Supplementary material

Table S1. Georeferencing and physico-chemical characteristics of the studied soils

Georeferencing and physico-chemical characteristics of the studied soils		
Soil	Andisol	Vertisol
Country	Mexico	Mexico
State	Morelos	Morelos
Municipality	Huitzilac	Temixco
Locality	Tres Marías	Cuentepec
Coordinates	19º02'18''N 99º15'11''W; 2803 masl	18º51'36''N 99º19'29''W; 1480 masl
Taxonomic order	Andisol (Melanudand)	Vertisol (Aquerts)
Sand (%)	92	56
Silt (%)	4	24
Clay (%)	4	20
Texture (Bouyoucos)	A	FarA
pH (w, 1:2.5)	5.7	4.9
M.O. (Walkley-Black) (%)	11	3.0
Ca (Ammonium acetate 1M) ($cmol_c\ kg^{-1}$)	1.7	3.0
Mg (Ammonium acetate 1M) ($cmol_c\ kg^{-1}$)	0.1	1.7
K (Ammonium acetate1M) ($cmol_c\ kg^{-1}$)	0.05	0.16
Na (Ammonium acetate1M) ($cmol_c\ kg^{-1}$)	0.0	0.0
Al (KCl 1M) ($cmol_c\ kg^{-1}$)	0.0	1.6
CIC effective ($cmol_c\ kg^{-1}$)	1.85	6.5
P Bray II ($mg\ kg^{-1}$)	1	34
S (Calcium phosphate 0.008 M) ($mg\ kg^{-1}$)	6	2
Fe (Olsen-EDTA) ($mg\ kg^{-1}$)	64	42
Mn (Olsen-EDTA) ($mg\ kg^{-1}$)	1	53
Cu (Olsen-EDTA) ($mg\ kg^{-1}$)	1	2
Zn (Olsen-EDTA) ($mg\ kg^{-1}$)	1	3
B Hot water) ($mg\ kg^{-1}$)	0.1	0.14
NO_3 (Aluminum sulfate 0.025 M) ($mg\ kg^{-1}$)	3	1
NH_4 (KCl 1M) ($mg\ kg^{-1}$)	18	38

Table S2. Detection of the type and concentration of OAs in different soils with strains (*T. virens* and *A. tubingensis*). The values are the mean of the concentration of acids ($\mu g\ mL^{-1}$) ± SE extrapolated from 250 mL samples of four different soil samples in their interaction with microorganisms A, B, C and D (n = 4). Bolded values depict the condition in which the highest value for that particular acid was found.

Soil	Microorganism	Pyruvic $\mu g\ mL^{-1}$	Fumaric $\mu g\ mL^{-1}$	Tartaric $\mu g\ mL^{-1}$	Succinic $\mu g\ mL^{-1}$	Malic $\mu g\ mL^{-1}$	Oxalic $\mu g\ mL^{-1}$	Citric $\mu g\ mL^{-1}$	Concentration P $\mu g\ mL^{-1}$
Andisol	***T. virens***	**0.422** ± 0.142	**0.002** ± 0.001	**0.496** ± 0.049	**0.002** ± 0.001	**0.058** ± 0.043	**0.006** ± 0.001	**0.003** ± 0.002	**29.187** ± 0.400
	A. tubingensis	**0.122** ± 0.070	**0.014** ± 0.001	**0.404** ± 0.238	**0.124** ± 0.041	**0.007** ± 0.014	**0.005** ± 0.000	0.000	**35.217** ± 0.0800
Vertisol	***T. virens***	**0.063** ± 0.008	**0.010** ± 0.000	**0.032** ± 0.019	**0.028** ± 0.003	**0.014** ± 0.003	**0.023** ± 0.001	**0.005** ± 0.000	**34.240** ± 0.209
	A. tubingensis	**0.049** ± 0.028	**0.052** ± 0.000	**1.834** ± 0.004	0.000	**0.024** ± 0.006	**0.062** ± 0.009	**0.005** ± 0.001	**36.369** ± 0.711
Without Soil	***T. virens***	0.000	**0.001** ± 0.000	0.000	0.000	**0.004** ± 0.003	**0.050** ± 0.032	0.000	**40.615** ± 0.883
	A. tubingensis	0.000	**0.002** ± 0.001	0.000	**0.036** ± 0.012	**0.032** ± 0.046	**0.005** ± 0.001	0.000	**37.505** ± 0.350

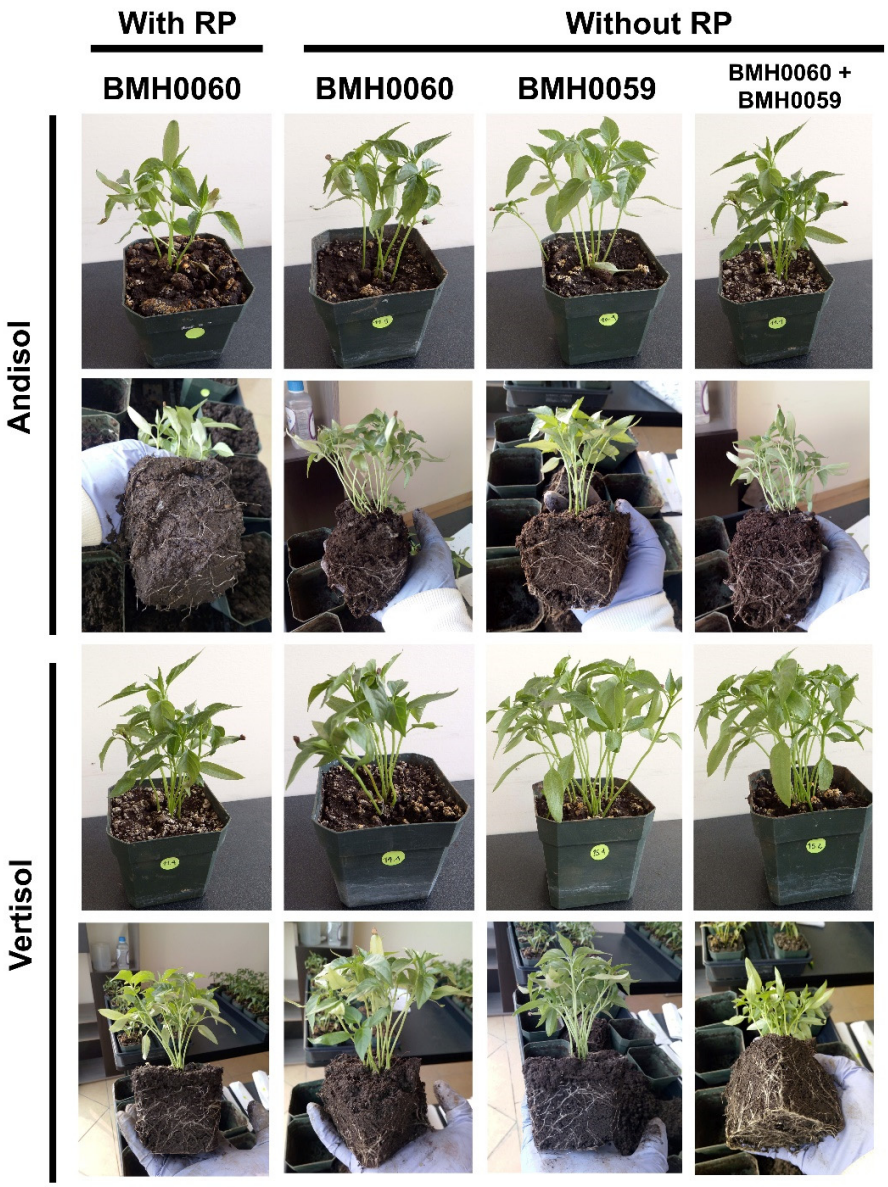

Figure S1. Representative images of the biometric parameters in *C. annuum* L inoculated with and without RP (RP^+ and RP^-), adding simple and dual treatments with *T. virens* (PMF) and/or *A. tubingensis* (PSF) 7×10^6 spores mL^{-1}), grown in two soils Andisol (And) and Vertisol (Ver).

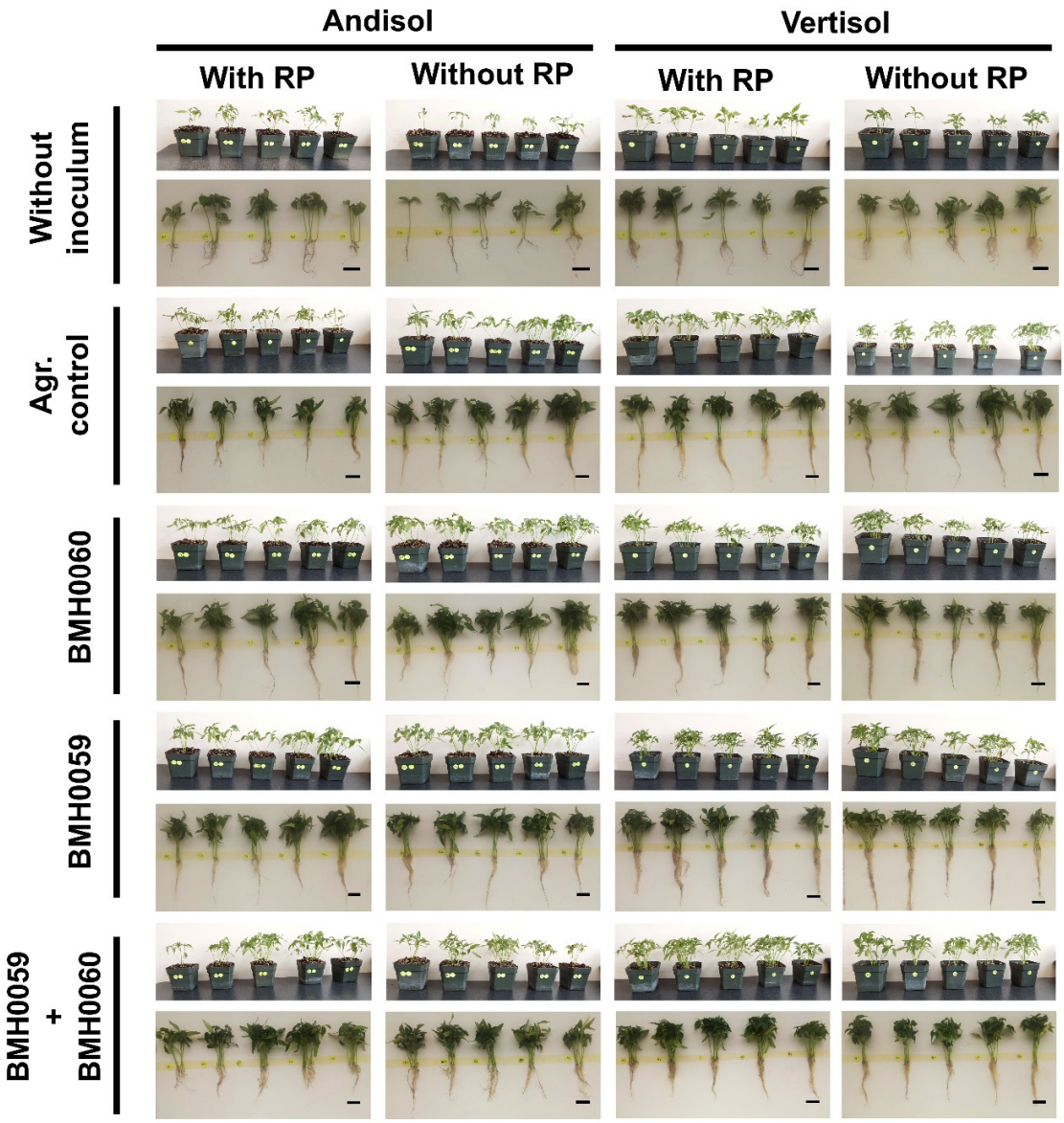

Figure S2. Representative images of biometric parameters in *C. annuum* L inoculated with and without RP (RP^+ and RP^-), adding simple and dual treatments with *T. virens* (PMF) and/or *A. tubingensis* (PSF) $7x10^6$ spores mL^{-1}), grown in two soils Andisol (And) and Vertisol (Ver)