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Desert truffles (mycorrhizal hypogeous Ascomycota) are found in arid and semi-arid areas of the globe. They are not only a key component of the mycological flora on the Mediterranean basin but also economically significant for the local rural populations.

Desert truffles fruit bodies are a potentially important food source for animals and humans, rich in proteins and poor in carbohydrates and lipids. Plus, given the considerable prices they may reach in local markets, their cultivation has the potential to enhance the socio-economic development of rural and/or local populations around the Mediterranean basin.

Terfezia is undoubtedly the most diversified of all desert truffle genera, but its taxonomy is far from resolved.

Approach: We compiled and used the public available ITS data on *Terfezia* spp. on the custom-curated UNITE database to reconstruct the genus phylogeny and we confronted the results with putative plant host and soil parameters associated with the different specimens, whenever available. We proposed an identification key to *Terfezia* genus highlighting the importance of morphological and ecological characterization.

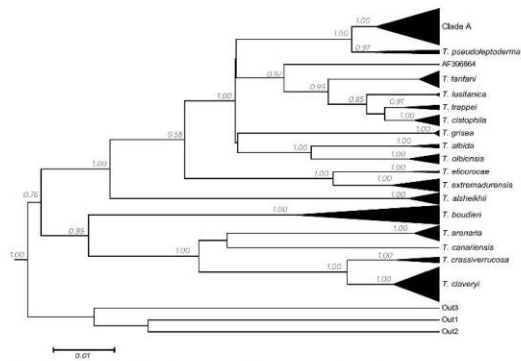


Fig. 1. Phylogenetic relationship between *Terfezia* species. The phylogeny corresponds to the majority rule consensus tree of trees sampled in a Bayesian analysis, and the posterior probability values are shown for main nodes.

Key to <i>Terfezia</i> species	
1	Warty species 2
	Warty or warty-reticulated species 11
2(1)	In alkaline soils 3
	In acid soils 5
3(2)	With <i>Pinus</i> and/or <i>Quercus</i> species <math>< 4 \mu\text{m}</math> with pointed spines 4
	With <i>Pinus</i> and/or <i>Quercus</i> species <math>< 4 \mu\text{m}</math> with pointed spines <i>olbiensis</i>
4(3)	Peridium light colour, glabrous with green colour <i>albida</i>
	Peridium dark colour, glabrous with green colour <i>grisea</i>
5(2)	Ascospore diameter $> 4.5 \mu\text{m}$ 6
	Ascospore diameter <math>< 4.5 \mu\text{m}</math> 7
6(5)	Ascospore brown-reddish, spores with straight pointed spines <i>terfezia</i>
	Ascospore brown, spores with conical $1.5-2 \mu\text{m}$ at base/short and truncated spines <i>extravulgare</i>
7(3)	Glabrous without green colour, with <i>Clusia</i> 8
	Glabrous with green colour, with <i>Clusia</i> , <i>Pinus</i> or <i>Quercus</i> 9
8(7)	Spores $> 15 \mu\text{m}$ with beak-like spines, with <i>Clusia</i> <i>psuedopendula</i>
	Spores $> 15 \mu\text{m}$ with straight spines, with <i>Clusia</i> exclusively <i>chrysalis</i>
9(7)	Peridium <math>< 1 \text{ mm}</math> 10
	Peridium 1 mm <i>major</i>
10(5)	With <i>Pinus</i> and/or <i>Quercus</i> species with spores <math>< 4 \mu\text{m}</math> long <i>major</i>
	With <i>Faba</i> and/or <i>Quercus</i> species with spores <math>< 4 \mu\text{m}</math> long <i>berberula</i>
11(1)	In alkaline 12
	In acid soils 16
12(1)	Spores with warts making a complete and clear reticulum 13
	Spores with warts sometimes forming an incomplete reticulum 14
13(1)	Glabrous strong pink, spores $> 18 \mu\text{m}$ <i>caerulescens</i>
	Glabrous whitish, spores $> 18 \mu\text{m}$ <i>elliptica</i>
14(1)	Spores $> 22 \mu\text{m}$ 15
	Spores <math>< 22 \mu\text{m}</math> <i>trapezi</i>
15(4)	Ascii with 4-6 spores, spores with spines <math>< 1.5 \mu\text{m}</math> long <i>leventii</i>
	Ascii with 4-6 spores, spores with spines <math>< 1.5 \mu\text{m}</math> long <i>emarginata</i>
16(1)	Ascospores $> 2 \text{ cm}$, spores warty without reticulum <i>emarginata</i>
	Ascospores $> 2 \text{ cm}$, spores warty with a complete reticulum <i>albifolia</i>



Research highlights

- *Terfezia* classification is updated and pressing taxonomic issues were solved
- applied synonymy between *T. trapezi* and *T. cistophila* seems incorrect
- several lineages are hidden within the *T. leptoderma/olbiensis* complex
- an identification key to *Terfezia* genus is now available
- absence of geographic and ecological data greatly hinders identification



More in: Louro, R et al., What is in a name? *Terfezia* classification revisited, Fungal Biology, <https://doi.org/10.1016/j.funbio.2019.01.003>

