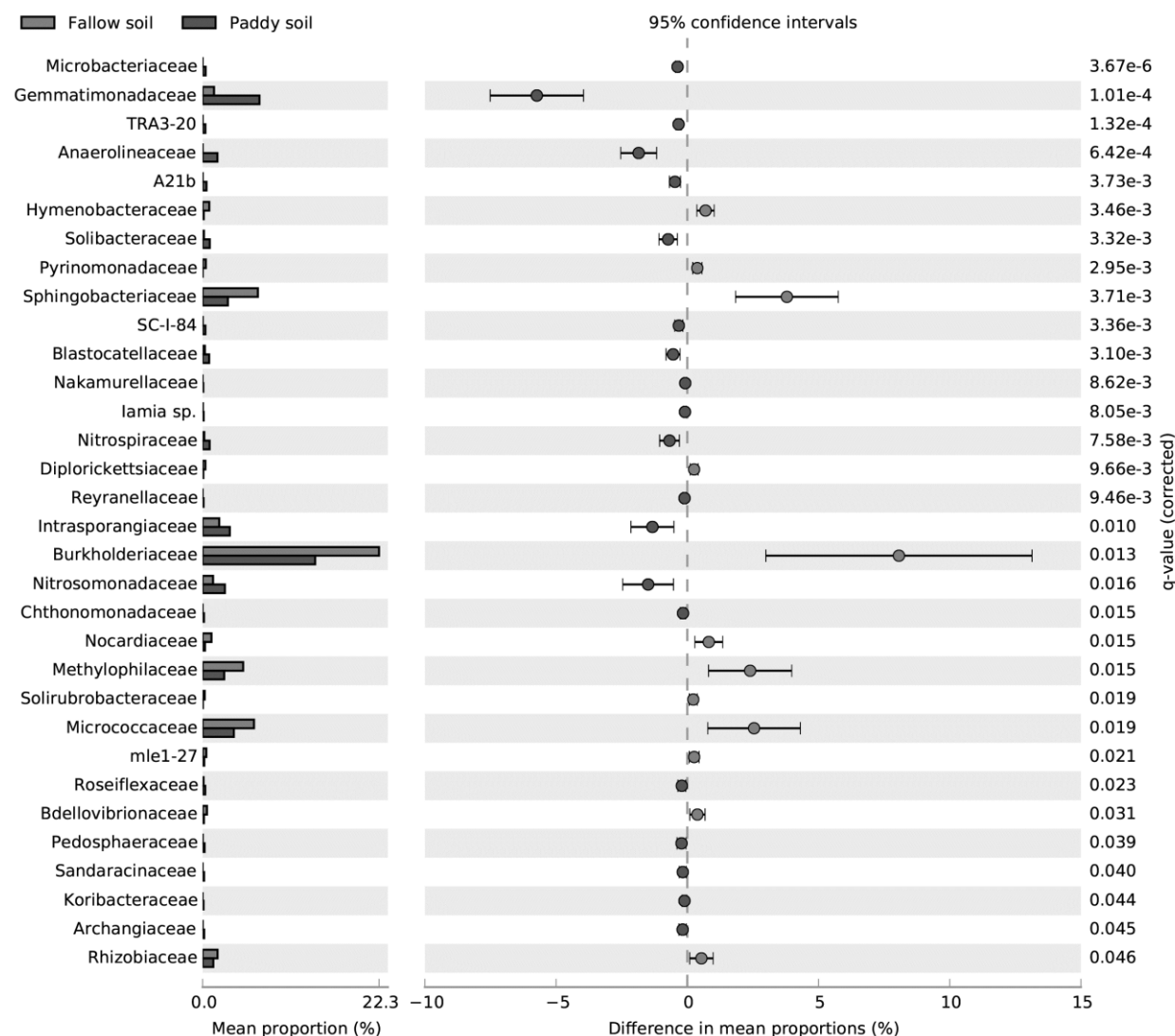**Figure S1**. Significantly abundant orders in the fallow and paddy soil as determined by Welch's *t*-test with a Benjamini-Hochberg FDR test correction to calculate *q*-values (Corrected *p*-values).

Figure S2. Significantly abundant families in the fallow and paddy soil as determined by Welch's *t*-test with a Benjamini–Hochberg FDR test correction to calculate *q*-values.

Table S1. Read counts of paddy and fallow soil samples after removal of chloroplast, mitochondria and other plant-derived contaminants.

S. No	*Paddy soil samples	Read Count	*Fallow soil samples	Read Count
1	P11	28,209	F11	26,361
2	P12	24,246	F12	33,902
3	P13	26,156	F13	33,551
4	P14	33,576	F14	30,998
5	P21	38,808	F21	29,025

6	P22	32,882	F22	42,652
7	P23	32,154	F23	38,197
8	P24	18,817	F24	38,253
9	P31	31,766	F31	35,135
10	P32	27,236	F32	28,786
11	P33	29,038	F33	30,274
12	P34	36,970	F34	36,842
13	P41	21,724	F41	22,591
14	P42	29,380	F42	31,444
15	P43	36,068	F43	30,208
16	P44	16,717	F44	36,388
	Average reads	**28,984**	**Average reads**	**32,788**

*Paddy soil samples (n = 16): P11-14 (Field 1), P21-24 (Field 2), P31-34 (Field 3), P41-44 (Field 4), *Fallow soil samples (n = 16): F11-14 (Field 1), F21-24 (Field 2), F31-34 (Field 3), F41-44 (Field 4).

Table S2. The Pairwise Kruskal-Wallis comparisons of alpha diversities in each soil types.

Group 1	Group 2	H	*p*-value	α-diversity
Paddy soil (n=16)	Fallow soil (n=16)	5.28648	0.02	Chao 1
Paddy soil (n=16)	Fallow soil (n=16)	0.410511	0.0001	Faith pd
Paddy soil (n=16)	Fallow soil (n=16)	0.4	0.5	Pielou_e
Paddy soil (n=16)	Fallow soil (n=16)	3.840909	0.04	Shannon index
Paddy soil (n=16)	Fallow soil (n=16)	5.638818	0.017567	Observed species

Table S3. Permutational MANOVA results using weighted and unweighted UniFrac distances for the soil types.

Group 1	Group 2	Permutations	pseudo-F	*p*-value	Unifrac distances
Fallow soil (n=16)	Paddy soil (n=16)	999	9.15229	0.001	Unweighted
Fallow soil (n=16)	Paddy soil (n=16)	999	7.41567	0.001	Weighted