Supplementary Material

Distinct responses of active and total bacterial communities to inorganic fertilization in a 30-year experimental site

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Figure captions

Fig. S1 Absolute abundances (mean±SE) of total bacteria in the fertilization treatments. CK, no fertilizer; PK, chemical phosphorus and potassium fertilizer; NK, chemical nitrogen and K fertilizer; NP, chemical N and P fertilizer; NPK, chemical N, P and K fertilizer. Different letters indicate significant differences.

Fig.S2 Relative abundances of the 16S rRNA gene and 16S rRNA in the active and total bacterial communities (phyla) in the fertilization treatments. CK, no fertilizer; PK, chemical phosphorus and potassium fertilizer; NK, chemical nitrogen and K fertilizer; NP, chemical N and P fertilizer; NPK, chemical N, P and K fertilizer.

Fig.S3 Relative abundances (mean±SE) of the dominant *Cyanobacteria* and *Proteobacteria* communities (orders) in the fertilization treatments. CK, no fertilizer; PK, chemical phosphorus and potassium fertilizer; NK, chemical nitrogen and K fertilizer; NP, chemical N and P fertilizer; NPK, chemical N, P and K fertilizer. Different letters indicate significant differences.

Table S1 Soil properties (mean±SE) in the fertilization treatments. WC, water content; SOM, soil organic-matter content; TC, total carbon content; TN, total nitrogen content; TP, total phosphorus content; TS, total sulphur content; TK, total potassium content; BC, biomass C content; BN, biomass N content; BP: biomass P content.

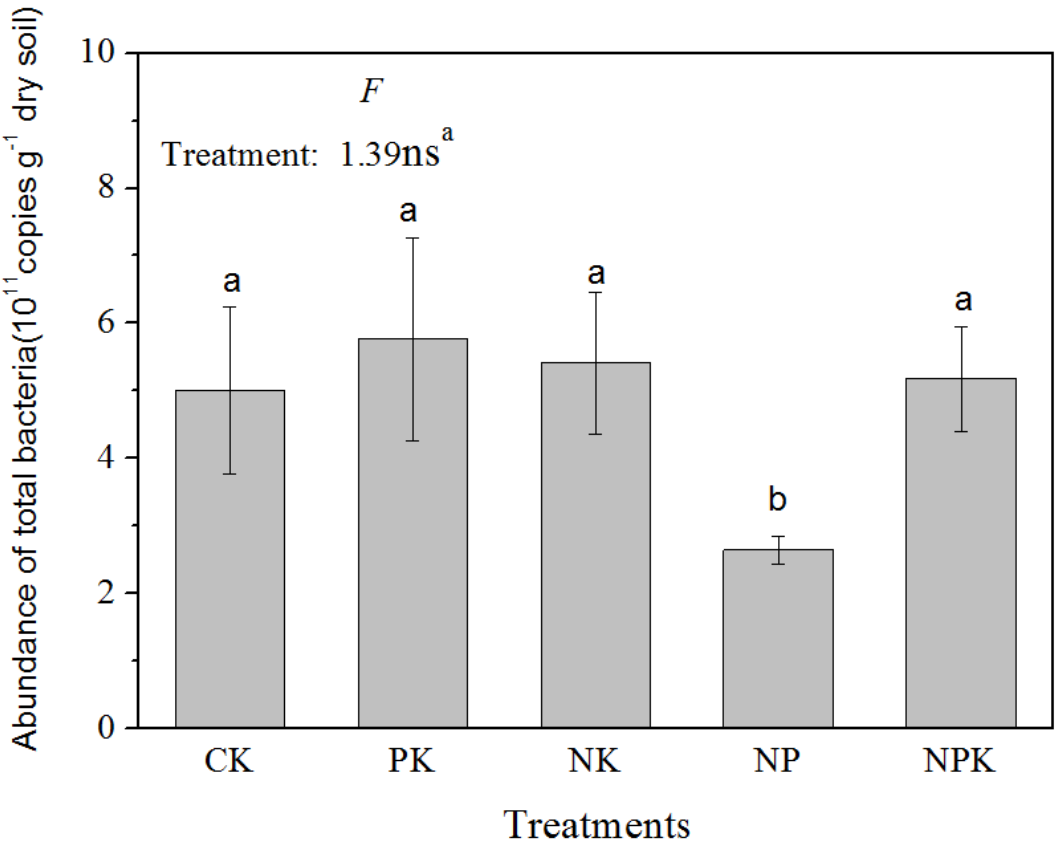
	WC (%)	pH	TC ($g\ kg^{-1}$)	TN ($g\ kg^{-1}$)	SOM ($g\ kg^{-1}$)	NH_4^+-N ($mg\ kg^{-1}$)	NO_3^--N ($mg\ kg^{-1}$)	TP ($g\ kg^{-1}$)	Olsen-P ($mg\ kg^{-1}$)	TS ($g\ kg^{-1}$)	TK ($g\ kg^{-1}$)	BC ($mg\ kg^{-1}$)	BN ($mg\ kg^{-1}$)	BP ($mg\ kg^{-1}$)
CK	16.20±0.40	8.36±0.03	9.22±0.27	0.69±0.04	17.34±0.79	0.43±0.12	2.63±0.09	0.37±0.02	6.57±0.65	2.93±0.31	9.27±0.72	44.99±3.97	19.08±0.68	4.50±0.69
NK	14.32±0.16	8.11±0.07	8.53±0.18	0.85±0.03	14.70±0.32	2.62±0.04	92.80±9.31	0.28±0.02	5.32±0.69	4.29±0.84	8.37±0.28	46.43±5.17	57.53±4.51	4.98±1.30
NP	15.83±0.36	8.02±0.02	11.42±0.42	0.91±0.10	10.68±0.72	1.37±0.13	20.94±2.73	2.18±0.16	30.17±3.01	3.27±0.31	10.07±0.54	84.88±4.34	33.15±1.72	5.76±0.98
PK	17.58±0.86	8.26±0.08	9.52±0.48	0.65±0.06	17.89±1.26	1.14±0.09	3.57±0.77	2.73±0.73	45.86±2.20	3.31±0.18	9.61±1.72	66.99±3.48	23.92±0.43	4.16±0.75
NPK	15.14±0.19	8.03±0.10	11.64±0.36	1.01±0.04	17.77±1.22	2.25±0.12	57.36±2.90	1.76±0.30	23.60±1.15	3.48±0.34	9.18±1.02	92.38±5.88	48.04±1.68	5.99±0.61

Table S2 Environmental factors that are significantly correlated with the communities of *Cyanobacteria* and *Proteobacteria*. The correlations (r^2) and significance (*P*) are determined using a Monte Carlo permutation (MCP) test (999 permutations) between community structure and the soil variables.

	MCP Test			
	Cyanobacteria		***Proteobacteria***	
Variable	r^2	*P*	r^2	*P*
Water Content(WC)	0.3935	0.011	0.6427	0.003
Soil pH	0.5481	0.003	0.6005	0.001
Total Carbon Content(TC)	0.5828	0.001	0.4511	0.009
Total Nitrogen Content(TN)	0.6865	0.001	0.4865	0.006
Soil Organic Matter(SOM)	0.3463	0.021	0.5126	0.003
Soil NH_4^+-N Content	0.4265	0.013	0.6373	0.001
Soil NO_3^--N Content	0.4188	0.012	0.8149	0.001
Total Phosphorus Content(TP)	0.7022	0.001	0.4523	0.011

Soil Olsen Phosphorus Content(Olsen-P)	0.6857	0.001	0.2922	0.049
Total Sulfur(TS)	0.0818	0.483	0.248	0.087
Total Potassium Content(TK)	0.1214	0.342	0.3108	0.048
Biomass Carbon(BC)	0.6702	0.001	0.1646	0.232
Biomass Nitrogen(BN)	0.415	0.01	0.7604	0.001
Biomass Phosphorus(BP)	0.1499	0.257	0.1129	0.359

Fig. S1



[a] ns: not significant

Fig. S2

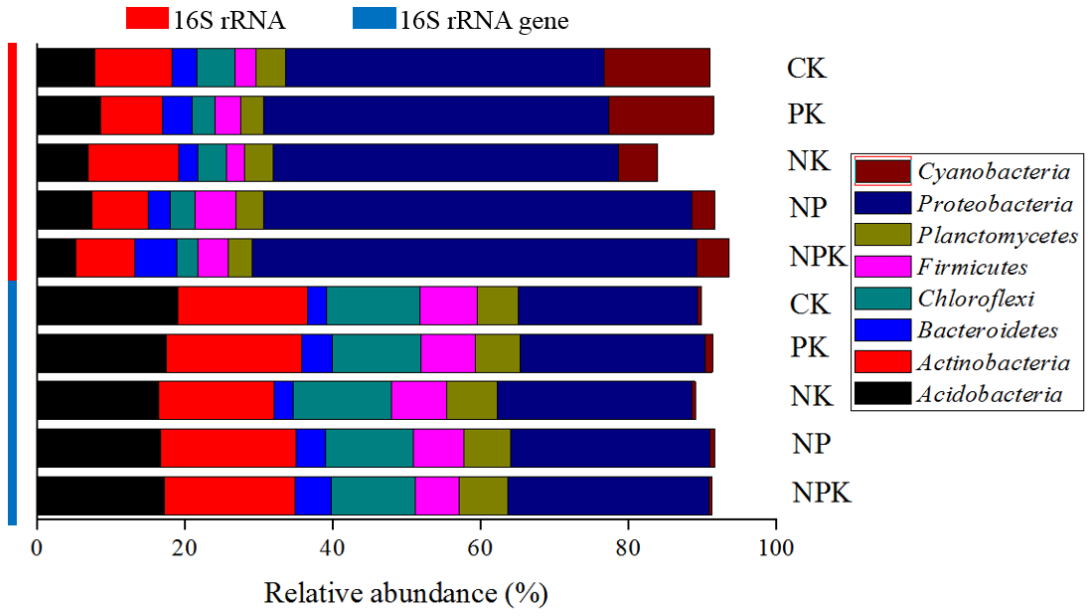
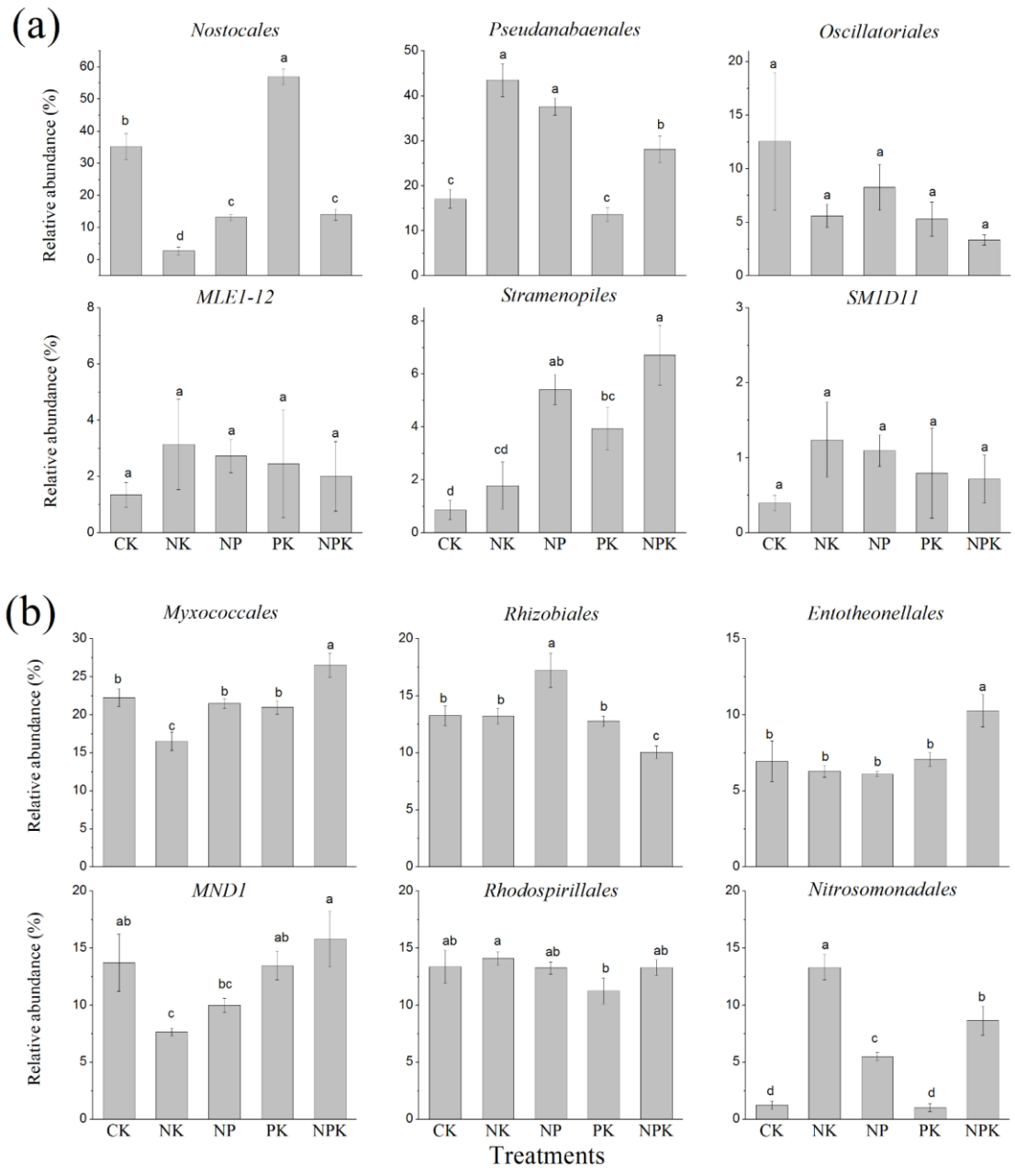

16S rRNA
16S rRNA gene
CK
PK
NK
NP
NPK
CK
PK
NK
NP
NPK
Cyanobacteria
Proteobacteria
Planctomycetes
Firmicutes
Chloroflexi
Bacteroidetes
Actinobacteria
Acidobacteria
0
20
40
60
80
100
Relative abundance (%)

Fig. S3


(a)
Nostocales
Pseudanabaenales
Oscillatoriales
MLE1-12
Stramenopiles
SM1D11
Relative abundance (%)
CK
NK
NP
PK
NPK
(b)
Myxococcales
Rhizobiales
Entotheonellales
MND1
Rhodospirillales
Nitrosomonadales
Relative abundance (%)
Treatments