Figures & Tables: Seaweed extracts strongly structured microbial communities associated with tomato and pepper roots and significantly increased crop yield

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Table 1: summary of PERMANOVAs

	fungi-soil	fungi-root	bacteria-soil	bacteria-root
fertilization	0.02***	0.08***	0.04***	0.07***
planted	0.21***	NA	0.13***	NA
species	0.02***	0.26***	0.02***	0.52***
fertilization:planted	0.01**	NA	0.02***	NA
fertilization:species	0.01*	0.04*	0.03***	0.05***
planted:species	0.01	NA	0.01**	NA
fertilization:planted:species	0.01	NA	0.01*	NA

r^2 (percentage of variance explained by the term in the model); *p-value<0.05, **<0.005, ***<0.0005

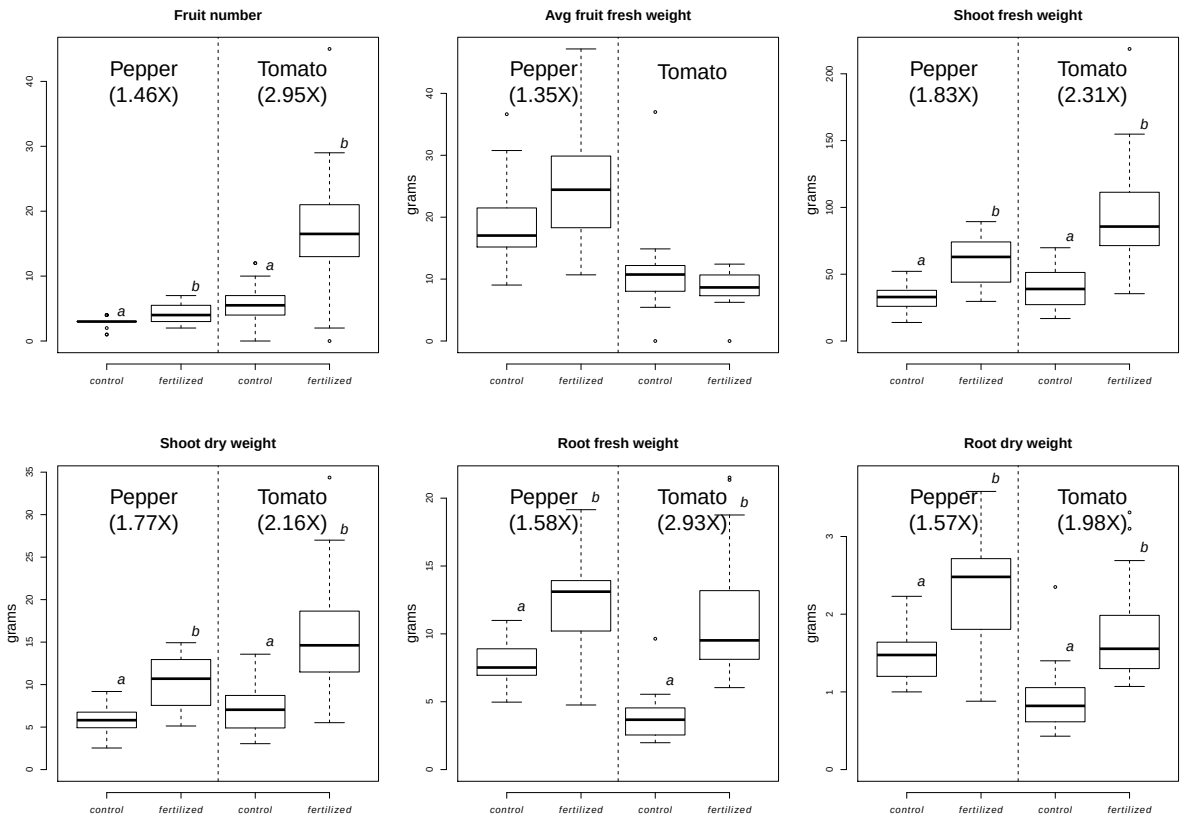

Figure 1: Measures of plant productivity. ***a*** **and** ***b*** **subscripts above boxplots denote significant differences according to the fertilization treatment. Fold changes between the mean of the control and fertilized plants were also noted for significant changes (for pepper and tomato separately).**

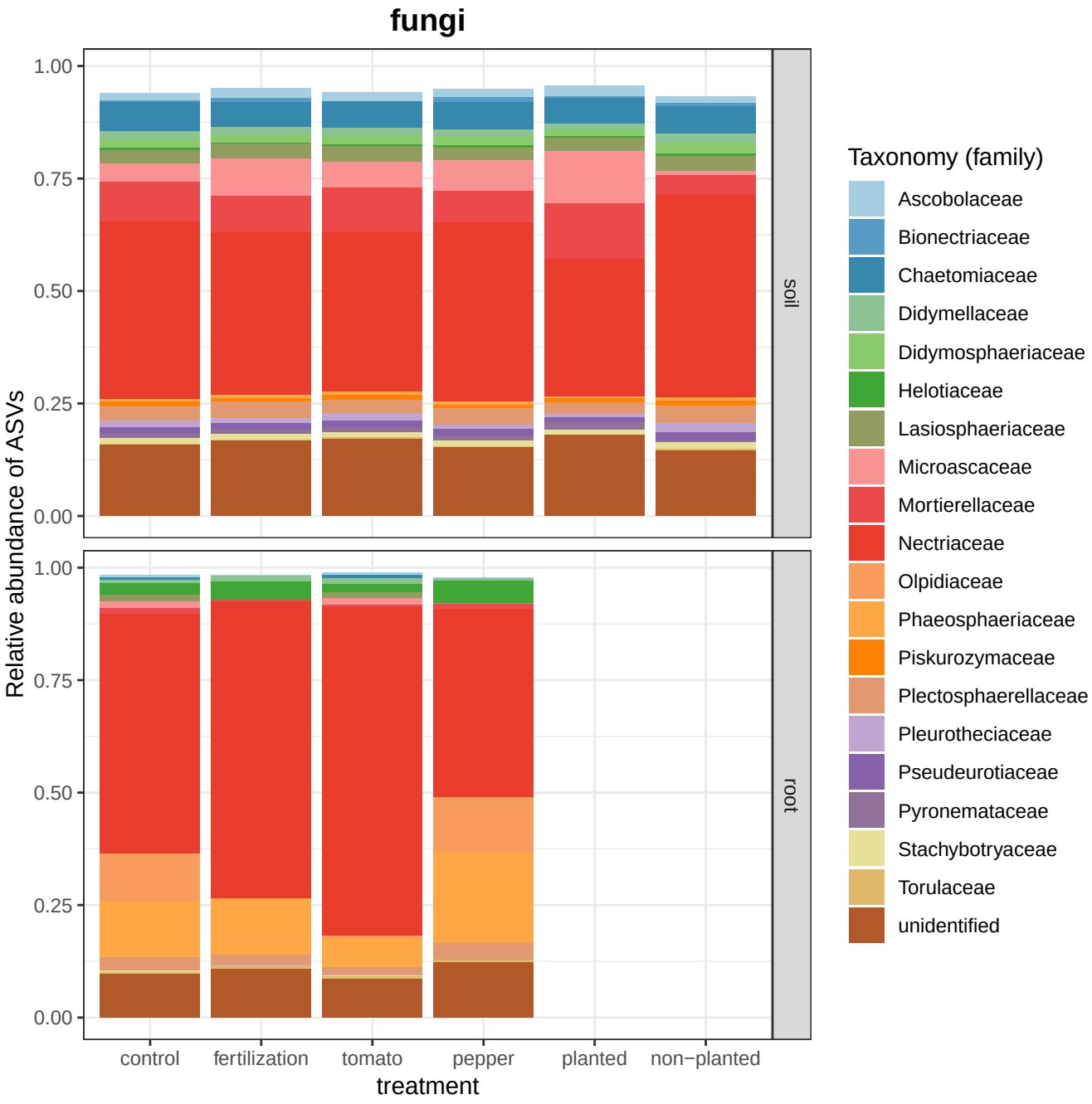

Figure 2: Barplots of the relative abundance of fungal ASVs for fungi

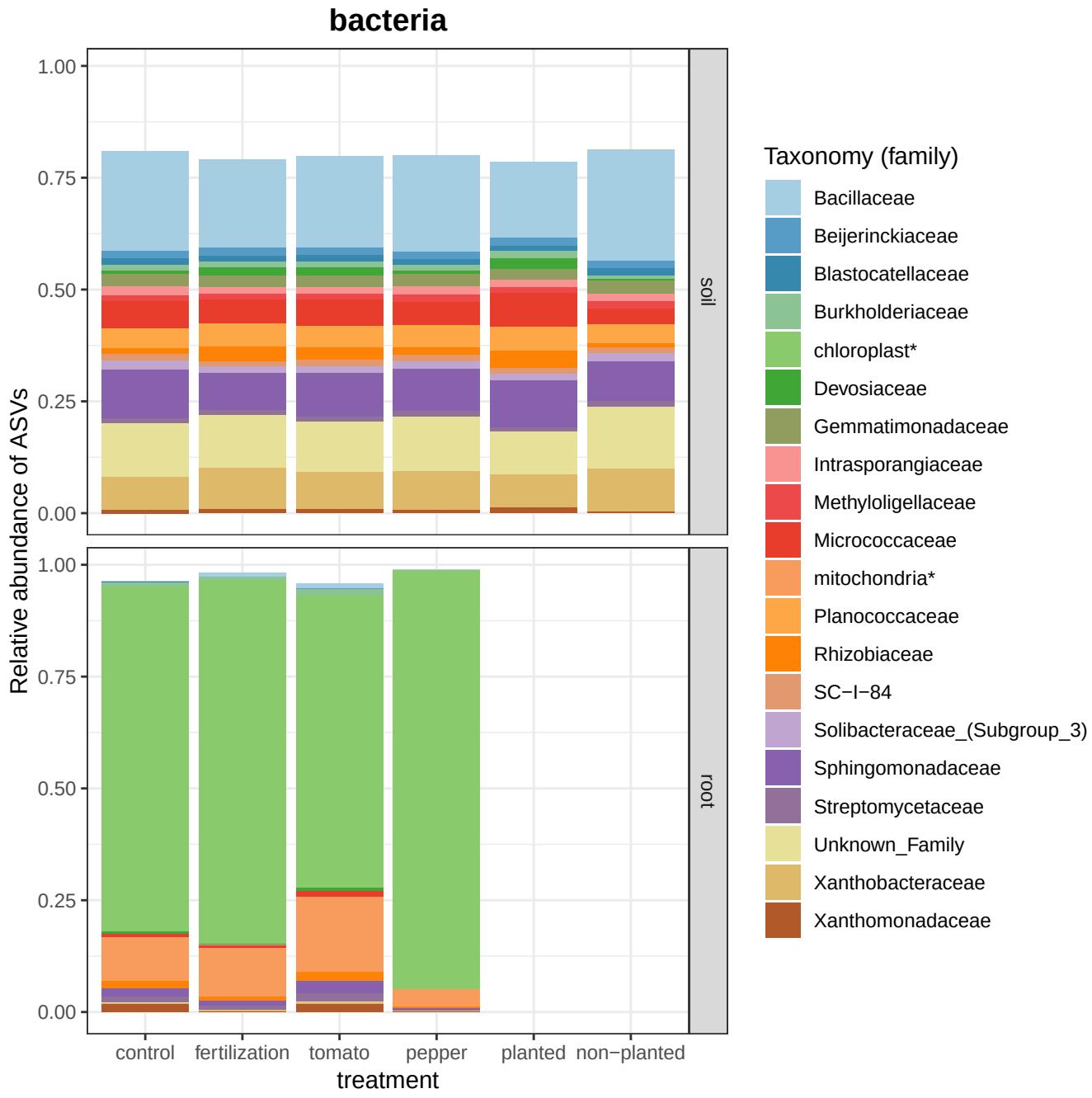

Figure 3: Barplots of the relative abundance of bacterial ASVs for bacteria

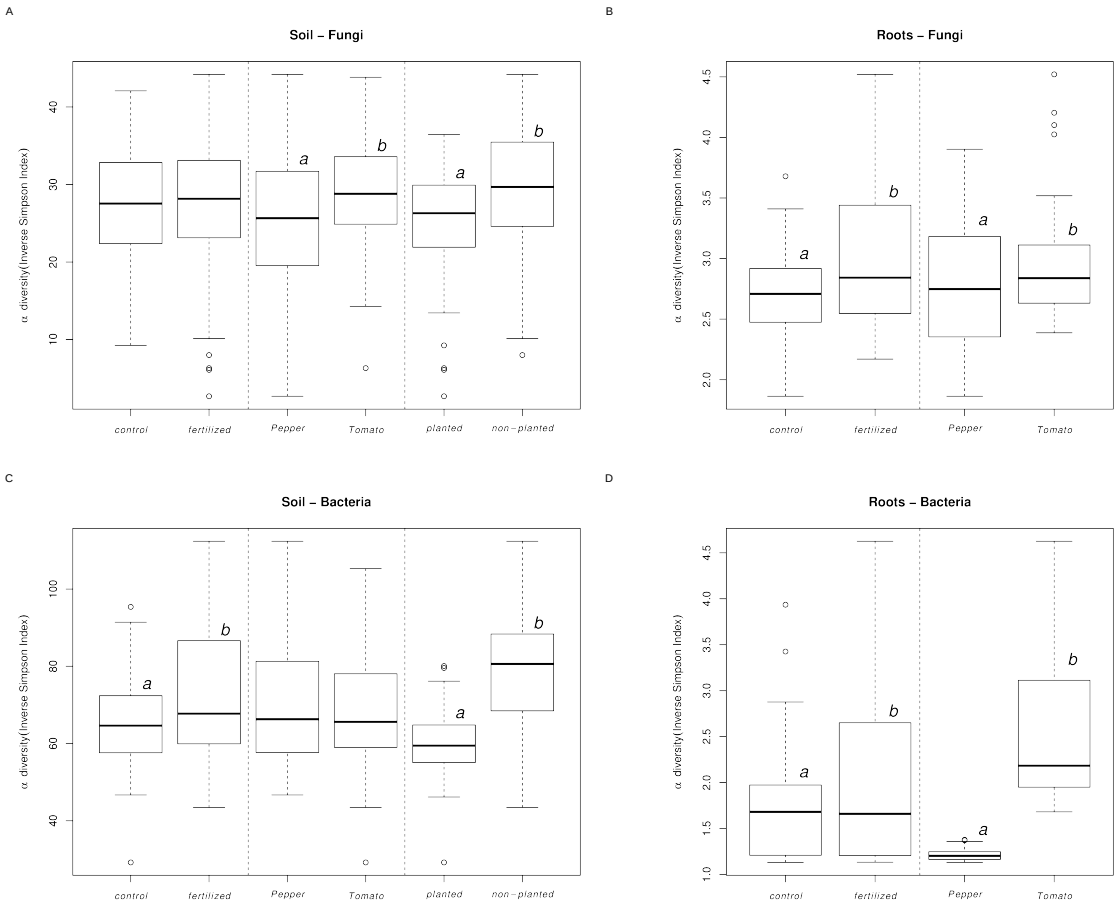

Figure 4: Boxplot of *a*-diversity according to the treatment, species and planting effect for fungal-root, fungal-soil, bacteria-soil and bacteria-root. *a* and *b* subscripts above boxplots denote significant differences.

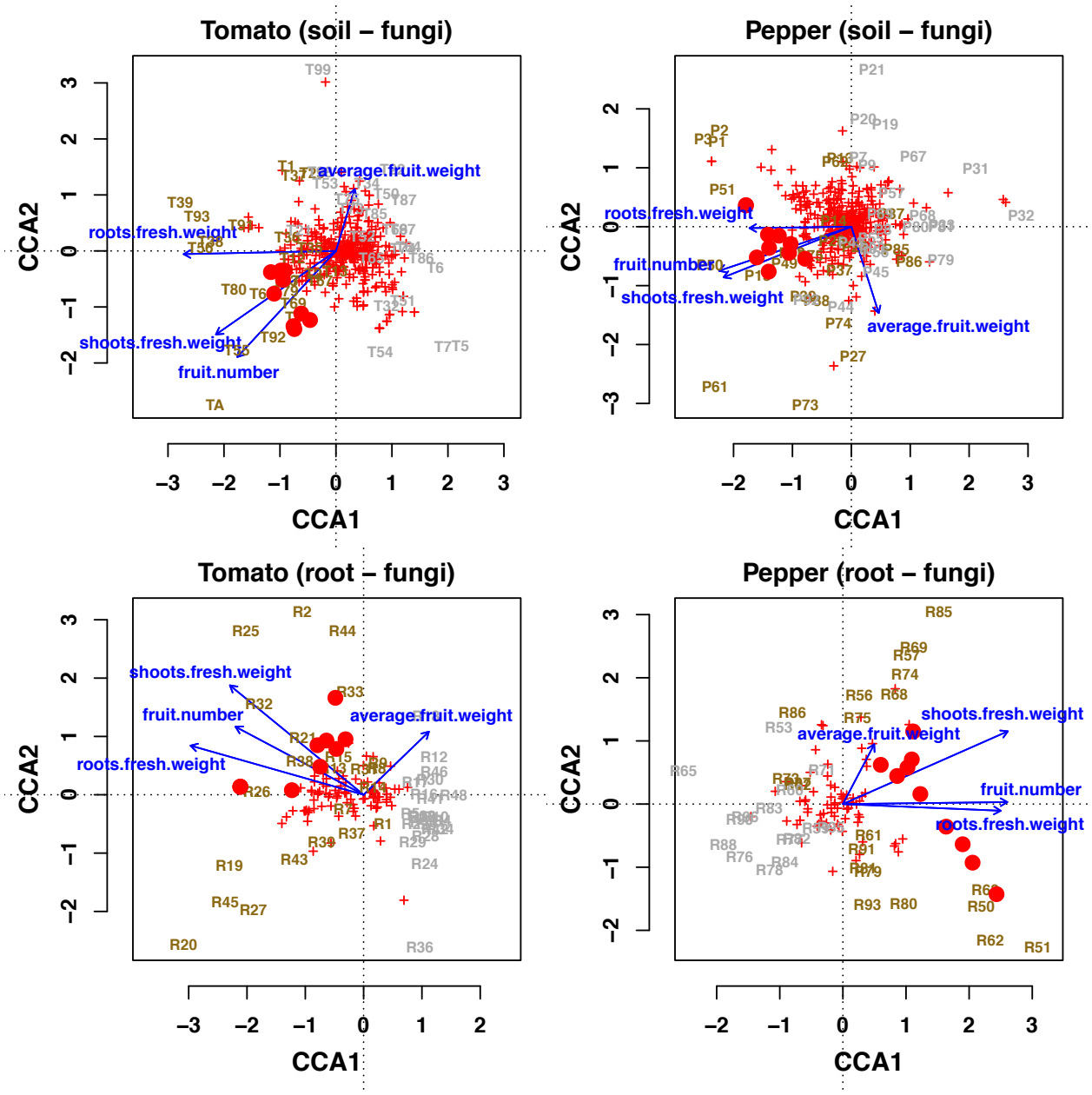

Figure 5: Canonical correspondence analyses for soil-fungi and root-fungi. Samples were labeled and colored in gray (unfertilized) or dark yellow (fertilized). Red crosses represent individual ASVs, while red points represent the ten ASVs most closely associated with the three productivity measures of root fresh weight, shoots fresh weight and fruit number. Blue arrows are the four productivity measures used as constraints in the ordinations.

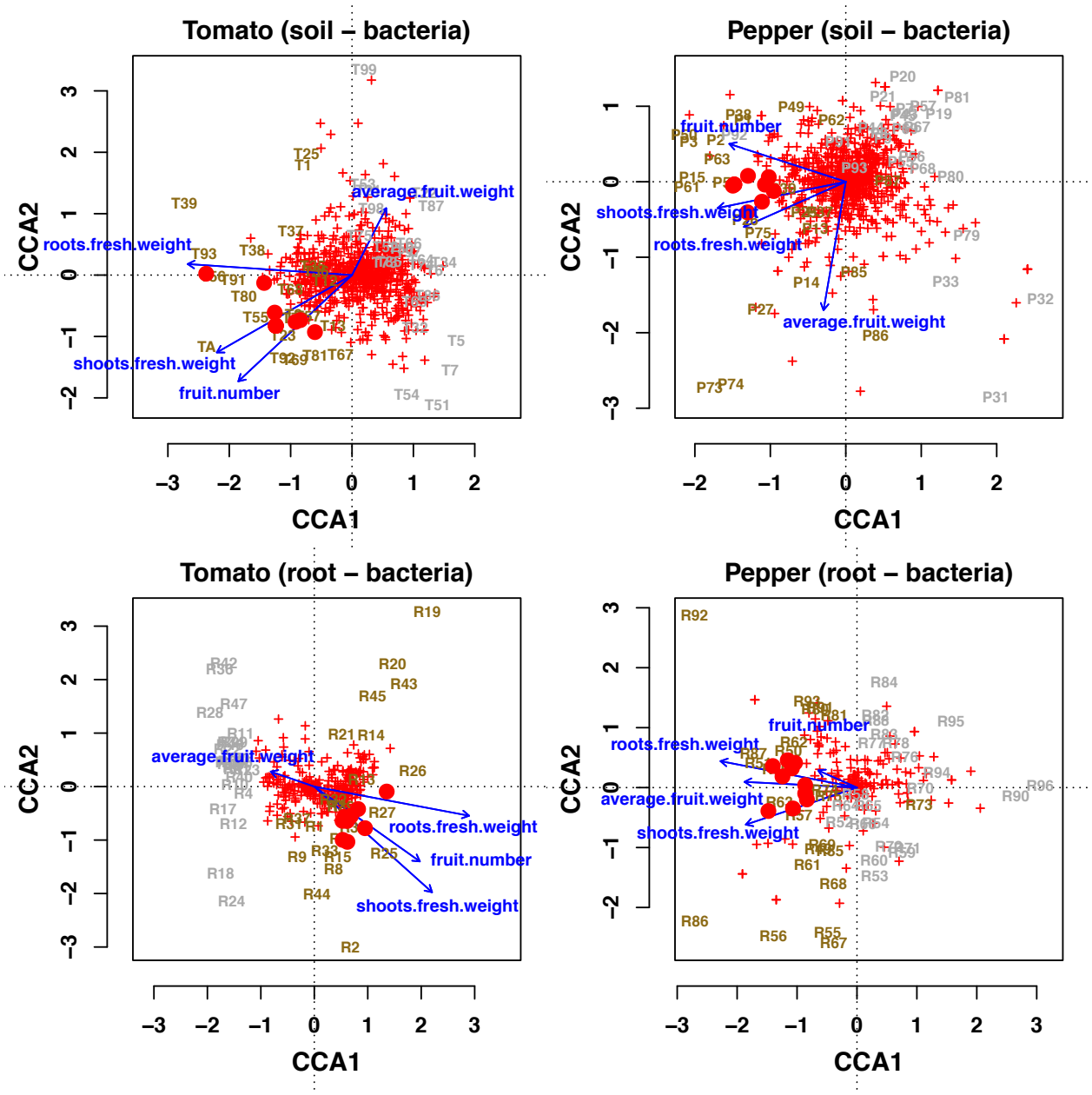

Figure 6: Canonical correspondence analyses for soil-bacteria and root-bacteria. Samples were labeled and colored in gray (unfertilized) or dark yellow (fertilized). Red crosses represent individual ASVs, while red points represent the ten ASVs most closely associated with the three productivity measures of root fresh weight, shoots fresh weight and fruit number. Blue arrows are the four productivity measures used as constraints in the ordinations.

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Table S1: Soil characteristics (in ppm unless specified otherwise)

Soil Characteristics	Average value
pH	6.01
Conductivity (mmhos/cm)	0.68
Nitrate (N)	62.40
Ammonium	0.09
Phosphorus	0.41
Potassium	29.30
Calcium	64.40
Magnesium	13.80
Chloride	28.50
Sulfate	19.30
Sodium	17.80
Zinc	0.12
Manganese	0.06
Cooper	0.81
Iron	0.90
Aluminium	1.66

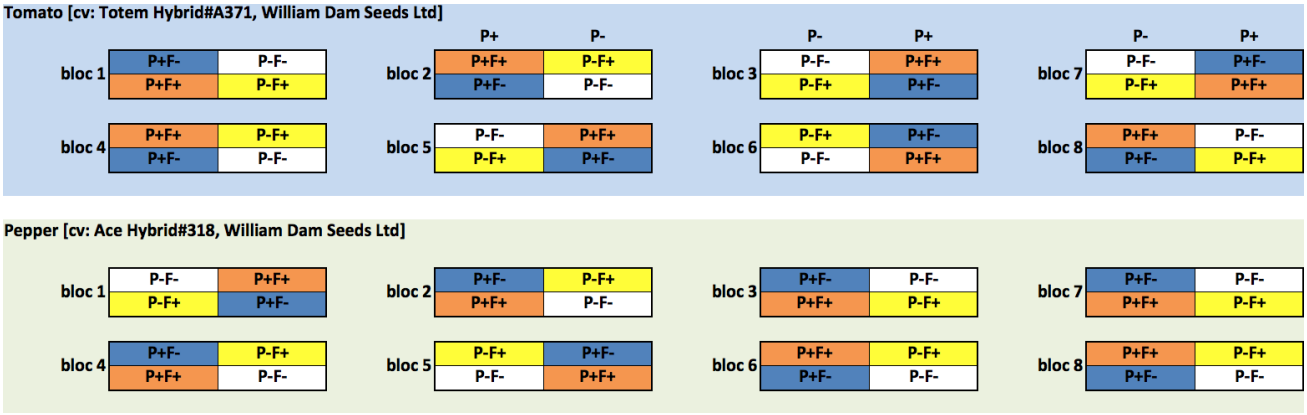

Table S2: Randomized Split Block Experimental design

TableS3: Stella Maris® characteristics

Stella Maris® characteristics	Average value
Appearance	Viscous Brownish-Black Liquid
Odor	Marine Odor
Solubility in water (%)	100
pH	7.4 - 8.2
Carbohydrates	Alginic acid, Mannitol, Fucoidans
Organic matter content (%)	13.0 - 16.0
Total Nitrogen (N) (%)	0.1 - 0.6
Available phosphate (P2O5) (%)	< 0.2
Soluble potash (K2O) (%)	5.0 - 7.0
Sulphur (S) (%)	0.3 - 0.6
Magnesium (Mg) (%)	0.05 - 0.15
Calcium (Ca) (%)	0.05 - 0.15
Sodium (Na) (%)	0.7 - 1.2
Iron (Fe) (ppm)	30 - 90
Cooper (Cu) (ppm)	< 4
Manganese (Mn) (ppm)	3 - 11
Boron (B) (ppm)	20 - 40

Table S4: Summary of sequencing and bioinformatics identification of ASVs

	fungi-soil	fungi-root	bacteria-soil	bacteria-root
No sequences (sum)	976,000	309,000	920,000	535,000
No sequences (mean)	50,847	32,208	47,907	56,365
No seq. filtered (mean)	32,626	12,714	29,662	37,642
No seq. filt. merged (mean)	29,300	12,094	14,060	30,706
No seq. filt. merg. no chimeras (mean)	25,476	9,849	13,521	30,408
No samples	192	96	192	96
No samples trimmed	189	81	192	95
No ASVs (sum)	6,112	845	9,352	2,023
No ASVs trimmed (sum)	413	106	811	325
ASV per sample (mean)	176	37	269	92

Figure S1: Plant productivity. Photos were taken at the end of the experimental treatment. In each photo, fertilized plants are on the left. A: pepper shoots, B: pepper roots, C: pepper fruits and D: tomato fruits.

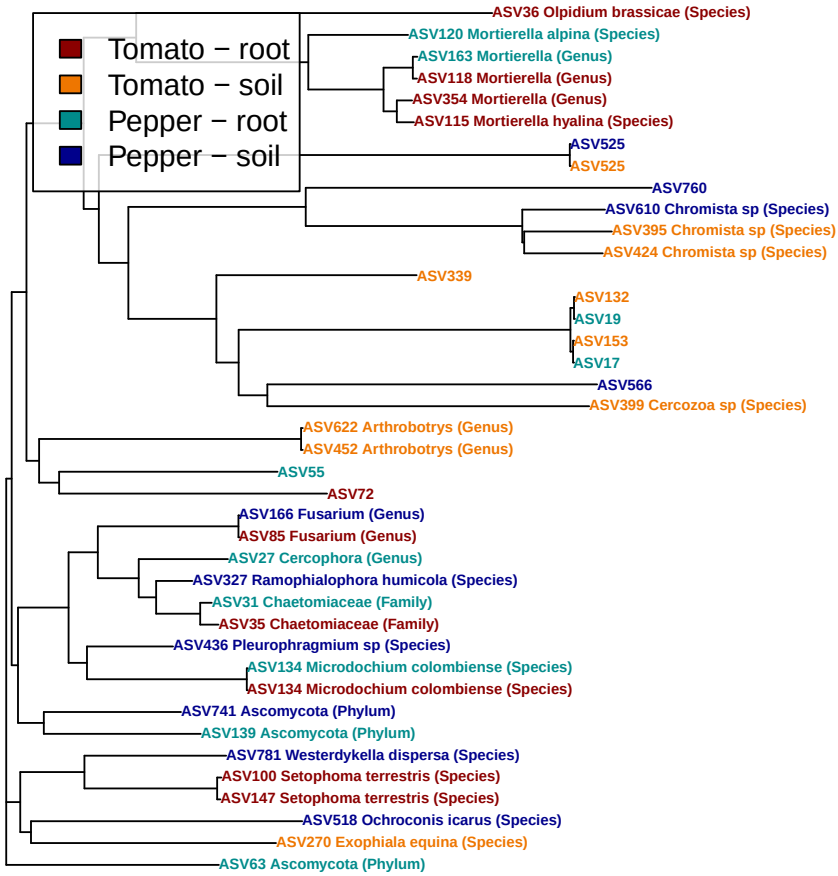

Figure S2: Neighbor-Joining trees of candidates ASVs (fungi) positively associated with productivity measures. The most accurate taxonomy assigned according to the RDP bayesian classifier (form Phylum to species) was added as tip labels.

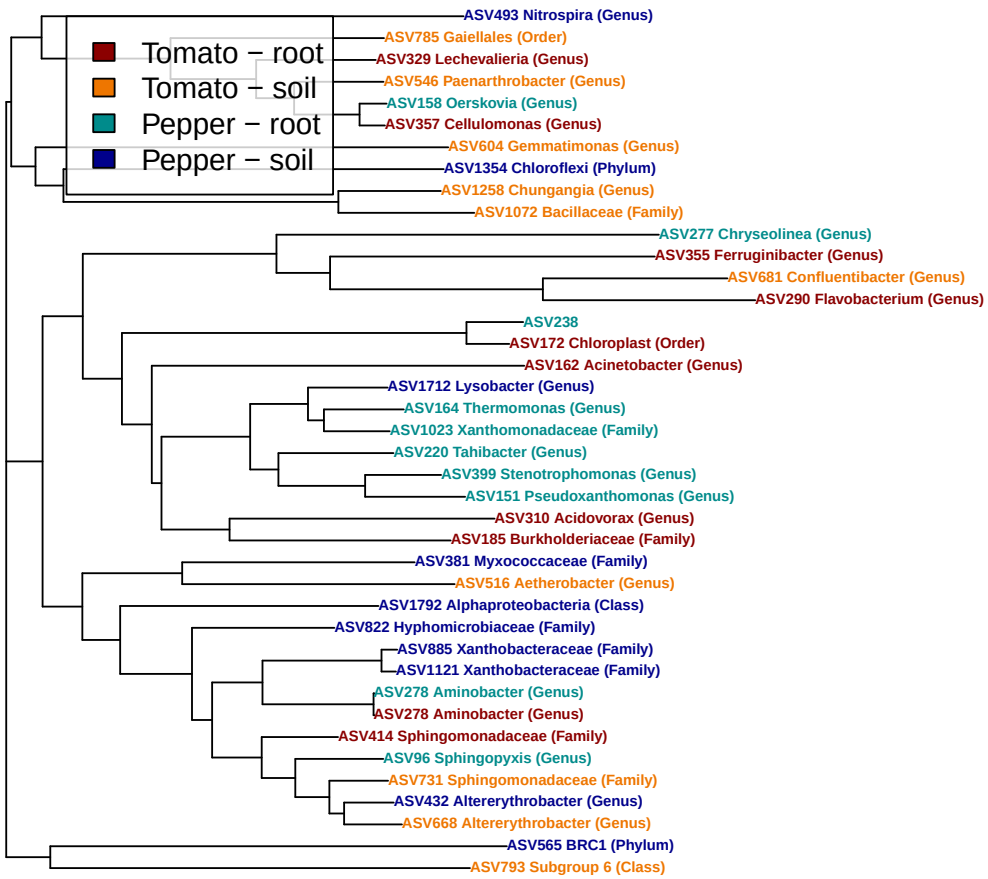

Figure S3: Neighbor-Joining trees of candidates ASVs (bacteria) positively associated with productivity measures. The most accurate taxonomy assigned according to the RDP bayesian classifier (form Phylum to species) was added as tip labels.