

Supplementary Materials

Field inoculation by arbuscular mycorrhizal fungi with contrasting life-history strategies differently affects tomato nutrient uptake and residue decomposition dynamics

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Table S1 Arbuscular mycorrhizal fungal (AMF) species and family, isolate codes, donor, geographical origin and original isolate supplier

AMF species	AMF family	CCS isolate code ^a	Donor	INVAM isolate code ^b	Geographic origin	Original isolate supplier
<i>Gigaspora gigantea</i>	Gigasporaceae	MFGS05	Giusto Giovannetti	PA125	Pennsylvania	INVAM, Morgantown, West Virginia
<i>Scutellospora pellucida</i>	Gigasporaceae	MFGS12	Giusto Giovannetti	MN408A	Minnesota	INVAM, Morgantown, West Virginia
<i>Funneliformis mosseae</i>	Glomeraceae	-	Joseph B. Morton	MD118	Maryland	INVAM, Morgantown, West Virginia
<i>Sclerocystis sinuosa</i>	Glomeraceae	MFGS06	Giusto Giovannetti	MD126	Maryland	INVAM, Morgantown, West Virginia

^aCCS: Centro Colture Sperimentali, Quart (Aosta, Italy)

^bINVAM: The International Collection of (Vesicular) Arbuscular Mycorrhizal Fungi

Table S2 *P*-values of linear orthogonal contrasts on arbuscules, vesicles and arbuscular mycorrhizal fungal (AMF) colonization, and total yield of plants of *Solanum lycopersicum* var. Pisanello inoculated with four AMF species: *Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae (Giga), and *Funnelliformis mosseae* (*F.mos*) and *Sclerocystis sinuosa* (*S.sin*) belonging to the family Glomeraceae (Glome). Sampling at BBCH 62 growth stage

	Arbuscules ^a	Vesicles	AMF root colonization	Total yield plant ⁻¹
-M vs +M ^b	0.024 ^c	0.024	0.005	0.037
<i>Giga</i> vs <i>Glome</i>	0.517	0.237	0.438	0.964
<i>G.giga</i> vs <i>S.pellu</i>	0.885	0.736	0.688	0.039
<i>F.mos</i> vs <i>S.sin</i>	0.250	0.445	0.046	0.276

^a BBCH 62 - 2nd inflorescence with first flower open

^b -M, mock inoculation (control); +M, inoculation

^c In bold statistically significant values ($P < 0.05$), three replicate plots per treatment

Table S3 *P*-values of linear orthogonal contrasts on arbuscules, vesicles, arbuscular mycorrhizal fungal (AMF) colonization, shoot dry weight and total yield of plants of *Solanum lycopersicum* var. Rio Grande inoculated with four AMF species: *Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae (Giga), *Funnelliformis mosseae* (*F.mos*) and *Sclerocystis sinuosa* (*S.sin*) belonging to the family Glomeraceae (Glome). Sampling dates at BBCH 22, BBCH 62 and BBCH 89 growth stages

	BBCH 22 ^a				BBCH 62			BBCH 89			
	Arbuscules	Vesicles	AMF root colonization	Shoot dry weight	Arbuscules	Vesicles	AMF root colonization	Arbuscules	Vesicles	AMF root colonization	Total yield plant ⁻¹
-M vs +M ^b	<0.001 ^c	0.422	0.007	0.006	0.019	0.469	0.012	0.828	0.006	0.116	0.050
<i>Giga</i> vs <i>Glome</i>	0.005	1.000	0.510	0.216	1.000	0.643	0.605	0.176	0.007	0.369	0.979
<i>G.giga</i> vs <i>S.pellu</i>	0.545	0.209	0.338	0.387	0.279	0.623	0.369	0.482	0.001	0.041	0.475
<i>F.mos</i> vs <i>S.sin</i>	0.418	1.000	0.403	0.050	0.433	0.080	0.698	0.742	0.110	0.432	0.141

^a BBCH 22 - 2nd primary apical side shoot visible; BBCH 62 - 2nd inflorescence with first flower open; BBCH 89 - Fully ripe: all fruits have typical fully ripe color

^b -M, mock inoculation treatment (control); +M, inoculation

^c In bold statistically significant values ($P < 0.05$), three replicate plots per treatment

Table S4 *P*-values of linear orthogonal contrast on fruit concentration of nutrients of plants of *Solanum lycopersicum* var. Pisanello and var. Rio Grande inoculated with four arbuscular mycorrhizal fungal (AMF) species: *Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae (Giga), and *Funnelliformis mosseae* (*F.mos*) and *Sclerocystis sinuosa* (*S.sin*) belonging to the family Glomeraceae (Glome). Sampling dates in var. Pisanello: 22nd July 2019 (1st harvest) and 1st August 2019 (2nd harvest); in var. Rio Grande: 10th August 2020

	[P] ^a	[N]	[K]	[Ca]	[Mg]	[Zn]	[Fe]	[Cu]	[Mn]
var. Pisanello ^a									
1 st harvest									
-M vs +M ^b	0.147 ^c	0.024	0.323	0.555	0.389	0.015	0.407	0.873	0.293
Giga vs Glome	0.229	0.640	0.905	0.139	0.096	0.398	0.171	0.213	0.650
<i>G.giga</i> vs <i>S.pellu</i>	0.097	0.791	0.309	0.157	0.095	0.401	0.740	0.025	0.461
<i>F.mos</i> vs <i>S.sin</i>	0.176	0.014	0.168	0.200	0.833	0.759	0.760	0.056	0.280
2 nd harvest									
-M vs +M	0.011	0.086	0.639	0.003	0.022	0.749	0.333	0.038	0.005
Giga vs Glome	0.222	0.774	0.109	0.440	0.012	0.058	0.864	0.080	0.019
<i>G.giga</i> vs <i>S.pellu</i>	0.682	0.069	0.277	0.329	0.524	0.494	0.884	0.777	0.686
<i>F.mos</i> vs <i>S.sin</i>	0.094	0.714	0.022	0.685	0.011	0.485	0.546	0.118	0.045
var. Rio Grande									
-M vs +M	0.016	0.754	0.048	0.684	0.328	0.003	0.044	<0.001	0.002
Giga vs Glome	0.150	0.001	<0.001	0.029	0.097	0.014	0.453	<0.001	0.038
<i>G.giga</i> vs <i>S.pellu</i>	0.222	0.402	0.420	0.410	0.237	0.914	0.274	0.809	0.252
<i>F.mos</i> vs <i>S.sin</i>	0.550	0.973	0.003	0.524	0.915	0.007	0.430	0.952	0.159

^a BBCH 89 - Fully ripe: all fruits have typical fully ripe color

^b -M, mock inoculation (control); +M, inoculation

^c In bold statistically significant values ($P < 0.05$), three replicate plots per treatment

Table S5 *P*-values of linear orthogonal contrast on fruit content of nutrients of plants of *Solanum lycopersicum* var. Pisanello inoculated with four arbuscular mycorrhizal fungal (AMF) species: *Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae (Giga), and *Sclerocystis sinuosa* (*S.sin*) and *Funnelliformis mosseae* (*F.mos*) belonging to the family Glomeraceae (Glome). Sampling dates: 22nd July 2019 (1st harvest) and 1st August (2nd harvest)

	P ^a	N	K	Ca	Mg	Zn	Fe	Cu	Mn
1 st harvest ^a									
-M vs +M ^b	0.080 ^c	0.080	0.130	< 0.001	0.146	0.298	0.272	0.116	0.205
Giga vs Glome	0.056	0.133	0.035	0.029	0.336	0.150	0.357	0.169	0.494
<i>G.giga</i> vs <i>S.pellu</i>	0.015	0.015	0.001	< 0.001	0.030	0.021	0.022	0.012	0.097
<i>F.mos</i> vs <i>S.sin</i>	0.010	0.008	0.005	< 0.001	0.017	0.008	0.001	< 0.001	0.007
2 nd harvest									
-M vs +M	0.318	0.287	0.992	0.031	0.346	0.727	0.745	0.536	0.258
Giga vs Glome	0.059	0.069	0.021	0.538	0.018	0.046	0.818	0.058	0.019
<i>G.giga</i> vs <i>S.pellu</i>	0.082	0.248	0.311	0.360	0.575	0.879	0.882	0.640	0.403
<i>F.mos</i> vs <i>S.sin</i>	0.207	0.904	0.576	0.757	0.342	0.818	0.359	0.471	0.190

^a BBCH 89 - Fully ripe: all fruits have typical fully ripe color

^b -M, mock-inoculated treatment (control); +M, inoculation treatment

^c In bold statistically significant values ($P < 0.05$), three replicate plots per treatment

Table S6 Nutrient content in fruits of *Solanum lycopersicum* var. Pisanello inoculated with four arbuscular mycorrhizal fungal (AMF) species: *Gigaspora gigantea* MGFS05 (*G.giga*) and *Scutellospora pellucida* MGFS12 (*S.pellu*) belonging to the family Gigasporaceae (Giga), and *Sclerocystis sinuosa* MFGS06 (*S.sin*) and *Funnelliformis mosseae* MD118 (*F.mos*) belonging to the family Glomeraceae (Glome). Sampling dates: 22nd July 2019 (1st harvest) and 1st August (2nd harvest)

	P ^a	N	K	Ca	Mg	Zn	Fe	Cu	Mn
	%			g kg ⁻¹		mg kg ⁻¹			
	1 st harvest								
-M ^b	0.09 ± 0.03 ^c	0.47 ± 0.14	1.22 ± 0.35	0.07 ± 0.02	0.05 ± 0.01	0.65 ± 0.20	1.05 ± 0.37	0.27 ± 0.08	0.33 ± 0.11
<i>G.giga</i>	0.09 ± 0.01	0.45 ± 0.01	1.00 ± 0.07	0.06 ± 0.01	0.03 ± 0.00	0.46 ± 0.19	0.80 ± 0.01	0.19 ± 0.00	0.22 ± 0.01
<i>S.pellu</i>	0.31 ± 0.03	1.52 ± 0.14	3.57 ± 0.06	0.23 ± 0.01	0.13 ± 0.02	1.57 ± 0.17	2.56 ± 0.27	0.81 ± 0.07	0.94 ± 0.24
<i>F.mos</i>	0.24 ± 0.02	1.36 ± 0.11	3.03 ± 0.22	0.20 ± 0.01	0.11 ± 0.01	1.33 ± 0.10	2.47 ± 0.08	0.72 ± 0.02	0.80 ± 0.06
<i>S.sin</i>	0.06 ± 0.01	0.28 ± 0.03	0.67 ± 0.08	0.05 ± 0.00	0.03 ± 0.00	0.34 ± 0.02	0.57 ± 0.02	0.15 ± 0.01	0.17 ± 0.01
	2 nd harvest								
-M	0.18 ± 0.02	1.66 ± 0.04	3.89 ± 0.20	0.23 ± 0.02	0.12 ± 0.01	1.90 ± 0.14	3.35 ± 0.28	0.82 ± 0.07	0.88 ± 0.95
<i>G.giga</i>	0.24 ± 0.04	1.54 ± 0.19	4.11 ± 0.63	0.15 ± 0.01	0.15 ± 0.02	2.06 ± 0.29	3.58 ± 0.50	0.96 ± 0.15	1.10 ± 0.14
<i>S.pellu</i>	0.24 ± 0.03	1.72 ± 0.01	4.64 ± 0.20	0.19 ± 0.03	0.16 ± 0.01	2.02 ± 0.17	3.71 ± 0.27	1.02 ± 0.06	1.24 ± 0.12
<i>F.mos</i>	0.21 ± 0.01	1.41 ± 0.06	3.55 ± 0.10	0.16 ± 0.01	0.13 ± 0.01	1.58 ± 0.13	3.09 ± 0.40	0.84 ± 0.10	0.98 ± 0.11
<i>S.sin</i>	0.16 ± 0.02	1.43 ± 0.10	3.26 ± 0.38	0.15 ± 0.01	0.11 ± 0.01	1.64 ± 0.18	3.91 ± 1.12	0.74 ± 0.06	0.77 ± 0.56

^a BBCH 89 - Fully ripe: all fruits have typical fully ripe color

^b -M, mock-inoculated treatment (control)

^c Mean and SE of three replicate plots per treatment

Table S7 *P*-values of linear orthogonal contrast on fruit content of nutrients of plants of *Solanum lycopersicum* var. Rio Grande inoculated with four arbuscular mycorrhizal fungal (AMF) species: *Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae (*Giga*), *Funnelliformis mosseae* (*F.mos*) and *Sclerocystis sinuosa* (*S.sin*) belonging to the family Glomeraceae (*Glome*). Sampling date: 10th August 2020

	P ^a	N	K	Ca	Mg	Zn	Fe	Cu	Mn
-M vs +M ^b	0.820 ^c	0.691	0.778	0.993	0.831	0.333	0.444	0.364	0.448
Giga vs Glome	0.958	0.109	0.387	0.024 ^c	0.138	0.623	0.555	0.063	0.644
<i>G.giga</i> vs <i>S.pellu</i>	0.307	0.589	0.200	0.137	0.970	0.188	0.703	0.345	0.511
<i>F.mos</i> vs <i>S.sin</i>	0.488	0.642	0.288	0.704	0.746	0.626	0.750	0.744	0.522

^a BBCH 89 - Fully ripe: all fruits have typical fully ripe color

^b -M, mock-inoculated treatment (control); +M, inoculation treatment

^c In bold statistically significant values ($P < 0.05$), three replicate plots per treatment

Table S8 Nutrient content in fruits of *Solanum lycopersicum* var. Rio Grande inoculated with four arbuscular mycorrhizal fungal (AMF) species: *Gigaspora gigantea* MGFS05 (*G.giga*) and *Scutellospora pellucida* MGFS12 (*S.pellu*) belonging to the family Gigasporaceae (*Giga*), *Funnelliformis mosseae* MD118 (*F.mos*) and *Sclerocystis sinuosa* MFGS06 (*S.sin*) belonging to the family Glomeraceae (*Glome*). Sampling date: 10th August 2020

	P ^a	N	K	Ca	Mg	Zn	Fe	Cu	Mn
	%			g kg ⁻¹		mg kg ⁻¹			
-M ^b	0.14 ± 0.02 ^c	0.96 ± 0.20	2.02 ± 0.12	0.09 ± 0.02	0.08 ± 0.01	0.90 ± 0.06	1.53 ± 0.34	0.31 ± 0.03	0.32 ± 0.02
<i>G.giga</i>	0.15 ± 0.02	1.06 ± 0.19	2.25 ± 0.33	0.06 ± 0.02	0.07 ± 0.01	0.97 ± 0.15	1.66 ± 0.25	0.44 ± 0.07	0.41 ± 0.07
<i>S.pellu</i>	0.14 ± 0.02	0.97 ± 0.11	1.85 ± 0.32	0.07 ± 0.01	0.07 ± 0.01	1.15 ± 0.28	1.83 ± 0.54	0.41 ± 0.08	0.36 ± 0.09
<i>F.mos</i>	0.13 ± 0.02	0.71 ± 0.11	1.58 ± 0.27	0.09 ± 0.02	0.09 ± 0.02	0.85 ± 0.12	1.86 ± 0.28	0.28 ± 0.03	0.33 ± 0.05
<i>S.sin</i>	0.16 ± 0.02	0.82 ± 0.06	2.07 ± 0.15	0.13 ± 0.02	0.09 ± 0.00	1.08 ± 0.06	2.06 ± 0.34	0.35 ± 0.03	0.39 ± 0.04

^a BBCH 89 - Fully ripe: all fruits have typical fully ripe color

^b -M, mock inoculation (control)

^c Mean and SE of three replicate plots per treatment

Table S9 Results of PERMANOVA and variation partitioning of the effect of arbuscular mycorrhizal fungal (AMF) inoculation (Inoc) [*Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae, and *Funnelliformis mosseae* (*F.mos*) and *Sclerocystis sinuosa* (*S.sin*) belonging to the family Glomeraceae] on total yield and fruit concentration of nutrients, and on AMF root traits (arbuscules, vesicles, AMF root colonization) of *Solanum lycopersicum* L. var. Pisanello and var. Rio Grande. Analysis of homogeneity of multivariate dispersion (PERMDISP) of Inoc.

	df	Pseudo-F	P (perm)	Variance explained (%)		df	Pseudo-F	P (perm)	Variance explained (%)
<i>var. Pisanello</i> ^a					<i>var. Rio Grande</i>				
Inoc ^b	4	2.3	0.001 ^c	30.2	Inoc	4	2.9	0.001	39.0
PERMDISP Inoc			0.268		PERMDISP Inoc			0.684	
Pair-wise tests			P(MC) ^d		Pair-wise tests			P(MC)	
<i>F.mos, S.pellu</i>			0.666		<i>F.mos, S.pellu</i>			0.169	
<i>F.mos, G.giga</i>			0.115		<i>F.mos, G.giga</i>			0.046	
<i>F.mos, S.sin</i>			0.102		<i>F.mos, S.sin</i>			0.265	
<i>F.mos, -M</i>			0.036		<i>F.mos, -M</i>			0.045	
<i>S.pellu, G.giga</i>			0.292		<i>S.pellu, G.giga</i>			0.355	
<i>S.pellu, S.sin</i>			0.177		<i>S.pellu, S.sin</i>			0.118	
<i>S.pellu, -M</i>			0.073		<i>S.pellu, -M</i>			0.017	
<i>G.giga, S.sin</i>			0.114		<i>G.giga, S.sin</i>			0.047	
<i>G.giga, -M</i>			0.033		<i>G.giga, -M</i>			0.022	
<i>S.sin, -M</i>			0.083		<i>S.sin, -M</i>			0.180	

^a Response data were fourth-root transformed and normalized, and the resemblance matrix was calculated using the Euclidean distance between samples

^b PERMANOVA was performed following a completely randomized design with AMF inoculation (Inoc) as fixed factor and with three replicate plots per treatment

^c In bold statistically significant values ($P \leq 0.05$)

^d Pair-wise comparisons among levels of the factor Inoc and significance obtained by Monte Carlo permutations [Monte Carlo P -values, P(MC)]

Table S10 *P*-values of linear orthogonal contrast on the abundance of bacteria and fungi and on the fungal:bacterial ratio (F:B) in soil of *Solanum lycopersicum* var. Pisanello and var. Rio Grande inoculated with four arbuscular mycorrhizal fungal (AMF) species: *Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae (Giga), and *Funnelliformis mosseae* (*F.mos*) and *Sclerocystis sinuosa* (*S.sin*) belonging to the family Glomeraceae (Glome). Sampling dates at BBCH 89 (Meier et al., 2001): var. Pisanello 30st August 2019; var. Rio Grande 27th August 2020.

	var. Pisanello ^a			var. Rio Grande		
	Bacteria ^b	Fungi ^c	F:B	Bacteria	Fungi	F:B
-M vs +M ^d	<0.001 ^e	<0.001	<0.001	0.024	<0.001	<0.001
<i>Giga</i> vs <i>Glome</i>	0.268	0.021	0.037	0.003	<0.001	0.015
<i>G.giga</i> vs <i>S.pellu</i>	0.337	0.338	0.921	0.269	0.534	0.009
<i>F.mos</i> vs <i>S.sin</i>	0.117	0.480	0.998	0.212	0.084	0.670

^a BBCH 89 - Fully ripe: all fruits have typical fully ripe color

^b Abundance of soil bacteria based on qPCR analysis using the 16 rRNA gene region as bacterial target and expressed as gene copies g⁻¹ dry soil. DNA was extracted in triplicate for each soil sample and then pooled; three technical qPCR replicates were run per sample

^c Abundance of soil fungi based on qPCR analysis using the ITS1 region as fungal target and expressed as gene copies g⁻¹ dry soil

^d -M, mock inoculation (control); +M, inoculation

^e In bold statistically significant values (*P* < 0.05), three replicate plots per treatment.

Table S11 Abundance of bacteria and fungi and fungal:bacterial ratio (F:B) in soil of *Solanum lycopersicum* var. Pisanello and var. Rio Grande inoculated with four arbuscular mycorrhizal fungal (AMF) species: *Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae (Giga), and *Funnelliformis mosseae* (*F.mos*) and *Sclerocystis sinuosa* (*S.sin*) belonging to the family Glomeraceae (Glome). Sampling dates at BBCH 89: var. Pisanello 30th August 2019; in var. Rio Grande 27th August 2020

	var. Pisanello ^a			var. Rio Grande		
	Bacteria ^b	Fungi ^c	F:B	Bacteria ^b	Fungi ^c	F:B
	RNA gene copies g ⁻¹ dry soil			ITS1 gene copies g ⁻¹ dry soil		
-M ^d	3.82·10 ¹⁰ ± 2.8·10 ⁹ ^e	1.49·10 ¹⁰ ± 6.4·10 ⁹	0.37 ± 0.16	1.05·10 ¹¹ ± 3.7·10 ¹⁰	4.15·10 ¹⁰ ± 5.2·10 ⁹	0.504 ± 0.01
<i>G.giga</i>	1.44·10 ¹¹ ± 1.2·10 ¹⁰	1.97·10 ¹¹ ± 2.3·10 ¹⁰	1.39 ± 0.08	1.99·10 ¹¹ ± 2.2·10 ¹⁰	2.60·10 ¹¹ ± 2.8·10 ¹⁰	1.330 ± 0.01
<i>S.pellu</i>	1.84·10 ¹¹ ± 3.2·10 ¹⁰	2.42·10 ¹¹ ± 3.0·10 ¹⁰	1.37 ± 0.08	2.37·10 ¹¹ ± 2.2·10 ¹⁰	2.79·10 ¹¹ ± 3.0·10 ¹⁰	1.180 ± 0.02
<i>F.mos</i>	1.53·10 ¹¹ ± 1.0·10 ¹⁰	1.60·10 ¹¹ ± 2.0·10 ¹⁰	1.11 ± 0.08	1.51·10 ¹¹ ± 1.3·10 ¹⁰	1.76·10 ¹¹ ± 1.4·10 ¹⁰	1.130 ± 0.02
<i>S.sin</i>	1.26·10 ¹¹ ± 8.4·10 ⁹	1.44·10 ¹¹ ± 1.1·10 ¹⁰	1.17 ± 0.01	1.08·10 ¹¹ ± 1.1·10 ¹⁰	1.19·10 ¹¹ ± 1.7·10 ¹⁰	1.110 ± 0.05

^a BBCH 89 - Fully ripe: all fruits have typical fully ripe color

^b Abundance of soil bacteria based on qPCR analysis using the 16 rRNA gene region as bacterial target and expressed as gene copies g⁻¹ dry soil. DNA was extracted in triplicate per each soil sample and then pooled; three technical qPCR replicates were run per sample

^c Abundance of soil fungi based on qPCR analysis using the ITS1 region as fungal target and expressed as gene copies g⁻¹ dry soil

^d -M, mock inoculation (control)

^e Mean and SE of three replicate plots per treatment

a) Experimental set-up



Var. Pisanello (a local old variety) having an indeterminate growth habit



Var. Rio Grande (a modern variety) having a determinate growth habit



Distinct growth behaviour and nutrient distribution pattern



b) Hypotheses

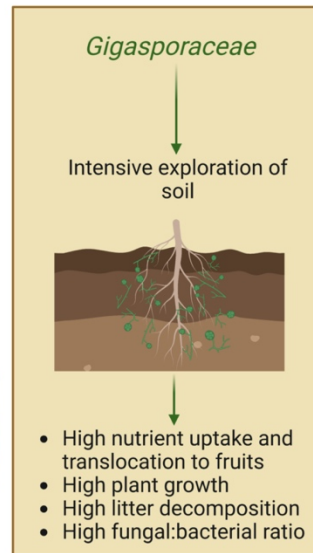
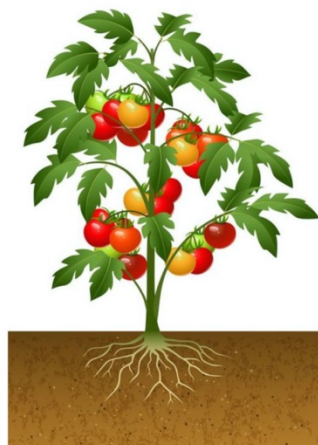
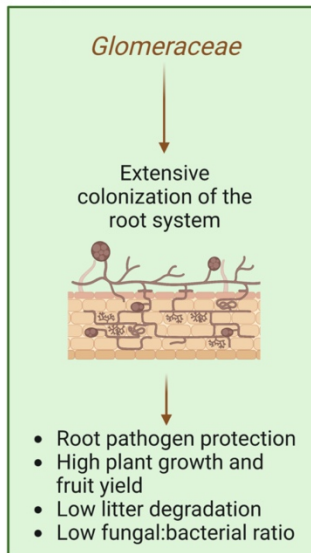
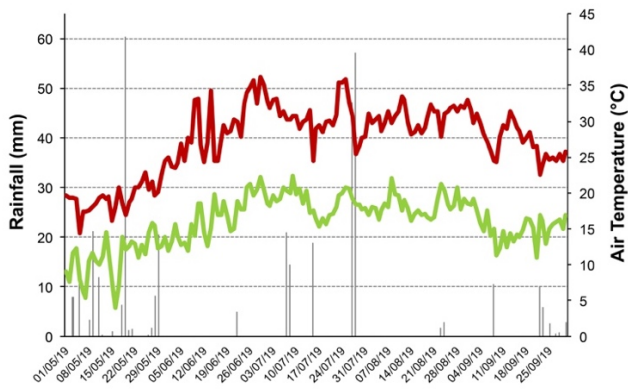


Fig. S1 Graphical scheme of *Solanum lycopersicum* varieties used in the experiments of arbuscular mycorrhizal fungal (AMF) inoculation (a); research hypotheses for Gigasporaceae (*Gigaspora gigantea* and *Scutellospora pellucida*) and Glomeraceae (*Funnelliformis mosseae* and *Sclerocystis sinuosa*) (b).

a) 2019



b) 2020

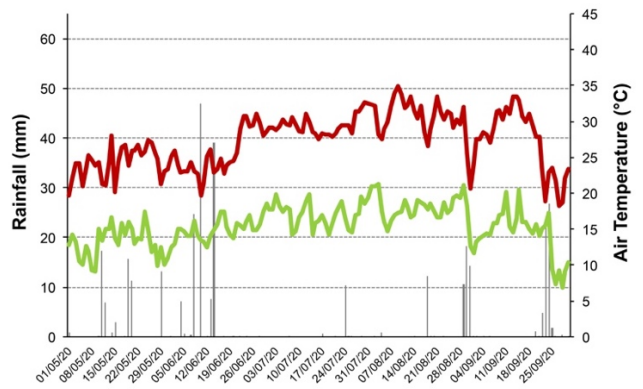


Fig. S2 Daily rainfall data and air maximum and minimum temperature during the growth cycle of tomato (*Solanum lycopersicum* L.) in 2019 (a) and 2020 (b) at the experimental site in the organic farm “Fattoria Le prata”, Pisa, Italy. The rainfall gauge is located in Metato, San Giuliano Terme, Pisa (E 16° 11’40’’ N48° 47’ 38’’).

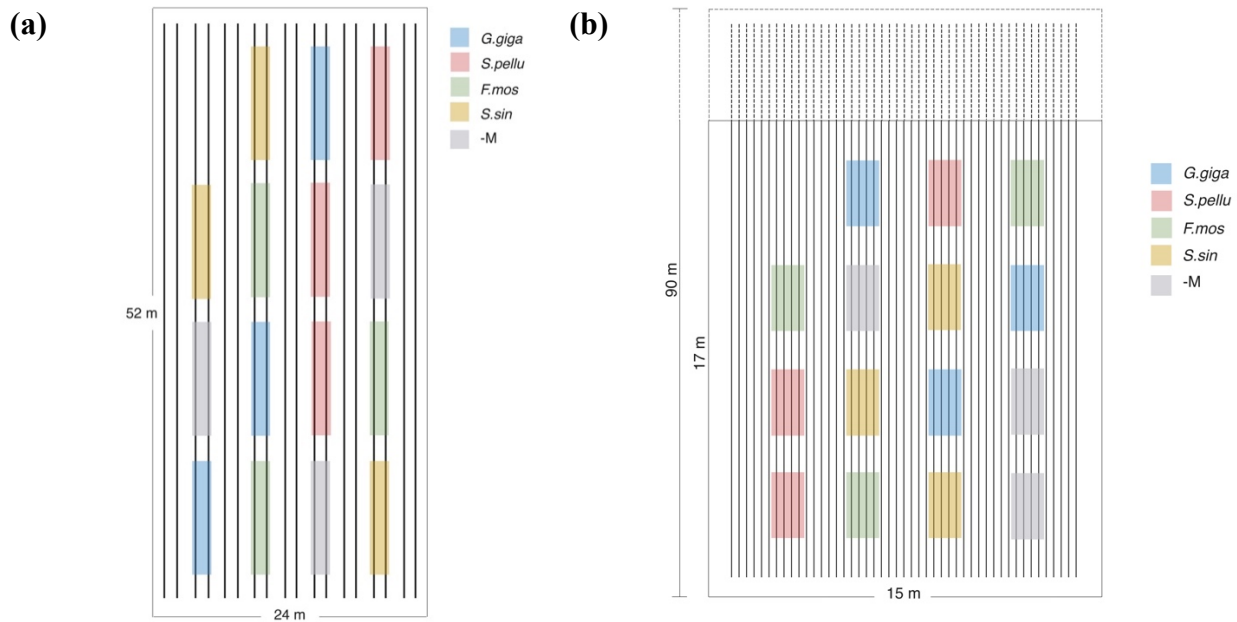


Fig. S3 Schematic overview of the completely randomized design of 2019: *Solanum lycopersicum* L. var. Pisanello (a). Treatments were: mock inoculation (control, -M) and inoculation with single AMF species: *Gigaspora gigantea* (*G.giga*) and *Scutellospora pellucida* (*S.pellu*) belonging to the family Gigasporaceae; *Funnelliformis mosseae* (*F.mos*) and *Sclerocystis sinuosa* (*S.sin*) belonging to the family Glomeraceae Schematic overview of the completely randomized design of 2020: *Solanum lycopersicum* L. var. Rio Grande (b). The layouts are drawn to scale within each field.

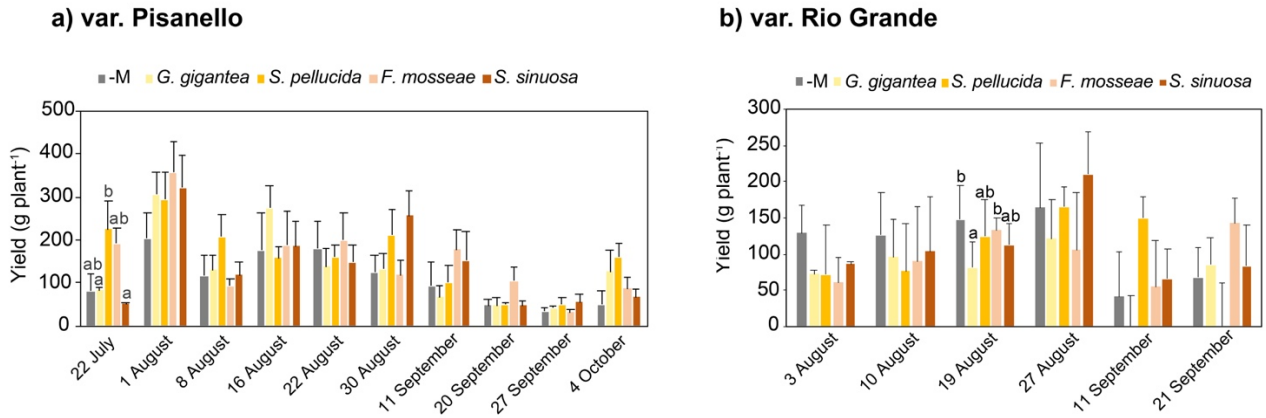


Fig. S4 Yield (fruit fresh weight per plant) of *Solanum lycopersicum* L. var. Pisanello mock-inoculation (control, -M) and inoculation with single AMF species: *Gigaspora gigantea* and *Scutellospora pellucida* belonging to the family Gigasporaceae; *Funnelliformis mosseae* and *Sclerocystis sinuosa* belonging to the family Glomeraceae. For the var. Pisanello the experiment was carried out in 2019, while for the var. Rio Grande the experiment was carried out in 2020. For each harvest, values followed by different letters are significantly different among treatments, according to one-way ANOVAs ($P < 0.05$), while values without letters did not show any significant differences.

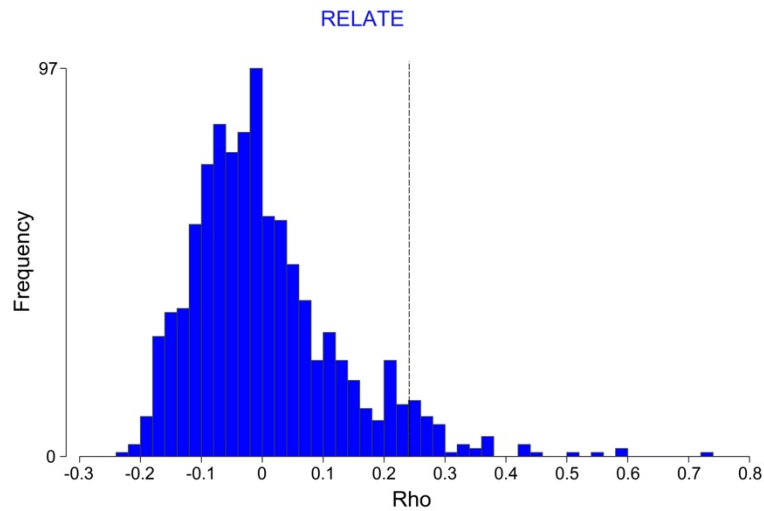


Fig. S5 RELATE analysis based on Spearman rank and 999 permutations for testing the significance of the relationship between the two matrices: the matrix of percentages of remaining mass of litter bags at the four sampling times and the matrix of soil fungal and bacterial abundances ($\rho = 1$ perfect relationship) (Clarke and Warwick 2001). The analysis was carried out using PRIMER 7 and PERMANOVA + software (Anderson et al. 2008; Clarke and Gorley 2015).

References

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