

Supplementary Material

Table S2. Comparisons of functional community profiles of bacteria in different treatments using FAPROTAX.

Function/guild	Control	M_Bulk	WIM_Bulk	M_Rhizosphere	WIM_Rhizosphere
	(%)	(%)	(%)	(%)	(%)
methanotrophy	0.01	0.00	0.00	0.00	0.00
acetoclastic methanogenesis	0.00	0.00	0.00	0.00	0.00
methanogenesis by disproportionation of methyl groups	0.00	0.00	0.00	0.00	0.00
methanogenesis using formate	0.00	0.00	0.00	0.00	0.00
methanogenesis by CO ₂ reduction with H ₂	0.00	0.00	0.00	0.00	0.00
methanogenesis by eduction of methyl compounds with H ₂	0.00	0.00	0.00	0.00	0.00
hydrogenotrophic methanogenesis	0.00	0.00	0.00	0.00	0.00
methanogenesis	0.00	0.00	0.00	0.00	0.00
methanol oxidation	0.35	0.39	0.39	0.46	0.15
methylotrophy	0.35	0.40	0.40	0.47	0.15
aerobic ammonia oxidation	0.09	0.11	0.03	0.02	0.00
aerobic nitrite oxidation	0.10	0.02	0.01	0.02	0.02
nitrification	0.19	0.12	0.04	0.03	0.02
sulfate respiration	0.00	0.00	0.00	0.01	0.01
sulfur respiration	0.00	0.00	0.00	0.00	0.00
dark sulfite oxidation	0.00	0.00	0.00	0.00	0.00
sulfite respiration	0.00	0.00	0.00	0.00	0.00
thiosulfate respiration	0.00	0.00	0.00	0.00	0.00
respiration of sulfur compounds	0.00	0.00	0.00	0.01	0.01
arsenate detoxification	0.00	0.00	0.00	0.00	0.00

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arsenate respiration	0.00	0.00	0.00	0.00	0.00
dissimilatory arsenate reduction	0.00	0.00	0.00	0.00	0.00
arsenite oxidation detoxification	0.00	0.00	0.00	0.00	0.00
arsenite oxidation energy yielding	0.00	0.00	0.00	0.00	0.00
dissimilatory arsenite oxidation	0.00	0.00	0.00	0.00	0.00
anammox	0.00	0.00	0.00	0.00	0.00
nitrate denitrification	0.02	0.02	0.02	0.06	0.02
nitrite denitrification	0.02	0.02	0.02	0.06	0.02
nitrous oxide denitrification	0.02	0.02	0.02	0.06	0.02
denitrification	0.02	0.02	0.02	0.06	0.02
chitinolysis	0.71	0.74	0.96	2.29	2.57
knallgas bacteria	0.00	0.00	0.00	0.00	0.00
dark hydrogen oxidation	0.02	0.14	0.09	0.33	0.41
nitrogen fixation	0.08	0.13	0.09	0.29	0.21
nitrate ammonification	0.00	0.00	0.00	0.12	0.03
nitrite ammonification	0.00	0.00	0.00	0.12	0.03
nitrite respiration	0.03	0.06	0.14	0.20	0.09
cellulolysis	0.42	0.21	0.18	1.51	1.38
xylanolysis	0.38	0.08	0.08	1.23	1.19
dark sulfide oxidation	0.00	0.00	0.00	0.00	0.00
dark sulfur oxidation	0.00	0.00	0.00	0.00	0.00
dark thiosulfate oxidation	0.00	0.00	0.01	0.00	0.00
dark oxidation of sulfur compounds	0.00	0.01	0.01	0.07	0.09
manganese oxidation	0.00	0.00	0.00	0.03	0.01
manganese respiration	0.00	0.00	0.00	0.00	0.00

ligninolysis	0.00	0.00	0.00	0.00	0.00
fermentation	0.76	0.57	0.73	1.88	1.24
aerobic chemoheterotrophy	19.42	10.11	10.41	28.10	26.70
invertebrate parasites	0.00	0.00	0.00	0.00	0.00
human pathogens septicemia	0.00	0.00	0.00	0.00	0.00
human pathogens pneumonia	0.41	1.15	1.32	0.40	0.39
human pathogens nosocomia	0.00	0.00	0.00	0.00	0.00
human pathogens meningitis	0.00	0.00	0.00	0.00	0.00
human pathogens gastroenteritis	0.00	0.00	0.00	0.00	0.00
human pathogens diarrhea	0.00	0.00	0.00	0.00	0.00
human pathogens all	0.41	1.16	1.37	1.04	0.57
fish parasites	0.00	0.00	0.00	0.00	0.00
human gut	0.01	0.01	0.01	0.60	0.15
human associated	0.42	1.18	1.38	1.64	0.72
mammal gut	0.01	0.01	0.01	0.60	0.15
animal parasites or symbionts	0.42	1.18	1.38	1.64	0.72
plant pathogen	0.00	0.00	0.00	0.18	0.05
oil bioremediation	0.00	0.00	0.00	0.00	0.00
aromatic hydrocarbon degradation	0.00	0.00	0.00	0.00	0.00
aromatic compound degradation	11.29	0.50	1.38	1.47	1.31
aliphatic non methane hydrocarbon degradation	0.27	0.05	0.02	0.01	0.00
hydrocarbon degradation	2.78	0.90	0.24	0.17	0.10
dark iron oxidation	0.00	0.00	0.00	0.01	0.02
iron respiration	0.00	0.00	0.00	0.00	0.00
nitrate respiration	0.05	0.17	0.30	1.05	0.46

nitrate reduction	0.22	0.38	0.62	3.60	2.64
nitrogen respiration	0.05	0.17	0.30	1.05	0.46
fumarate respiration	0.00	0.00	0.00	0.00	0.00
intracellular parasites	0.02	0.09	0.06	0.25	0.22
chlorate reducers	0.00	0.00	0.00	0.00	0.00
predatory or exoparasitic	0.89	0.77	0.72	0.15	0.14
chloroplasts	0.00	0.00	0.00	0.00	0.00
nonphotosynthetic cyanobacteria	0.01	0.02	0.02	0.00	0.00
photosynthetic cyanobacteria	0.57	1.20	0.10	0.28	0.31
anoxygenic photoautotrophy H ₂ oxidizing	0.00	0.00	0.00	0.00	0.00
anoxygenic photoautotrophy S oxidizing	0.12	0.05	0.05	0.01	0.01
anoxygenic photoautotrophy Fe oxidizing	0.00	0.00	0.00	0.00	0.00
anoxygenic photoautotrophy	0.26	0.10	0.11	0.05	0.04
oxygenic photoautotrophy	0.57	1.20	0.10	0.28	0.31
photoautotrophy	0.83	1.31	0.22	0.32	0.35
aerobic anoxygenic phototrophy	0.00	0.00	0.00	0.00	0.00
photoheterotrophy	0.28	0.20	0.16	0.10	0.15
phototrophy	0.96	1.46	0.31	0.38	0.47
plastic degradation	0.00	0.00	0.00	0.00	0.00
ureolysis	0.01	0.06	0.09	0.10	0.04
reductive acetogenesis	0.00	0.00	0.00	0.00	0.00
chemoheterotrophy	20.99	11.60	12.29	31.51	29.81

M, plastic mulching; WIM, the combination of freezing saline water irrigation and plastic mulching.