**Supplementary Materials:**

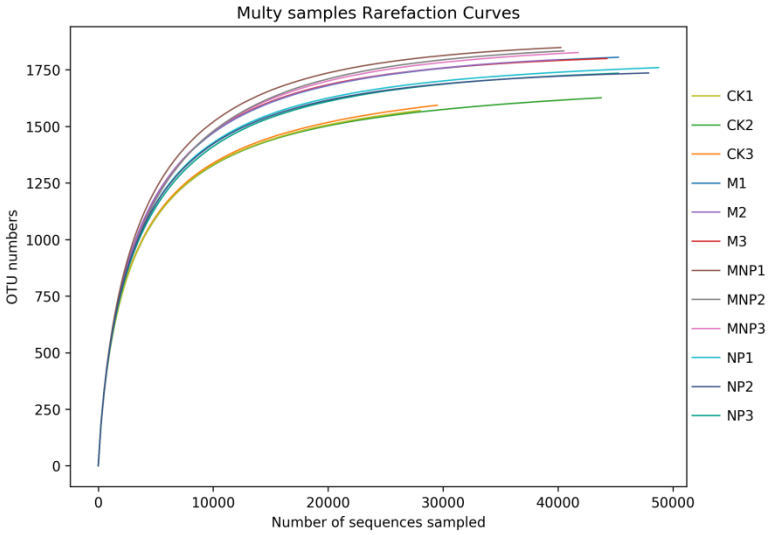


**Figure S1** Multiple-sample rarefaction curve. M: manure; NP: chemical fertilizer; MNP: manure+chemical fertilizer; CK: no fertilizer.

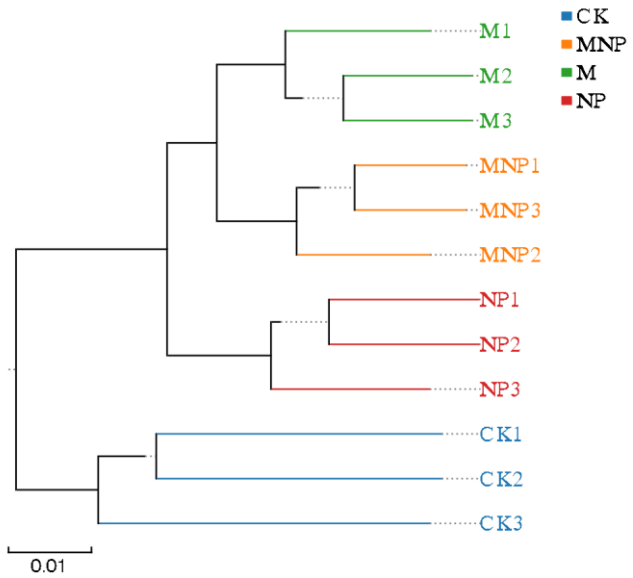


**Figure 2.** UPGMA clustering tree. M: manure; NP: chemical fertilizer; MNP: manure+chemical fertilizer; CK: no fertilizer. The distance legend equals to 0.01.

**Table 1.** ANOVA F-values and p-values of soil properties between groups.

| | F | p-value |
|---|---|---|
| pH | 0.998 | 0.442 |
| AN | 32.722 | 0.000 |
| AP | 26.463 | 0.000 |
| AK | 21.205 | 0.000 |
| OM | 11.023 | 0.003 |
| TN | 3.984 | 0.052 |
| TP | 12.271 | 0.002 |
| TK | 0.556 | 0.658 |

**Table 2.** Difference analysis of bacteria at phylum level.

| Treatments | Proteobacteria | Actinobacteria | Acidobacteria | Gemmatimonadetes | Chloroflexi | Bacteroidetes | Nitrospirae | Rokubacteria | Verrucomicrobia | Firmicutes | Others | Unassigned |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | 0.3522 a | 0.1942 b | 0.1764 a | 0.0896 b | 0.0862 b | 0.0549 b | 0.0116 b | 0.0080 b | 0.0075 a | 0.0067 a | 0.0128 b | 0.0001 a |
| NP | 0.3281 b | 0.2360 a | 0.1417 c | 0.1025 a | 0.0905 ab | 0.0550 b | 0.0128 b | 0.0073 b | 0.0067 a | 0.0066 a | 0.0127 b | 0.0001 a |
| MNP | 0.3466 a | 0.1835 b | 0.1399 c | 0.0912 b | 0.0847 b | 0.1074 a | 0.0092 c | 0.0054 c | 0.0088 a | 0.0070 a | 0.0162 a | 0.0001 a |
| CK | 0.3272 b | 0.2322 a | 0.1633 b | 0.0867 b | 0.0958 a | 0.0362 b | 0.0161 a | 0.0119 a | 0.0085 a | 0.0064 a | 0.0152 ab | 0.0003 a |

**Table 3.** Difference analysis of bacteria at genus level.

| Treatments | uncultured_bacterium_f_Gemmatimonadaceae | uncultured_bacterium_c_Subgroup_6 | Sphingomonas | MND1 | uncultured_bacterium_c_MB-A2-108 | Ellin6055 | uncultured_bacterium_o_IMCC26256 | RB41 | Arthrobacter | Steroidobacter | Others | Unassigned |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | 0.0639 b | 0.0753 a | 0.0343 b | 0.0308 b | 0.0252 b | 0.0183 b | 0.0178 b | 0.0223 a | 0.0158 b | 0.0196 ab | 0.6766 b | 0.0001 b |
| NP | 0.0693 a | 0.0556 c | 0.0412 a | 0.0294 b | 0.0257 b | 0.0244 a | 0.0219 ab | 0.0160 b | 0.0243 a | 0.0158 bc | 0.6763 b | 0.0001 b |
| MNP | 0.0600 b | 0.0588 c | 0.0393 a | 0.0224 c | 0.0175 c | 0.0208 b | 0.0179 b | 0.0163 b | 0.0184 b | 0.0211 a | 0.7076 a | 0.0001 b |
| CK | 0.0627 b | 0.0634 b | 0.0379 ab | 0.0450 a | 0.0351 a | 0.0186 b | 0.0244 a | 0.0246 a | 0.0155 b | 0.0137 c | 0.6588 b | 0.0003 a |