

Table S1. Location of the sampling sites

<i>Site</i>	<i>Land-use</i>	<i>Plot</i>	<i>Altitude</i>	<i>Latitude/Longitude</i>
A	Natural	1	1226 m	S15°32'51.1" E28°15'13.7"
A	Natural	2	1230 m	S15°32'51.4" E28°15'14.9"
A	Natural	3	1226 m	S15°32'51.9" E28°15'14.1"
A	Farm	1	1225 m	S15°32'49.9" E28°15'13.1"
A	Farm	2	1225 m	S15°32'49.6" E28°15'13.7"
A	Farm	3	1224 m	S15°32'49.2" E28°15'13.1"
B	Natural	1	1151 m	S14°39'50.4" E28°2'13.6"
B	Natural	2	1149 m	S14°39'51.2" E28°2'13.3"
B	Natural	3	1152 m	S14°39'51.9" E28°2'12.8"
B	Farm	1	1148 m	S14°39'83.5" E28°2'24.4"
B	Farm	2	1148 m	S14°39'86" E28°2'26.4"
B	Farm	3	1147 m	S14°39'83" E28°2'27"
C	Natural	1	1166 m	S14°23'24" E28°29'55.4"
C	Natural	2	1166 m	S14°23'24.3" E28°29'56.1"
C	Natural	3	1169 m	S14°23'25" E28°29'57.1"
C	Farm	1	1170 m	S14°23'24.3" E28°29'44.7"
C	Farm	2	1170 m	S14°23'25.8" E28°29'44.3"
C	Farm	3	1170 m	S14°23'27.4" E28°29'43.5"

Table S2 Soil texture and type

<i>Site</i>	<i>Land-use</i>	<i>Sand (%)</i>	<i>Silt (%)</i>	<i>Clay (%)</i>	<i>Texture</i>	<i>Type</i>
A	Natural	61.73 \pm 2.72	18.40 \pm 3.17	19.87 \pm 5.77	Sandy loam	Chromic Luvisols
A	Farm	65.87 \pm 5.21	15.49 \pm 1.85	18.64 \pm 4.07	Sandy loam	Chromic Luvisols
B	Natural	64.00 \pm 2.62	15.47 \pm 1.62	20.53 \pm 1.15	Sandy clay loam	Undifferentiated Acrisols
B	Farm	55.47 \pm 11.37	16.00 \pm 4.00	28.53 \pm 7.57	Sandy clay loam	Undifferentiated Acrisols
C	Natural	70.93 \pm 4.20	13.20 \pm 7.23	15.87 \pm 5.77	Sandy loam	Undifferentiated Acrisols
C	Farm	74.73 \pm 6.33	9.40 \pm 2.16	15.87 \pm 4.16	Sandy loam	Undifferentiated Acrisols

Table S3. Number of filtered reads after sequencing

<i>Site</i>	<i>Land-use</i>	<i>Plot</i>	<i>Core</i>	<i>input</i>	<i>filtered</i>	<i>denoised</i>	<i>non.chimeric</i>
A	Natural	1	1	45991	23035	19960	19842
A	Natural	1	2	30895	16927	14047	14047
A	Natural	1	3	49794	23128	19470	19116
A	Natural	2	1	46810	22340	18977	18575
A	Natural	2	2	42476	20405	16905	16190
A	Natural	2	3	60588	29407	25008	24116
A	Natural	3	1	47156	21080	17750	17513
A	Natural	3	2	51759	25095	21060	20825
A	Natural	3	3	59126	29402	24926	24222
A	Farm	1	1	57780	28242	23903	23706
A	Farm	1	2	53186	26450	22977	22818
A	Farm	1	3	52070	26952	23379	23291
A	Farm	2	1	42835	21769	18302	18209
A	Farm	2	2	50220	25816	23319	23224
A	Farm	2	3	50804	25307	22047	21995
A	Farm	3	1	28916	16280	13877	13859
A	Farm	3	2	37364	20330	18056	17989
A	Farm	3	3	38036	18565	16305	16305
B	Natural	1	1	46589	23702	20580	20281
B	Natural	1	2	39300	20235	17387	17033
B	Natural	1	3	32412	16660	14116	13793
B	Natural	2	1	44010	22341	19554	19146
B	Natural	2	2	54868	28096	25048	24655

B	Natural	2	3	82528	41960	37774	36602
B	Natural	3	1	35276	17928	15633	15497
B	Natural	3	2	32031	17439	14387	14387
B	Natural	3	3	57559	29962	26572	26472
B	Farm	1	1	65658	32542	29759	29432
B	Farm	1	2	52519	25290	22484	21903
B	Farm	1	3	51121	27853	24990	24752
B	Farm	2	1	81744	40552	36386	36346
B	Farm	2	2	40429	21045	17510	17510
B	Farm	2	3	39610	20419	16833	16833
B	Farm	3	1	38062	20590	18430	18164
B	Farm	3	2	39157	21538	19184	19083
B	Farm	3	3	37303	22310	20198	19952
C	Natural	1	1	72540	32606	29308	29021
C	Natural	1	2	38875	19893	16966	16822
C	Natural	1	3	44025	21366	18828	18789
C	Natural	2	1	27740	14602	11689	11599
C	Natural	2	2	42937	20145	16957	16763
C	Natural	2	3	35967	17636	14139	14046
C	Natural	3	1	81602	38363	34458	33864
C	Natural	3	2	40910	20332	17516	17480
C	Natural	3	3	19578	9823	7768	7768
C	Farm	1	1	26982	15555	13007	13007
C	Farm	1	2	37155	18357	15443	15412
C	Farm	1	3	36291	18426	15259	15187

C	Farm	2	1	40782	20607	18004	17664
C	Farm	2	2	32843	16955	13776	13776
C	Farm	2	3	40341	19395	16749	16716
C	Farm	3	1	77766	37760	32748	32609
C	Farm	3	2	32034	16837	13788	13788
C	Farm	3	3	40804	21934	18224	18200

Table S4. Number of OTUs in genus (highly existed in the natural soils)

<i>Genus</i>	<i>Natural</i>	<i>Farm</i>
FFCH10602	30	7
DA101	27	19
Chitinophaga	5	1
Chthoniobacter	4	1
Phenylobacterium	12	9
Amycolatopsis	4	2
Candidatus Nitrososphaera	53	51
Ellin506	4	2
Ammoniphilus	4	3
Blastococcus	2	1
Burkholderia	6	5
Caldilinea	2	1
Candidatus Xiphinematobacter	10	9
Catellatospora	5	4
Devosia	4	3
Dyella	2	1
Inquilinus	3	2
Labrys	3	2
Methylibium	3	2
Oxobacter	2	1
Saccharopolyspora	2	1
Sporomusa	2	1
Stenotrophomonas	2	1

Terracoccus

2

1

Table S5. Number of OTUs in genus (highly existed in the farm soils)

<i>Genus</i>	<i>Natural</i>	<i>Farm</i>
Flavisolibacter	25	43
Gemmata	55	72
Bdellovibrio	4	20
Candidatus Solibacter	18	34
Candidatus Koribacter	8	23
Planctomyces	24	37
Fimbriimonas	12	22
Plesiocystis	5	15
Aquicella	4	12
Kaistobacter	24	32
Perlucidibaca	1	8
Pirellula	16	23
Streptomyces	10	17
A17	4	10
Nitrospira	4	10
Nocardioides	5	11
Paenibacillus	9	15
Adhaeribacter	4	9
Anaeromyxobacter	2	7
Balneimonas	12	17
Chloronema	1	6
Geodermatophilus	10	15

Table S6. Number of OTUs in genus

<i>Genus</i>	<i>Natural</i>	<i>Farm</i>
A17	4	10
Achromobacter	1	1
Acinetobacter	1	1
Actinoallomurus	3	3
Actinomadura	2	6
Actinomycetospora	3	4
Actinoplanes	7	9
Adhaeribacter	4	9
Aeromicrobium	2	4
Afifella	5	5
Agrobacterium	1	2
Agromyces	2	2
Alicyclobacillus	10	11
Alkanibacter	1	3
Ammoniphilus	4	3
Amycolatopsis	4	2
Anaeromyxobacter	2	7
Aquicella	4	12
Ardenscatena	6	7
Arenimonas	1	1
Arthrobacter	5	5
Azospirillum	1	3
Bacillus	16	18

Balneimonas	12	17
Bdellovibrio	4	20
Beijerinckia	1	1
Blastococcus	2	1
Bradyrhizobium	2	2
Brevibacillus	1	1
Burkholderia	6	5
Caldilinea	2	1
Candidatus Entotheonella	2	2
Candidatus Koribacter	8	23
Candidatus Nitrososphaera	53	51
Candidatus Solibacter	18	34
Candidatus Xiphiematobacter	10	9
Catellatospora	5	4
Cellulomonas	2	4
Chitinophaga	5	1
Chloronema	1	6
Chthoniobacter	4	1
Chthonomonas	2	3
Clostridium	5	9
Cohnella	1	3
Collimonas	1	1
Couchioplanes	1	1
Craurococcus	1	1
Cupriavidus	2	5

DA101	27	19
Dactylosporangium	2	2
Deinococcus	3	3
Devosia	4	3
Dokdonella	2	5
Dongia	1	2
Duganella	1	2
Dyella	2	1
Ellin506	4	2
FFCH10602	30	7
Fimbriimonas	12	22
Flavisolibacter	25	43
Flavobacterium	3	3
Gemmata	55	72
Geodermatophilus	10	15
Herbidospora	1	1
Hyphomicrobium	1	1
Iamia	4	5
Inquilinus	3	2
Kaistobacter	24	32
Kouleothrix	1	3
Kribbella	3	5
Ktedonobacter	1	1
Labrys	3	2
Leptolyngbya	8	8

Luteolibacter	3	5
Lysobacter	5	9
Massilia	4	7
Mesorhizobium	3	3
Methanosarcina	2	4
Methylibium	3	2
Methylobacterium	1	2
Micromonospora	2	3
Modestobacter	3	5
Mucilaginibacter	1	3
Mycobacterium	7	9
Nannocystis	5	6
Nevskia	1	3
Niastella	7	7
Nitrosomonas	1	1
Nitrosovibrio	1	2
Nitrospira	4	10
Nocardia	1	2
Nocardioides	5	11
Nonomuraea	1	5
Nostoc	2	2
Nostocoida	1	1
Opitutus	17	21
OR-59	4	7
Oscillochloris	2	4

Oxobacter	2	1
Paenibacillus	9	15
Panacagrimonas	1	2
Paracoccus	1	3
Pedomicrobium	3	7
Pedosphaera	1	1
Perlucidibaca	1	8
Phaeospirillum	1	5
Phenylobacterium	12	9
Phormidium	1	2
Pilimelia	3	4
Pirellula	16	23
Planctomyces	24	37
Plesiocystis	5	15
Pseudomonas	1	5
Pseudonocardia	8	9
Ralstonia	1	1
Reyranella	10	13
Rhizobium	2	2
Rhodococcus	1	2
Rhodocytophaga	1	2
Rhodopila	3	5
Rhodoplanes	49	50
Rubellimicrobium	3	6
Rubricoccus	3	4

Rubrivivax	2	3
Rubrobacter	15	15
Rugosimonospora	1	1
Saccharopolyspora	2	1
Sediminibacterium	2	4
Segetibacter	3	6
Skermanella	4	8
Solimonas	5	6
Solirubrobacter	1	1
Sorangium	1	3
Sphingomonas	3	6
Sporocytophaga	1	5
Sporomusa	2	1
Stenotrophomonas	2	1
Steroidobacter	7	9
Streptomyces	10	17
Streptosporangium	1	3
Terracoccus	2	1
Thermomonas	4	7
Virgisporangium	4	8
Xylanimicrobium	1	2
Carboxydotherrmus	1	NA
Kibdelosporangium	1	NA
Kitasatospora	1	NA
Chamaesiphon	2	NA

Actinocorallia	1	NA
Yonghaparkia	1	NA
Chryseobacterium	1	NA
Lacibacter	1	NA
Lentzea	1	NA
Kaistibacter	1	NA
Rudaea	1	NA
Cystobacter	1	NA
Martelella	1	NA
Ramlibacter	1	NA
Arthronema	1	NA
BSV43	2	NA
Methanocella	1	NA
Dolichospermum	1	NA
Sinobacter	1	NA
heteroC45_4W	1	NA
Rhodomicrobium	1	NA
Flaviumibacter	1	NA
Belnapia	1	NA
GOUTA19	1	NA
Parasegitibacter	1	NA
[Clostridium]	NA	1
1-68	NA	1
Megamonas	NA	1
Caloramator	NA	1

Methanobacterium	NA	2
Methanosaeta	NA	1
Actinoalloteichus	NA	1
Candidatus Protochlamydia	NA	1
Candidatus Rhabdochlamydia	NA	1
Sinorhizobium	NA	2
Actinopolymorpha	NA	1
Euzebya	NA	1
Caulobacter	NA	1
Mycoplana	NA	1
Cellulosimicrobium	NA	1
Cellvibrio	NA	1
Chelatococcus	NA	1
Alishewanella	NA	1
Nitrosotalea	NA	2
Chondromyces	NA	3
Chroococcidiopsis	NA	1
Anaerococcus	NA	2
Anaerolinea	NA	7
Haliangium	NA	1
Haloglycomyces	NA	1
Pelotomaculum	NA	1
Conexibacter	NA	2
Corynebacterium	NA	4
Arthrospira	NA	1

Asteroleplasma	NA	3
Azohydromonas	NA	1
Azorhizophilus	NA	1
Cryocola	NA	1
Cryptosporangium	NA	2
Bacteroides	NA	2
Turneriella	NA	2
Legionella	NA	1
Dechloromonas	NA	1
planctomycete	NA	1
Desulfococcus	NA	1
Desulfosporosinus	NA	3
Desulfovirga	NA	1
SC3-56	NA	1
Dok59	NA	1
Fluviicola	NA	1
Segniliparus	NA	1
Phycococcus	NA	2
Dyadobacter	NA	2
Sinomonas	NA	1
Haemophilus	NA	1
Enhydrobacter	NA	1
Streptococcus	NA	1
Variovorax	NA	2
Pontibacter	NA	6

Finegoldia	NA	1
Prevotella	NA	1
Promicromonospora	NA	1
Jeotgalicoccus	NA	1
Pseudanabaena	NA	1
Geobacter	NA	3
Rothia	NA	1
Georgenia	NA	1
Pseudoxanthomonas	NA	2
Uliginosibacterium	NA	1
Pelosinus	NA	1
Solibacillus	NA	2
Hymenobacter	NA	2
Symbiobacterium	NA	8
Telmatospirillum	NA	1
Coxiella	NA	2
Phaselicystis	NA	1
Crocinitomix	NA	1
Roseomonas	NA	6
Shimazuella	NA	1
Paracraurococcus	NA	1
Treponema	NA	1
R18-435	NA	2
Salinibacterium	NA	1
Woodsholea	NA	3

Peptoniphilus	NA	1
Marmoricola	NA	1
Roseococcus	NA	1
Thermoactinomyces	NA	1
Sphaerisporangium	NA	2
Prostheco bacter	NA	3
Staphylococcus	NA	1
Porphyromonas	NA	2
Phytohabitans	NA	1
Shinella	NA	1
Olivibacter	NA	1
Sphingobacterium	NA	1
Solitalea	NA	1
Thermus	NA	1
Terribacillus	NA	1
Veillonella	NA	1
Peredibacter	NA	1
Saccharothrix	NA	1
Rhodanobacter	NA	2

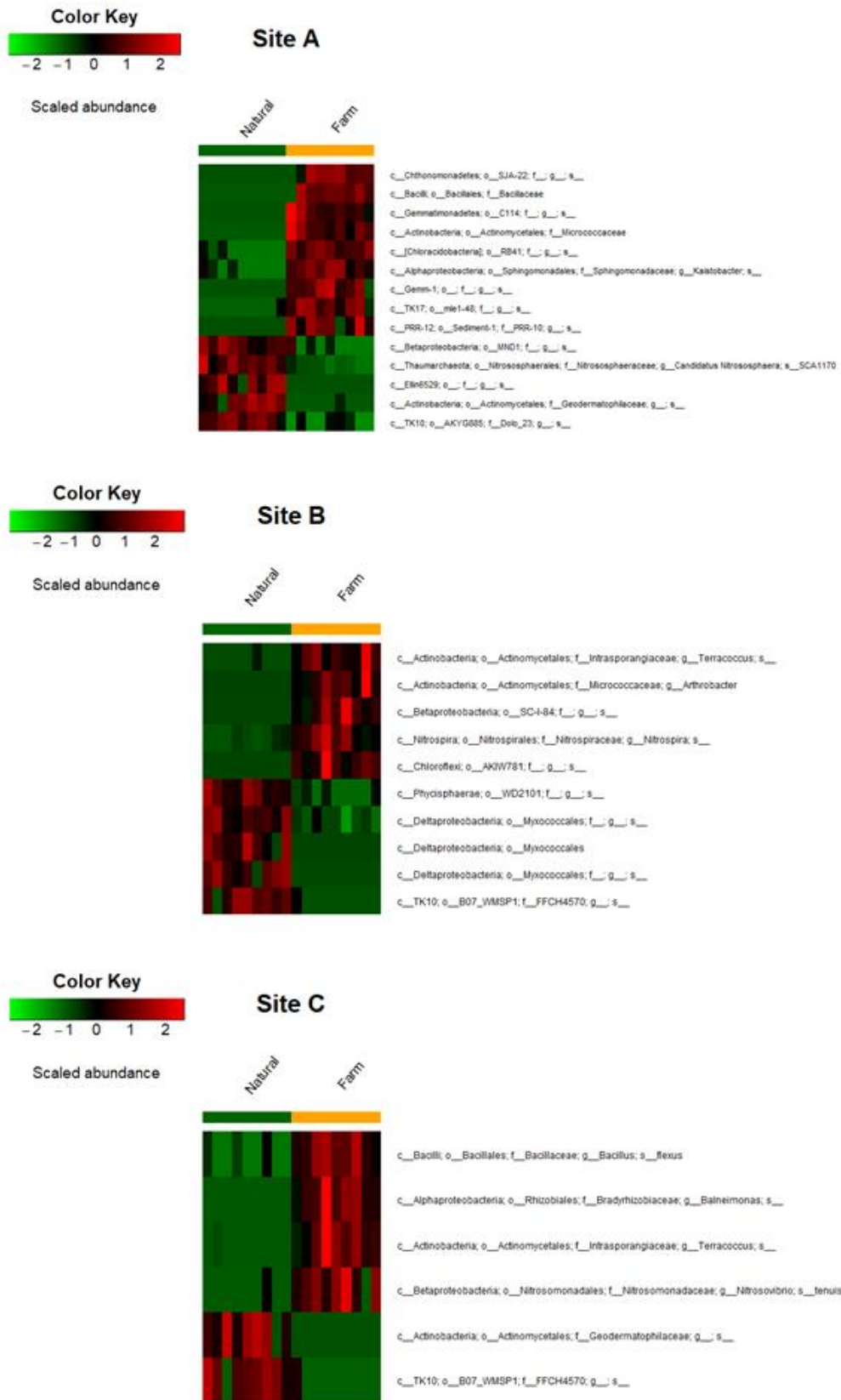


Figure S1. Heatmap of the OTUs significantly abundant in each land-use in each site

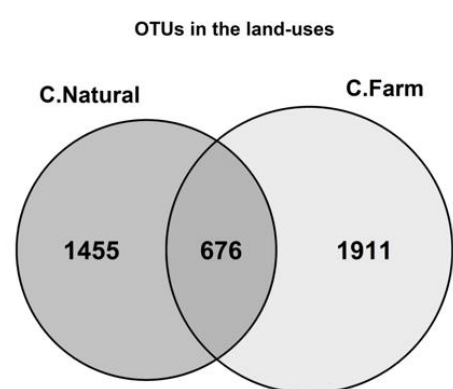
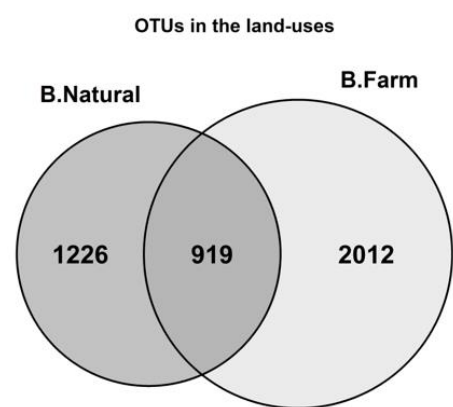
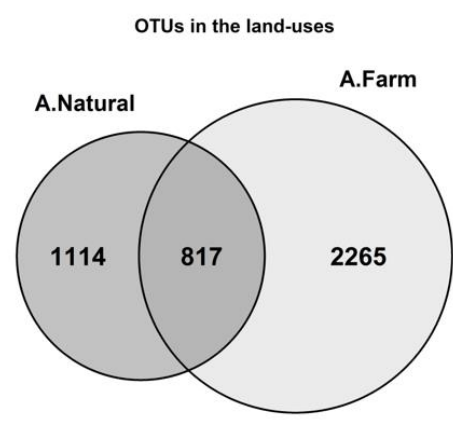


Figure S2. Distribution of the OTUs between the land-uses

Venn diagrams show the distribution of OTUs among the sites and the land-uses.

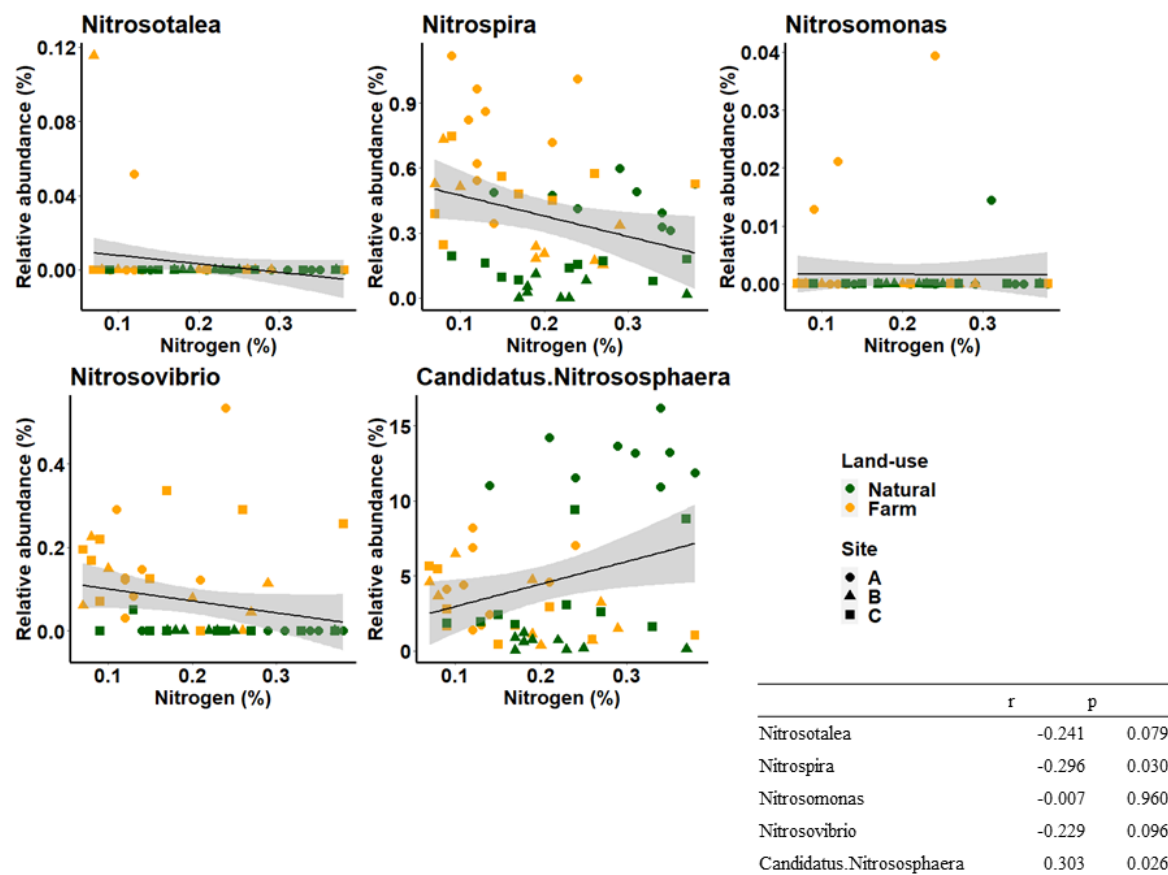


Figure S3. Correlation between the relative abundance of nitrifiers and the total nitrogen content.

The correlations were tested by Pearson's method using cor.test function in the R. The linear regression curves and confidence intervals were plotted in each figure. The correlation coefficients and p-values were shown in the table next to the figures.