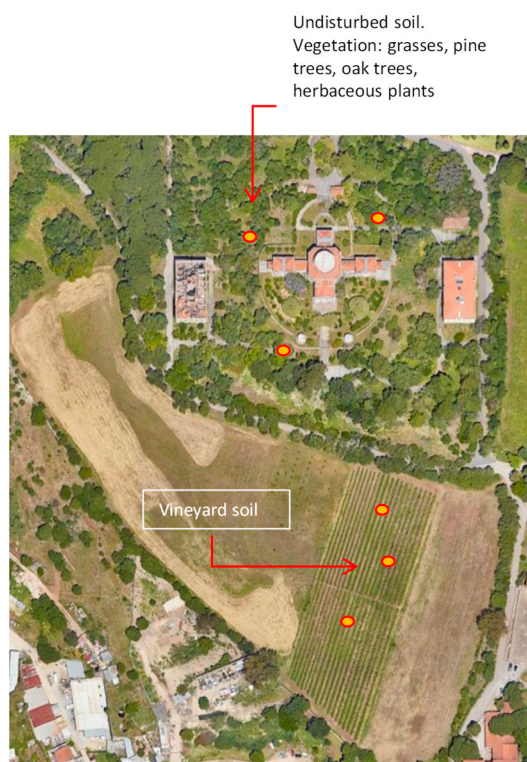
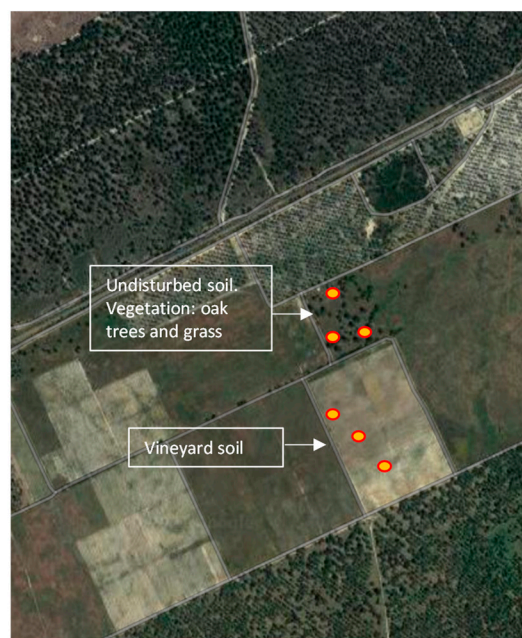


Supplementary material



Lisbon-Tapada da Ajuda



Pegões- PORVID- Central Pole for
the Conservation of Autochthonous
Grapevine Variability

Figure S1. Sampling sites.

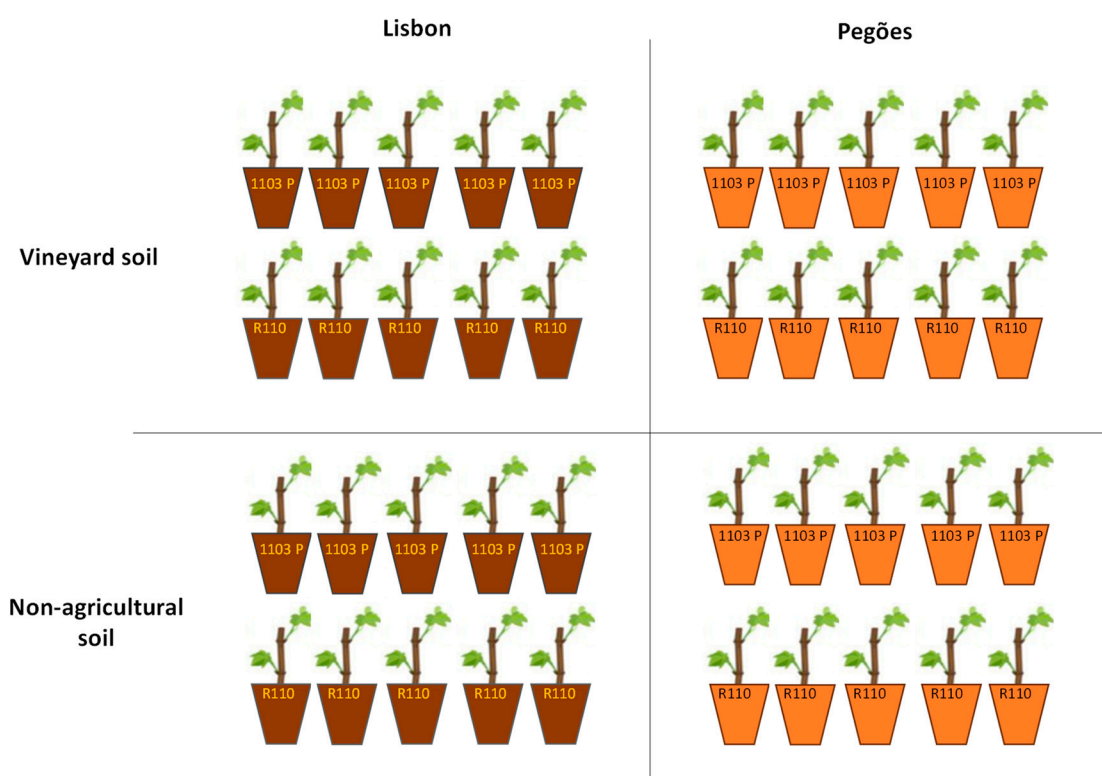


Figure S2. Experimental design.

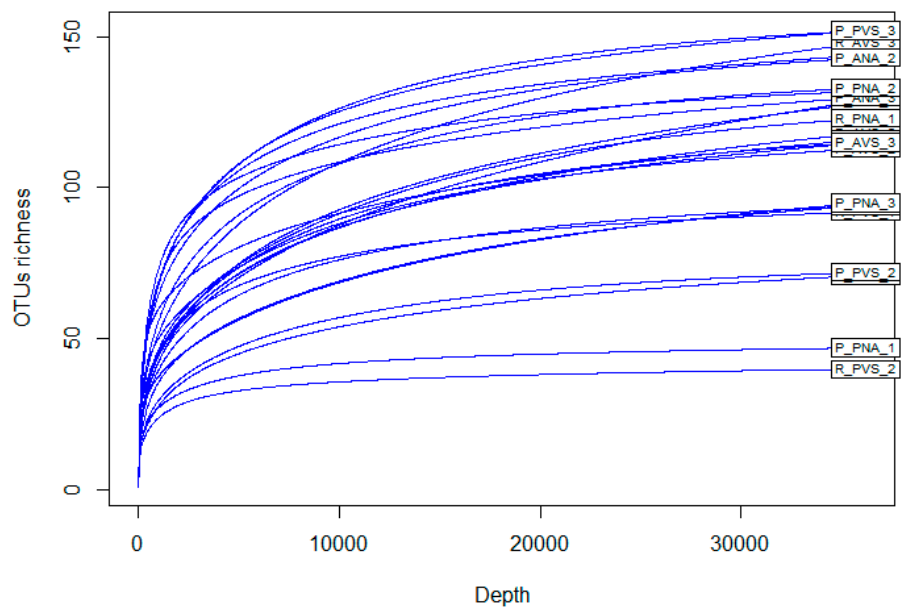


Figure S3: Rarefaction curve for assessing the sampling effort.

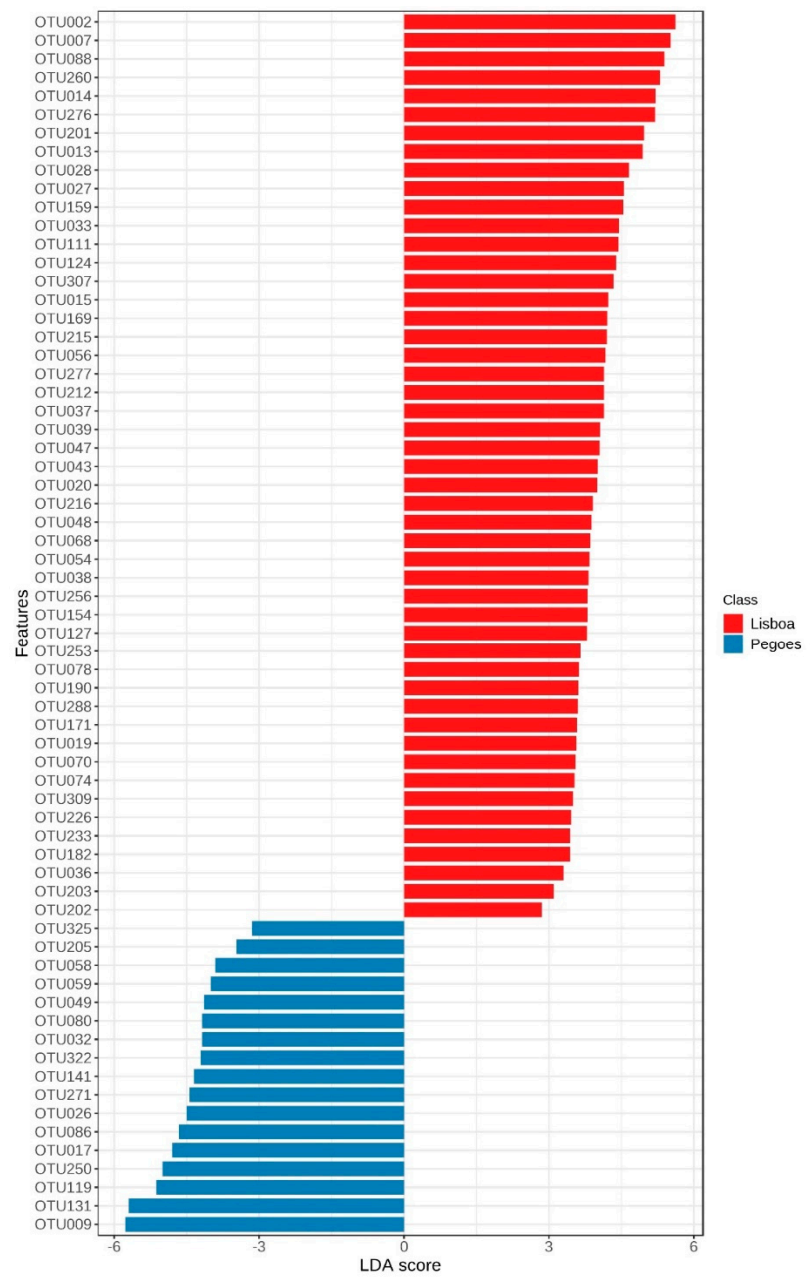


Figure S4. Significantly enriched arbuscular mycorrhizal taxa detected by Linear Discriminant analysis of effect size (Lefse) in Lisbon and Pegões soils. Significant differences were defined at $p < 0.05$ and an LDA score ($\log \text{LDA}$) > 2.0 .

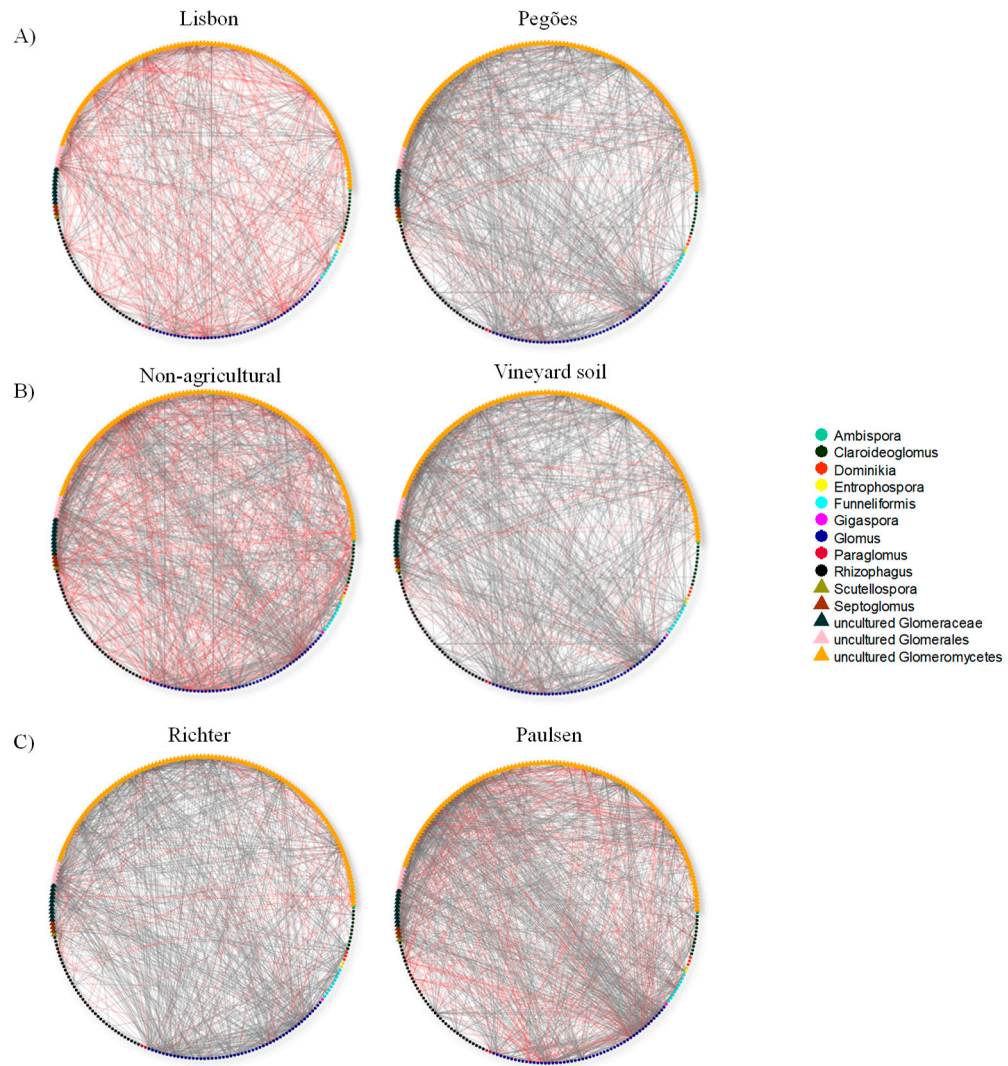


Figure S5. Significant co-occurrence networks of grapevine root arbuscular mycorrhizal fungal communities A) in Lisbon and Pegões, B) Non-agricultural soil and vineyard soil and C) in Richter 110 and 1103 Paulsen rootstocks. The nodes of each network represent the taxonomic affiliation of each OTU. Red lines connecting each pair of nodes (OTUs) show negative associations and grey lines show positive ones.

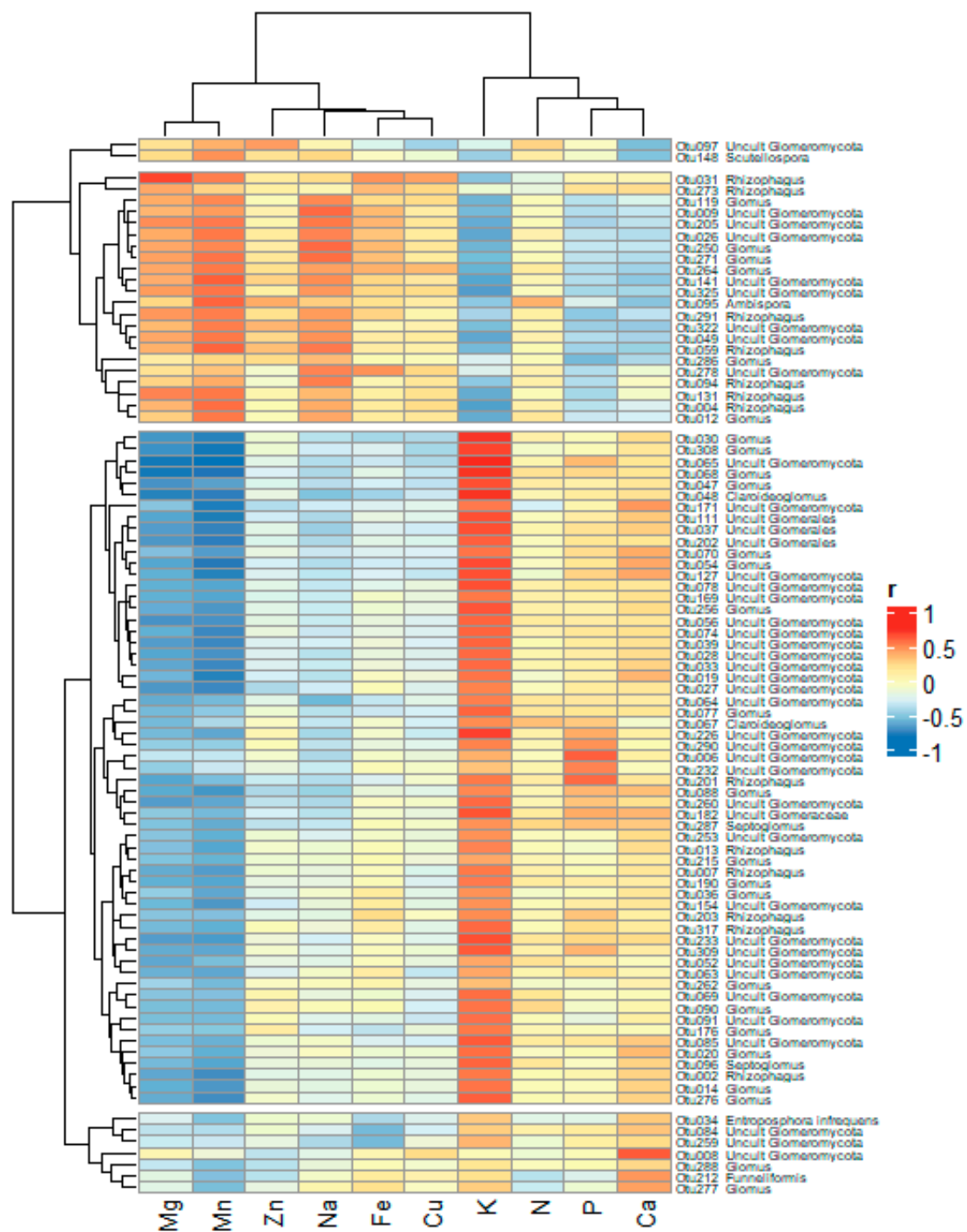


Figure S6. Correlation analysis (Spearman) between individual operational taxonomic units (OTUs) of arbuscular mycorrhizal fungi and leaf nutrient concentrations. Only OTUs showing significant correlation ($p < 0.01$) between their relative abundance in roots and leaf nutrient concentrations are shown.

Table S1. Correlation analysis (Spearman's ρ) between soil physico-chemical properties and α -diversity indexes. Only correlations with p -values higher than 0.01 are shown.

Parameter 1	Parameter 2	ρ	p -value
OTU richness	OC	0.83	0.01
	Soil_N	0.83	0.01
Shannon index	pH	0.93	< 0.01
	EC	0.93	< 0.01
	OC	0.83	0.01
	Soil_total N	0.83	0.01
	Soil_K	0.93	< 0.01
	Soil_Ca	0.93	< 0.01
	Soil_Zn	0.93	< 0.01

Table S2. Significantly enriched arbuscular mycorrhizal taxa detected by Linear Discriminant analysis of effect size (Lefse) in Lisbon and Pegões soils.

OTU number	Order	Family	Genus	Other	Relative abundance (%)	
					Lisbon	Pegoes
OTU019	-	-	-	Uncultured Glomeromycota	0.08	0.01
OTU027	-	-	-	Uncultured Glomeromycota	0.72	0.03
OTU028	-	-	-	Uncultured Glomeromycota	0.93	0.03
OTU033	-	-	-	Uncultured Glomeromycota	0.59	0.04
OTU039	-	-	-	Uncultured Glomeromycota	0.24	0.01
OTU056	-	-	-	Uncultured Glomeromycota	0.29	0.01
OTU074	-	-	-	Uncultured Glomeromycota	0.07	<0.01
OTU078	-	-	-	Uncultured Glomeromycota	0.09	<0.01
OTU127	-	-	-	Uncultured Glomeromycota	0.11	<0.01
OTU154	-	-	-	Uncultured Glomeromycota	0.14	0.01
OTU169	-	-	-	Uncultured Glomeromycota	0.34	0.01
OTU171	-	-	-	Uncultured Glomeromycota	0.08	<0.01
OTU216	-	-	-	Uncultured Glomeromycota	0.16	<0.01
OTU226	-	-	-	Uncultured Glomeromycota	0.08	0.02
OTU233	-	-	-	Uncultured Glomeromycota	0.06	<0.01
OTU253	-	-	-	Uncultured Glomeromycota	0.10	0.01
OTU260	-	-	-	Uncultured Glomeromycota	4.09	0.16
OTU309	-	-	-	Uncultured Glomeromycota	0.09	0.03

OTU number	Order	Family	Genus	Other	Relative abundance (%)	
					Lisbon	Pegoes
OTU037	Glomerales	-	-	Uncultured Glomerales	0.30	<0.01
OTU111	Glomerales	-	-	Uncultured Glomerales	0.54	0.01
OTU202	Glomerales	-	-	Uncultured Glomerales	0.02	<0.01
OTU048	Glomerales	Claroideoglomeraceae	<i>Claroideoglomus</i>	-	0.15	<0.01
OTU038	Glomerales	Glomeraceae	-	Uncultured Glomeraceae	0.15	0.02
OTU124	Glomerales	Glomeraceae	-	Uncultured Glomeraceae	0.53	0.05
OTU182	Glomerales	Glomeraceae	-	Uncultured Glomeraceae	0.06	<0.01
OTU307	Glomerales	Glomeraceae	-	Uncultured Glomeraceae	0.51	0.09
OTU015	Glomerales	Glomeraceae	<i>Funneliformis</i>	-	0.38	0.02
OTU212	Glomerales	Glomeraceae	<i>Funneliformis</i>	-	0.27	0.01
OTU020	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.21	0.01
OTU014	Glomerales	Glomeraceae	<i>Glomus</i>	-	3.67	0.5
OTU036	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.05	<0.01
OTU047	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.22	<0.01
OTU054	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.13	<0.01
OTU068	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.13	<0.01
OTU070	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.07	<0.01
OTU088	Glomerales	Glomeraceae	<i>Glomus</i>	-	5.27	0.51
OTU159	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.69	0.01
OTU190	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.1	0.02

OTU number	Order	Family	Genus	Other	Relative abundance (%)	
					Lisbon	Pegoes
OTU215	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.41	0.11
OTU256	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.13	<0.01
OTU276	Glomerales	Glomeraceae	<i>Glomus</i>	-	3.32	0.26
OTU277	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.27	0.01
OTU288	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.09	<0.01
OTU002	Glomerales	Glomeraceae	<i>Rhizophagus</i>	-	9.56	1.47
OTU007	Glomerales	Glomeraceae	<i>Rhizophagus</i>	-	7.35	0.85
OTU013	Glomerales	Glomeraceae	<i>Rhizophagus</i>	-	2.06	0.35
OTU201	Glomerales	Glomeraceae	<i>Rhizophagus</i>	-	2.32	0.5
OTU203	Glomerales	Glomeraceae	<i>Rhizophagus</i>	-	0.03	0.01
OTU043	Glomerales	Glomeraceae	<i>Septoglomus</i>	-	0.2	<0.01
OTU009	-	-	-	Uncultured Glomeromycota	0.74	12.47
OTU017	-	-	-	Uncultured Glomeromycota	0.05	1.3
OTU026	-	-	-	Uncultured Glomeromycota	0.01	0.64
OTU141	-	-	-	Uncultured Glomeromycota	0.01	0.47
OTU205	-	-	-	Uncultured Glomeromycota	<0.01	0.06
OTU322	-	-	-	Uncultured Glomeromycota	<0.01	0.33
OTU325	-	-	-	Uncultured Glomeromycota	<0.01	0.02
OTU080	-	-	-	Uncultured Glomeromycota	<0.01	0.290
OTU049	-	-	-	Uncultured Glomeromycota	0.01	0.280
OTU058	-	-	-	Uncultured Glomeromycota	<0.01	0.16

OTU number	Order	Family	Genus	Other	Relative abundance (%)	
					Lisbon	Pegoes
OTU119	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.18	2.93
OTU250	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.18	2.20
OTU271	Glomerales	Glomeraceae	<i>Glomus</i>	-	0.03	0.55
OTU059	Glomerales	Glomeraceae	<i>Rhizophagus</i>	-	<0.01	0.2
OTU086	Glomerales	Glomeraceae	<i>Rhizophagus</i>	-	0.07	0.97
OTU131	Glomerales	Glomeraceae	<i>Rhizophagus</i>	-	3.16	12.97
OTU032	Paraglomerales	Paraglomeraceae	<i>Paraglomus</i>	-	<0.01	0.3

Table S3. Leaf nutrient concentration in Aragonez variety grapevines grafted onto Richter 110 (R110) or 1103 Paulsen (1103 P) rootstocks grown in vineyard (VS) or non-agricultural soils (NAS) from Lisbon and Pegões. Data indicate average values \pm standard error ($n=3$). Different letters indicate significant differences between experimental groups according to Duncan mean comparison test.

Location	Land use	Rootstock	N	P	K	Ca	Mg	Na	Mn	Fe	Zn	Cu
Pegões	NAS	R 110	22.49 \pm 1.413 ab	1.16 \pm 0.128 a	9.29 \pm 0.440 c	7.48 \pm 1.457 b	4.91 \pm 0.087 ab	0.86 \pm 0.066 a	0.25 \pm 0.010 a	124.63 \pm 8.878 a	25.32 \pm 3.266 b	92.73 \pm 30.905 ab
			24.23 \pm 1.115 a	1.49 \pm 0.166 a	14.94 \pm 0.862 b	5.78 \pm 0.188 b	4.77 \pm 0.235 bc	0.74 \pm 0.149 ab	0.31 \pm 0.012 a	126.61 \pm 19.916 a	33.81 \pm 1.536 a	48.84 \pm 32.728 b
		VS	21.67 \pm 0.504 ab	1.41 \pm 0.131 a	14.63 \pm 1.678 b	9.29 \pm 1.435 ab	4.07 \pm 0.534 cd	0.83 \pm 0.0815 ab	0.10 \pm 0.036 abc	116.14 \pm 4.357 a	24.26 \pm 2.619 bc	141.70 \pm 81.062 a
			20.32 \pm 0.939 b	1.52 \pm 0.074 a	14.52 \pm 2.123 b	10.45 \pm 0.714 a	5.53 \pm 0.415 a	0.55 \pm 0.071 ab	0.12 \pm 0.023 a	142.86 \pm 20.204 a	24.3 \pm 1.273 bc	113.18 \pm 34.628 ab
Lisbon	NAS	R 110	22.82 \pm 1.212 ab	1.52 \pm 0.00 a	21.77 \pm 0.720 a	9.83 \pm 0.106 ab	3.09 \pm 0.329 e	0.64 \pm 0.194 ab	0.04 \pm 0.003 b	112.19 \pm 8.071 a	25.25 \pm 1.997 b	41.98 \pm 21.434 b
		1103 P	21.17 \pm 2.321 ab	1.18 \pm 0.389 a	20.53 \pm 2.094 a	10.16 \pm 0.783 ab	3.52 \pm 0.308 de	0.53 \pm 0.141 ab	0.04 \pm 0.004 b	112.46 \pm 5.891 a	23.81 \pm 2.642 bc	48.10 \pm 17.347 b
	VS	R 110	20.38 \pm 1.056 b	1.37 \pm 0.111 a	14.03 \pm 1.048 b	11.86 \pm 0.397 a	4.62 \pm 0.061 bc	0.66 \pm 0.255 ab	0.06 \pm 0.008 bc	172.79 \pm 47.985 a	19.74 \pm 0.235 c	75.63 \pm 10.085 ab
		1103 P	23.36 \pm 1.151 ab	1.72 \pm 0.205 a	16.72 \pm 0.784 b	10.38 \pm 1.151 ab	4.11 \pm 0.295 cd	0.07 \pm 0.004 abc	0.50 \pm 0.131 b	113.12 \pm 17.390 a	22.38 \pm 2.576 bc	74.28 \pm 32.744 ab