

# Checklist of arbuscular mycorrhizal fungi in tropical forests

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Tropical forests account for about 50 % of all world biodiversity, playing a key role in the functioning of the globe. These forests are divided into six natural vegetation formations: Lowland evergreen rainforests, Semi-evergreen rainforests, Dry forests, Lower montane forests, Upper montane forests and Mangroves. Arbuscular mycorrhizal fungi (AMF – Glomeromycotina) are among the organisms commonly found and directly related to the balance and functioning of these plant communities. This review shows the record of 228 AMF species in tropical forests, distributed in 14 families and 35 genera, representing 75 % of the known richness of this group of soil fungi. The Dry forests exhibit the largest number of AMF species. Areas under anthropic influence in the various forest formations generally present a decrease in richness when compared to natural preserved areas.

Keywords: dry forest, evergreen forest, Glomeromycotina, mangrove, montane forest, richness, vegetation types.

Tropical forests play a vital role in the planet's health, functioning and ecological balance. These forests act to reduce the concentration of atmospheric CO<sub>2</sub> by sequestration and carbon storage, regulating and maintaining the local, regional and global quality of the climate, water supply, a rich flora and fauna, soil formation, erosion, among other aspects (Sullivan et al. 2017).

Although tropical vegetations occupy approximately 2.5 billion ha, with 16 of the 25 hotspots for the conservation of the world's biodiversity, housing about 50 % of all species on the planet (Myers et al. 2000, Elias & May-Tobin 2011), 900,000 ha of these important formations are being devastated annually (International Sustainability Unit 2015, Roberts et al. 2017). In this context, it becomes highly relevant to know the biological communities that occur in tropical forests before this diversity is lost.

As important components of terrestrial ecosystems, arbuscular mycorrhizal fungi (AMF) are widely distributed in environments, forming mycorrhizal associations with 80 % of all plant species and 97 % of spermatophytes, even in the extreme environments of plant life (Smith & Read 2008, Brundrett 2009, Oehl & Körner 2014). These fungi perform a variety of ecosystem services, allowing plants to access a greater soil volume, with conse-

quent increase in the absorption and utilization of water and nutrients, especially phosphorus, as well as greater growth (Asghari & Cavagnaro 2011).

Mycorrhizal plants may have a nutrient supply by AM fungi of up to 80 % of nitrogen and 90 % of the phosphorus required (van der Heijden et al. 1998). AMF also promote increased plant resistance to pathogen attack (Liu et al. 2007), salinity (Estrada et al. 2013), and drought (Frosi et al. 2016), as well as increase the reproductive capacity of the host plants (Jayne & Quigley 2014), thereby playing a key role in the maintenance, equilibrium, and functioning of plant communities and terrestrial ecosystems.

Currently, AMF are inserted in the phylum *Mucoromycota*, subphylum *Glomeromycotina* (Spatafora et al. 2016) and distributed in three classes (*Archaeosporomycetes*, *Glomeromycetes* and *Paraglomeromycetes*), five orders (*Archaeosporales*, *Diversisporales*, *Gigasporales*, *Glomerales* and *Paraglomerales*), 16 families, 40 genera (Oehl et al. 2011, 2015; Goto et al. 2012; Błaszowski & Chwat 2013; Błaszowski et al. 2014, 2017; Marinho et al. 2014; Sieverding et al. 2014), and about 300 species (Rhatwal & Gandhe 2009, Öpik & Davison 2016, Andrade et al. 2017, Błaszowski et al. 2017, Goto & Jobim 2017).

Considering that tropical forests are biodiversity hotspots and that AMF are important for the maintenance of plant communities, the objective of this study was to inventory Glomeromycotina species in natural vegetation types and under anthropic pressure in order to increase knowledge about the distribution of these fungi in tropical forests. Up to now, 162 AMF species had been recorded in these forests (de Souza et al. 2010, Goto et al. 2010, Gupta et al. 2014, Jobim et al. 2016). However, as the records are outdated and fragmented by regions within countries, the current review will evidence much greater richness and contribute with a global view of the distribution of AMF in tropical areas.

### Materials and methods

All six natural major vegetation types of tropical forests were considered: Lowland evergreen rainforests (forests that are always humid), Semi-evergreen rainforests (forests that experience a dry period), Dry forests (forests with severe periods of drought, which can present deciduousness), Lower montane forests (altitudinal forests with limits between 1,000–1,800 m a.s.l.), Upper montane forests (altitudinal forests with limits above 1,800 m a.s.l.), and Mangroves (forests associated with the presence of brackish water, found along coastlines) (Thomas & Baltzer 2002, Sturgeon 2007). Those forests under anthropic pressure (agrosystems, mining and/or desertification) within these formations were grouped in the category Anthropogenic sites.

The data generated are based on literature review, consulting the Scielo, Scopus and Web of Science databases and the following publications: Mukerji & Bhattacharjee (1983), Vestberg et al. (1999), Mangan & Adler (2000), Picone (2000), Carrenho et al. (2001), Varela & Trejo (2001), Suciathm (2002), Lovelock et al. (2003), Muthukumar et al. (2003), Souza et al. (2003, 2013, 2016 a, b), Uhlmann et al. (2004), Shi et al. (2006), Gavito et al. (2008), Sharda & Rodrigues (2008), Tchabi (2008), Tchabi et al. (2008), Violi et al. (2008), Aguilar-Fernández et al. (2009), Rhatwal & Gandhe (2009), Cuenca & Lovera (2010), Goto et al. (2010), Wang et al. (2010), Sridhar et al. (2011), Stürmer & Siqueira (2011), Arias et al. (2012), Boonlue et al. (2012), Carneiro et al. (2012), da Silva et al. (2012, 2014, 2015a, b, 2017a, b), de Carvalho et al. (2012), de Mello et al. (2012), Jefwa et al. (2012), Lakshminpathy et al. (2012), Rajkumar et al. (2012), Bonfim et al. (2013, 2016), Johnson et al. (2013), Kamble et al. (2013), Leal et al. (2013), Pagano et al. (2013), Pontes et al. (2013), Santos et al. (2013), Teixeira-Rios et al. (2013), Vasconcellos et al. (2013),

Freitas et al. (2014), Gupta et al. (2014), Pereira et al. (2014, 2016), Sousa et al. (2014, 2017), Belay et al. (2015), Channabasava & Lakshman (2015), Dantas et al. (2015), Błaszowski et al. (2015), Rajeshkumar et al. (2015), Trejo et al. (2015), de Assis et al. (2016), Jobim et al. (2016), Willis et al. (2016), Andrade et al. (2017), Pontes et al. (2017a, b, c), Souza & Freitas (2017), Torres-Arias et al. (2017), Verma & Verma (2017).

The AMF classification follows Oehl et al. (2011) with updates (Błaszowski 2012; Goto et al. 2012; Błaszowski & Chwat 2013; Błaszowski et al. 2015, 2017; Marinho et al. 2014; Sieverding et al. 2014; Oehl et al. 2015).

### Results

In the consulted literature, a total of 228 species of Glomeromycotina were recorded in Tropical Forests, distributed in three classes (Archaeosporomycetes, Paraglomeromycetes and Glomeromycetes), five orders (Archaeosporales, Paraglomerales, Diversisporales, Glomerales and Gigasporales), 14 of the 16 currently recognized families [Acaulosporaceae (42), Ambisporaceae (=Appendicisporaceae) (9), Archaeosporaceae (4), Dentiscutataceae (14), Diversisporaceae (18), Entrophosporaceae (10), Gigasporaceae (6), Glomeraceae (78), Intraornatosporaceae (3), Pacisporaceae (5), Paraglomeraceae (7), Racocetraceae (17), Sacculosporaceae (2) and Scutellosporaceae (13)] and 35 of the 40 known genera.

All species of the genera *Albahypha*, *Archaeospora*, *Bulbospora*, *Entrophospora*, *Intraornatospora*, *Intraspora*, *Orbispora*, *Paradentiscutata*, *Quatunica*, *Racocetra*, *Sacculospora*, *Scutellospora*, *Simiglomus*, *Tricispora* and *Viscospora* were recorded in tropical forests. Eight genera (*Acaulospora*, *Ambispora* (= *Appendicispora*), *Claroideoglomus*, *Dentiscutata*, *Funneliformis*, *Fuscutata*, *Pacispora* and *Sclerocystis*) had 80 % or more of the species registered in tropical forest soils, another nine genera (*Cetraspora*, *Corymbiglomus*, *Diversispora*, *Gigaspora*, *Glomus*, *Kuklospora*, *Paraglomus*, *Redeckera* and *Rhizoglomus*) had  $\geq 50$  % of the species recorded in these vegetation types, while *Dominikia*, *Kamienskia* and *Septoglomus* exhibited the lowest percentage of species recorded in tropical forests (Fig. 1). However, the later three genera were only recently described from colder climate regions, which might suggest that their species richness in tropical forests so far has been underestimated. The most representative genera in tropical forest areas were *Acaulospora* and *Glomus*, with 40 species each.

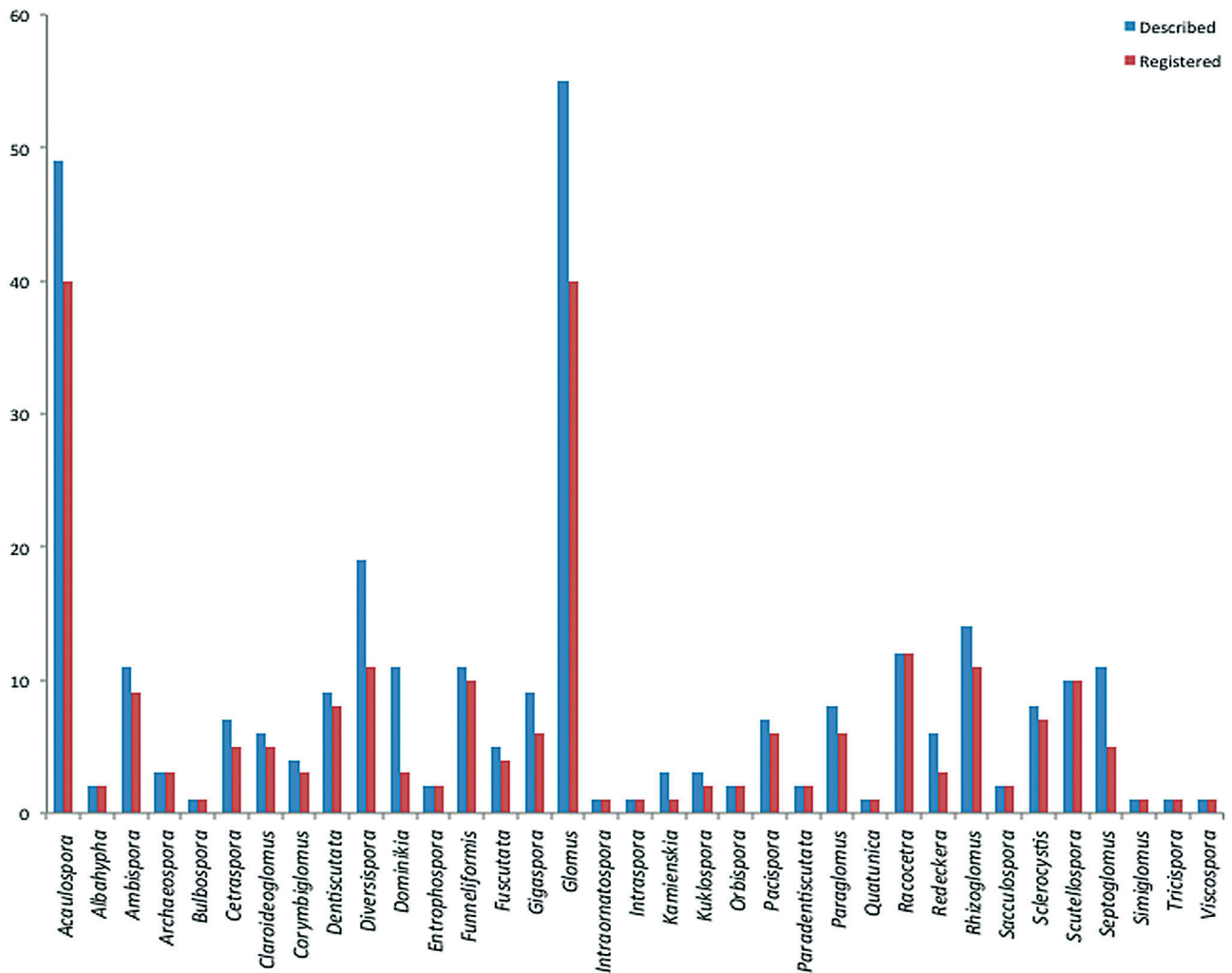


Fig. 1. Number of arbuscular mycorrhizal fungi species per genus described and registered from tropical forest soil samples.

Of the 228 AMF species, 127 were recorded in Lowland evergreen rainforests, 88 in Semi-evergreen rainforests, 164 in Dry forests, 64 in Lower montane forests, 55 in Upper montane forests and 55 in Mangroves. A total of 204 species of AMF were recorded in natural areas and 173 species in anthropogenic areas, of which 65 were exclusive to natural areas, 22 were exclusive to anthropogenic areas, and 141 occurred in both environments (Fig. 2).

From recent collections made in tropical forests, it was possible to describe a new family (Intraornatosporaceae), seven genera (*Bulbospora*, *Dentiscutata*, *Intraornatospora*, *Intraspora*, *Kuklospora*, *Orbispora* and *Paradentiscutata*) and 67 new species (see species numeration in the species list below: 7, 10, 12, 14, 15, 19, 20, 21, 22, 23, 27, 28, 30, 31, 32, 34, 35, 36, 39, 40, 41, 65, 71, 72, 73, 76, 77, 79, 80, 89, 92, 108, 115, 122, 124, 141, 152, 154, 156, 161, 163,

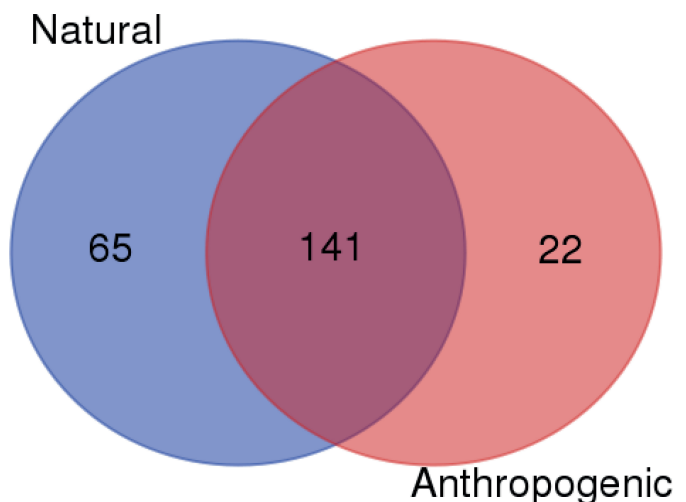


Fig. 2. Venn diagram of arbuscular mycorrhizal fungi at natural and anthropogenic sites of tropical forest.

166, 169, 172, 179, 183, 185, 188, 189, 190, 195, 197, 199, 200, 202, 203, 204, 205, 206, 213, 214, 215, 216, 217, 225, 226 and 228).

### Species list of AMF – arbuscular mycorrhizal fungi – recorded from tropical forests

#### Glomeromycetes

#### Diversisporales

#### Acaulosporaceae

#### *Acaulospora*

1. *Acaulospora alpina* Oehl, Sykorova & Sieverd., Mycologia 98: 289 (2006).  
Vegetation type: Lowland evergreen rainforest.
2. *Acaulospora bireticulata* F.M. Rothwell & Trappe. Mycotaxon 8: 472 (1979).  
Vegetation type: Lowland evergreen rainforest, Lower montane forest, Dry forest, Mangrove and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
3. *Acaulospora capsicula* Blaszk., Mycologia 82: 794 (1990).  
Vegetation type: Upper montane forest, Dry forest and Anthropogenic sites (Agrosystems).
4. *Acaulospora cavernata* Blaszk., Cryptogamic Botany 1: 204 (1989).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems and Mining).
5. *Acaulospora colossica* P.A. Schultz, Bever & J.B. Morton, Mycologia 91: 677 (1999).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest and Upper montane forest.
6. *Acaulospora delicata* C. Walker, C.M. Pfeiff. & Bloss, Mycotaxon 25: 622 (1986).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems, Pasture and Mining).
7. *Acaulospora denticulata* Sieverd. & S. Toro, Angewandte Botanik 61: 217 (1987).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).
8. *Acaulospora dilatata* J.B. Morton, Mycologia 78: 641 (1986).  
Vegetation type: Semi-evergreen rainforest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).
9. *Acaulospora elegans* Trappe & Gerd. Mycologia Memoir 5: 34 (1974).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems, Pasture and Mining).
10. *Acaulospora endographis* B.T. Goto, Mycotaxon 123: 405 (2013).  
Vegetation type: Lowland evergreen rainforest and Anthropogenic sites (Agrosystems).
11. *Acaulospora excavata* Ingleby & C. Walker, Mycotaxon 50: 100 (1994).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems, Mining and Desertification).
12. *Acaulospora foveata* Trappe & Janos, Mycotaxon 15: 516 (1982).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
13. *Acaulospora gedanensis* Blaszk., Karstenia 27: 38 (1988).  
Vegetation type: Dry forest.
14. *Acaulospora herrerae* Furrázola, B.T. Goto, G.A. Silva, Sieverd. & Oehl, Nova Hedwigia 97: 405 (2012).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Mining).
15. *Acaulospora ignota* Blaszk., Góralska, Chwat & Goto, Mycological Progress 14: 4 (2015).  
Vegetation type: Semi-evergreen rainforest.
16. *Acaulospora koskei* Blaszk., Mycological Research 99: 237 (1995).  
Vegetation type: Lowland evergreen rainforest, Lower montane forest, Dry forest and Anthropogenic sites (Agrosystems and Mining).
17. *Acaulospora lacunosa* J.B. Morton, Mycologia 78: 643 (1986).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Mining).
18. *Acaulospora laevis* Gerd. & Trappe, Mycologia Memoirs 5: 33 (1974).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems, Pasture and Mining).
19. *Acaulospora longula* Spain & N.C. Schenck, Mycologia 76: 689 (1984).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems and Pasture).
20. *Acaulospora mellea* Spain & N.C. Schenck, Mycologia 76: 689 (1984).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).
21. *Acaulospora minuta* Oehl, Tchabi, Hount., Palenz., Sánchez-Castro & G.A. Silva, Journal of Applied Botany and Food Quality 84: 214 (2011).  
Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
22. *Acaulospora morrowiae* Spain & N.C. Schenck, Mycologia 76: 692 (1984).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Mangrove and Anthropogenic sites (Agrosystems and Desertification).

23. *Acaulospora papillosa* C.M.R. Pereira & Oehl, Phytotaxa 260: 16 (2016).  
Vegetation type: Lowland evergreen rainforest.
  24. *Acaulospora paulinae* Błaszk., Bulletin of the Polish Academy of Sciences Biology 36: 273 (1988).  
Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
  25. *Acaulospora polonica* Błaszk., Karstenia 27: 38 (1988).  
Vegetation type: Lowland evergreen rainforest.
  26. *Acaulospora punctata* Oehl, Palenz., Sánchez-Castro, G. A. Silva, C. Castillo & Sieverd., Nova Hedwigia 93: 355 (2011).  
Vegetation type: Anthropogenic sites (Agrosystems).
  27. *Acaulospora reducta* Oehl, B.T. Goto & C.M.R. Pereira, Mycotaxon 130: 986 (2016).  
Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
  28. *Acaulospora rehmi* Sieverd. & S. Toro, Angewandte Botanik 61: 219 (1987).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems, Pasture and Mining).
  29. *Acaulospora rugosa* J.B. Morton, Mycologia 78: 645 (1986).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest, Mangrove and Anthropogenic sites (Agrosystems).
  30. *Acaulospora scrobiculata* Trappe, Mycotaxon 6: 363 (1977).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
  31. *Acaulospora sieverdingii* Oehl, Sýkorová, Błaszk. & G.A. Silva, Journal of Applied Botany and Food Quality 84: 48 (2011).  
Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
  32. *Acaulospora soloidea* Vaingankar & B.F. Rodrigues, Mycotaxon 115: 324 (2011).  
Vegetation type: Lowland evergreen rainforest.
  33. *Acaulospora spinosa* C. Walker & Trappe, Mycotaxon 12: 515 (1981).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems, Pasture and Mining).
  34. *Acaulospora spinosissima* Oehl, Palenz., Sánchez-Castro, Tchabi, Hount. & G. A. Silva, Sydowia 66: 34 (2014).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
  35. *Acaulospora spinulifera* Oehl, V.M. Santos, J.S. Pontes & G.A. Silva, Nova Hedwigia 105: 221 (2017).  
Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
  36. *Acaulospora splendida* Sieverd., Chaverri & I. Rojas, Mycotaxon 33: 252 (1988).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
  37. *Acaulospora taiwania* H.T. Hu, Quarterly Journal of Chinese Forestry: 48 (1988).  
Vegetation type: Mangrove.
  38. *Acaulospora thomii* Błaszk., Karstenia 27: 40 (1988).  
Vegetation type: Lowland evergreen rainforest and Anthropogenic sites (Mining).
  39. *Acaulospora tuberculata* Janos & Trappe, Mycotaxon 15: 519 (1982).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
  40. *Acaulospora walkeri* Kramad. & Hedger, Mycotaxon 37: 73 (1990).  
Vegetation type: Lowland evergreen rainforest and Anthropogenic sites (Pasture and Mining).
- Kuklospora**
41. *Kuklospora colombiana* (Spain & N.C. Schenck) Oehl & Sieverd., Journal of Applied Botany 80: 74 (2006).  
= *Entrophospora colombiana* Spain & N.C. Schenck, Mycologia 76: 693 (1984).  
= *Acaulospora colombiana* (Spain & N.C. Schenck) Kaonongbua, J.B. Morton & Bever, Mycologia 102: 1501 (2010).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Lower montane forest and Anthropogenic sites (Agrosystems, Pasture and Desertification).
  42. *Kuklospora kentinensis* (C.G. Wu & Y.S. Liu) Oehl & Sieverd., Journal of Applied Botany 80: 74 (2006).  
= *Entrophospora kentinensis* C.G. Wu & Y.S. Liu, Mycotaxon 53:287 (1995).  
= *Acaulospora kentinensis* (C.G. Wu & Y.S. Liu) Kaonongbua, J.B. Morton & Bever, Mycologia 102: 1501 (2010).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
- Diversisporaceae**
- Corymbiglomus**
43. *Corymbiglomus corymbiforme* Błaszk. & Chwat, The Glomeromycota 1: 274 (2012).  
Vegetation type: Lowland evergreen rainforest and Anthropogenic sites (Pasture).
  44. *Corymbiglomus globiferum* (Koske & C. Walker) Błaszk. & Chwat, Acta Mycologica 48: 99 (2013).  
= *Glomus globiferum* Koske et Walker. Mycotaxon 26:133 (1986).  
Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
  45. *Corymbiglomus tortuosum* (N.C. Schenck & G.S. Sm.) Błaszk. & Chwat: 99 (2013).  
= *Glomus tortuosum* N.C. Schenck & G.S. Sm., Mycologia 74: 83 (1982).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).

**Diversispora**

46. ***Diversispora aurantia*** (Błaszk., Blanke, Renker & Buscot) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 43 (2010).  
= *Glomus aurantium* Błaszk., Blanke, Renker & Buscot, Mycotaxon 90:4 50 (2004).  
Vegetation type: Dry forest.
47. ***Diversispora celata*** C. Walker, Gamper & A. Schüssler, New Phytologist 182: 497 (2009).  
Vegetation type: Dry forest and Upper montane forest.
48. ***Diversispora eburnea*** L.J. Kenn., J.C. Stutz & J.B. Morton) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 43 (2010).  
= *Glomus eburneum* L.J. Kenn., J.C. Stutz & J.B. Morton, Mycologia 91: 1084 (1999).  
Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Desertification).
49. ***Diversispora epigea*** (B.A. Daniels & Trappe) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 43 (2010).  
= *Glomus epigaeum* B.A. Daniels & Trappe, Canadian Journal of Botany 57: 540 (1979).  
= *Glomus epigaeus* B.A. Daniels & Trappe (1979).  
= *Glomus epigaeus* B.A. Daniels & Trappe (1979).  
Vegetation type: Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems).
50. ***Diversispora gibbosa*** (Błaszk.) Błaszk. & Kovács, Mycotaxon 116: 110 (2011).  
= *Glomus gibbosum* Błaszk., Mycologia 89: 339 (1997).  
Vegetation type: Anthropogenic sites (Agrosystems and Mining).
51. ***Diversispora insculpta*** (Błaszk.) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 110 (2011).  
= *Glomus insculptum* Błaszk., Mycotaxon 89: 227 (2004).  
Vegetation type: Anthropogenic sites (Mining).
52. ***Diversispora pustulata*** (Koske, Friese, C. Walker & Dalpé) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 110 (2011).  
= *Glomus pustulatum* Koske, Friese, C. Walker & Dalpé, Mycotaxon 26: 143 (1986).  
Vegetation type: Semi-evergreen rainforest (Agrosystems).
53. ***Diversispora spurca*** C.M. Pfeiff., C. Walker & Bloss) C. Walker & A. Schüssler, Mycological Research 108: 982 (2004).  
= *Glomus spurcum* C.M. Pfeiff., C. Walker & Bloss, Mycotaxon 59: 374 (1996).  
= *Diversispora spurcum* (C.M. Pfeiff., C. Walker & Bloss) C. Walker & A. Schüssler (2004).  
Vegetation type: Semi-evergreen rainforest, Lower montane forest and Anthropogenic sites (Agrosystems, Pasture and Mining).
54. ***Diversispora tenera*** P.A. Tandy) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 110 (2011).  
= *Glomus tenerum* P.A. Tandy, Australian Journal of Botany 23: 864 (1975).  
= *Glomus tener* P.A. Tandy (1975).  
Vegetation type: Anthropogenic sites (Agrosystems).
55. ***Diversispora trimurales*** (Koske & Halvorson) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 43 (2010).  
= *Glomus trimurales* Koske & Halvorson, Mycologia 81: 930 (1990).  
Vegetation type: Anthropogenic sites (Mining).
56. ***Diversispora versiformis*** (P. Karst.) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 110 (2011).  
= *Endogone versiformis* P. Karst.: 39 (1884).  
= *Glomus versiforme* (P. Karst.) S.M. Berch, Canadian Journal of Botany 61: 2614 (1983).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Mining).

**Redeckera**

57. ***Redeckera canadensis*** (Thaxt.) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 111 (2011).  
= *Endogone canadensis* Thaxt., Proceedings of the American Academy of Arts and Sciences 57: 317 (1922).  
= *Glomus canadense* (Thaxt.) Trappe & Gerd., Mycologia Memoirs 5: 59 (1974).  
= *Glomus canadensis* (Thaxt.) Trappe & Gerd. (1974).  
Vegetation type: Anthropogenic sites (Agrosystems).
58. ***Redeckera fulva*** (Berk. & Broome) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 44 (2010).  
= *Paurocotylis fulva* Berk. & Broome, Botanical Journal of the Linnean Society 14: 137 (1873).  
= *Endogone fulva* (Berk. & Broome) Pat., Bulletin de la Société Mycologique de France 19: 341 (1903).  
= *Glomus fulvum* (Berk. & Broome) Trappe & Gerd., Mycologia Memoirs 5: 59 (1974).  
= *Glomus fulvus* (Berk. & Broome) Trappe & Gerd. (1974).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
59. ***Redeckera pulvinata*** (Henn.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 44 (2010).  
= *Endogone pulvinata* Henn., Hedwigia 36: 212 (1897).  
= *Glomus pulvinatum* (Henn.) Trappe & Gerd., Mycologia Memoirs 5: 59 (1974).  
= *Glomus pulvinatus* (Henn.) Trappe & Gerd. (1974).  
Vegetation type: Anthropogenic sites.

**Tricispora**

60. ***Tricispora nevadensis*** (Palenzuela, Ferrol, Azcón-Aguilar & Oehl) Oehl, Palenzuela, G.A. Silva & Sieverd., Mycotaxon 117: 310 (2012).  
= *Entrophospora nevadensis* Palenzuela, Ferrol, Azcón-Aguilar & Oehl, Mycologia 102: 627 (2009).  
Vegetation type: Upper montane forest and Anthropogenic sites (Agrosystems).

**Entrophosporaceae****Albahypha**

61. ***Albahypha drummondii*** (Błaszk. & Renker) Sieverd., Oehl, B.T. Goto & G.A. Silva, Mycotaxon 117: 308 (2012).  
= *Glomus drummondii* Błaszk. & Renker, Mycological Research 110: 559 (2006).

= *Claroideoglomus drummondii* (Błaszk. & C. Renker) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 22 (2010).  
Vegetation type: Lowland evergreen rainforest.

62. *Albahypha walkeri* (Błaszk. & Renker) Sieverd., Oehl, B.T. Goto & G.A. Silva, Mycotaxon 117: 309 (2012).  
= *Glomus walkeri* Błaszk. & Renker, Mycological Research 110:563 (2006).  
= *Claroideoglomus walkeri* (Błaszk. & Renker) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 22 (2010).  
Vegetation type: Anthropogenic sites.

### *Claroideoglomus*

63. *Claroideoglomus claroideum* (N.C. Schenck & G.S. Sm.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 21 (2010).  
= *Glomus claroideum* N.C. Schenck & G.S. Sm., Mycologia 74:84 (1982).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems and Mining).
64. *Claroideoglomus etunicatum* (W.N. Becker & Gerd.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 22 (2010).  
= *Glomus etunicatum* W.N. Becker & Gerd., Mycotaxon 6: 29 (1977).  
= *Glomus etunicatus* W.N. Becker & Gerd. (1977).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems and Mining)
65. *Claroideoglomus hanlinii* Błaszk., Chwat & Góralska, Mycological Progress 14 (4/18): 7 (2015).  
Vegetation type: Dry forest and Mangrove.
66. *Claroideoglomus lamellosum* (Dalpé, Koske & Tews) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 22 (2010).  
= *Glomus lamellosum* Dalpé, Koske & Tews, Mycotaxon 43: 289 (1992).  
Vegetation type: Lowland evergreen rainforest, Dry Forest, Lower montane forest and Anthropogenic sites (Agrosystems and Mining).
67. *Claroideoglomus luteum* (L.J. Kenn., J.C. Stutz & J.B. Morton) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 22 (2010).  
= *Glomus luteum* L.J. Kenn., J.C. Stutz & J.B. Morton, Mycologia 91: 1090 (1999).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems and Mining).

### *Entrophospora*

68. *Entrophospora hexagonii* Rhatwal & Gandhe (2009).  
Vegetation type: Anthropogenic sites (Agrosystems).
69. *Entrophospora infrequens* (I.R. Hall) R.N. Ames & R.W. Schneid., Mycotaxon 8: 348 (1979).  
= *Glomus infrequens* I.R. Hall, Transactions of the British Mycological Society 68: 345 (1977).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Mangrove and Anthropogenic sites (Agrosystems and Mining)

### *Viscospora*

70. *Viscospora viscosa* (T.H. Nicolson) Sieverd., Oehl & F.A. Souza, Mycotaxon 116: 108 (2011).  
= *Glomus viscosum* T.H. Nicolson, Mycological Research 99: 1502 (1995).  
Vegetation type: Semi-evergreen rainforest.

### Gigasporales

#### Dentiscutataceae

#### *Dentiscutata*

71. *Dentiscutata biornata* (Spain, Sieverd. & S. Toro) Sieverd., F.A. Souza & Oehl, Mycotaxon 106: 342 (2009).  
= *Scutellospora biornata* Spain, Sieverd. & S. Toro, Mycotaxon 35: 220 (1989).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Magrove and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
72. *Dentiscutata cerradensis* (Spain & J. Miranda) Sieverd., F.A. Souza & Oehl, Mycotaxon 106: 342 (2009).  
= *Scutellospora cerradensis* Spain & J. Miranda, Mycotaxon 60: 130 (1996).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems).
73. *Dentiscutata colliculosa* B.T. Goto & Oehl, Nova Hedwigia 90: 385 (2010).  
Vegetation type: Semi-evergreen rainforest and Dry forest.
74. *Dentiscutata hawaiiensis* (Koske & Gemma) Sieverd., F.A. Souza & Oehl, Mycotaxon 106: 342 (2009).  
Vegetation type: Dry forest.
75. *Dentiscutata heterogama* (T.H. Nicolson & Gerd.) Sieverd., F.A. Souza & Oehl, Mycotaxon 106: 342 (2009).  
= *Endogone heterogama* T.H. Nicolson & Gerd., Mycologia 60: 319 (1968).  
= *Gigaspora heterogama* (T.H. Nicolson & Gerd.) Gerd. & Trappe, Mycologia Memoirs 5: 31 (1974).  
= *Scutellospora heterogama* (T.H. Nicolson & Gerd.) C. Walker & F.E. Sanders, Mycotaxon 27: 180 (1986).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems).
76. *Dentiscutata nigerita* Khade, Mycosphere 1: 243 (2010).  
Vegetation type: Lowland evergreen rainforest.
77. *Dentiscutata nigra* (J.F. Redhead) Sieverd., F.A. Souza & Oehl, Mycotaxon 106: 342 (2009).  
= *Gigaspora nigra* J.F. Redhead, Mycologia 71: 187 (1979).  
= *Scutellospora nigra* (J.F. Redhead) C. Walker & F.E. Sanders, Mycotaxon 27: 181 (1986).  
Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
78. *Dentiscutata reticulata* (Koske, D.D. Mill. & C. Walker) Sieverd., F.A. Souza & Oehl, Mycotaxon 106: 342 (2009).  
= *Gigaspora reticulata* Koske, D.D. Mill. & C. Walker, Mycotaxon 16: 429 (1983).

= *Scutellospora reticulata* (Koske, D.D. Mill. & C. Walker) C. Walker & F.E. Sanders, Mycotaxon 27: 181 (1986).  
Vegetation type: Dry forest.

79. ***Dentiscutata scutata*** (C. Walker & Dieder.) Sieverd., F.A. Souza & Oehl, Mycotaxon 106: 342 (2009).  
= *Scutellospora scutata* C. Walker & Dieder., Mycotaxon 35: 357 (1989).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems and Pasture).

### **Fuscutata**

80. ***Fuscutata aurea*** Oehl, C.M. Mello & G.A. Silva, Nova Hedwigia 95: 269 (2012).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
81. ***Fuscutata heterogama*** Oehl, F.A. Souza, L.C. Maia & Sieverd., Mycotaxon 106: 344 (2009).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Mangrove and Anthropogenic sites (Agrosystems, Mining and Desertification).
82. ***Fuscutata rubra*** (Stürmer & J.B. Morton) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 347 (2009).  
= *Scutellospora rubra* Stürmer & J.B. Morton, Mycological Research 103: 951 (1999).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems).
83. ***Fuscutata savannicola*** (R.A. Herrera & Ferrer) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 347 (2009).  
= *Gigaspora savannicola* R.A. Herrera & Ferrer, Revista del Jardín Botánico Nacional Habana 1: 57 (1981).  
= *Scutellospora savannicola* (R.A. Herrera & Ferrer) C. Walker & F.E. Sanders, Mycotaxon 27: 180 (1986).  
= *Dentiscutata savannicola* (R.A. Herrera & Ferrer) C. Walker & A. Schüssler, Mycological Progress 13: 1172 (2014).  
Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Desertification).

### **Quatunica**

84. ***Quatunica erythropus*** (Koske & C. Walker) F.A. Souza, Sieverd. & Oehl (2009).  
= *Gigaspora erythropha* Koske & C. Walker (1984).  
= *Gigaspora erythropus* Koske & C. Walker, Mycologia 76: 250 (1984).  
= *Gigaspora erythropha* Koske & C. Walker (1984).  
= *Scutellospora erythropha* (Koske & C. Walker) C. Walker & F.E. Sanders (1986).  
= *Scutellospora erythropus* (Koske & C. Walker) C. Walker & F.E. Sanders, Mycotaxon 27: 181 (1986).  
= *Quatunica erythropus* (Koske & C. Walker) F.A. Souza, Sieverd. & Oehl, Mycotaxon 106: 348 (2008).  
Vegetation type: Dry forest, Lower montane forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).

## **Gigasporaceae**

### **Gigaspora**

85. ***Gigaspora albida*** N.C. Schenck & G.S. Sm., Mycologia 74: 85 (1982).  
Vegetation type: Semi-evergreen rainforest, Dry forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems, Mining and Desertification).
86. ***Gigaspora decipiens*** I.R. Hall & L.K. Abbott, Transactions of the British Mycological Society 83: 204 (1984).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
87. ***Gigaspora gigantea*** (T.H. Nicolson & Gerd.) Gerd. & Trappe, Mycologia Memoirs 5: 29 (1974).  
= *Endogone gigantea* T.H. Nicolson & Gerd., Mycologia 60: 321 (1968).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems, Pasture and Mining).
88. ***Gigaspora margarita*** W.N. Becker & I.R. Hall, Mycotaxon 4: 155 (1976).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).
89. ***Gigaspora ramisporophora*** Spain, Sieverd. & N.C. Schenck, Mycotaxon 34: 668 (1989).  
Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Pasture).
90. ***Gigaspora rosea*** T.H. Nicolson & N.C. Schenck, Mycologia 71: 190 (1979).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems).

## **Glomeraceae**

### **Dominikia**

91. ***Dominikia aurea*** (Oehl & Sieverding) Błaszk., Chwat, G.A. Silva & Oehl, Nova Hedwigia 101: 71 (2015).  
= *Glomus aureum* Oehl & Sieverd., Journal of Applied Botany 77: 111 (2003).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
92. ***Dominikia indica*** (Błaszk., Wubet & Harikumar) Błaszk., Chwat & Kovács, Nova Hedwigia 101: 71 (2015).  
= *Glomus indicum* Błaszk., Wubet & Harikumar, Botany 88: 134 (2010).  
Vegetation type: Dry forest.
93. ***Dominikia minuta*** Błaszk., Tadych & Madej) Błaszk., Chwat & Kovács, Nova Hedwigia (2001).  
= *Glomus minutum* Błaszk., Tadych & Madej, Mycotaxon 76: 189 (2000).  
Vegetation type: Lowland evergreen rainforest and Anthropogenic sites (Mining).

**Funneliformis**

94. ***Funneliformis caledonius*** (T.H. Nicolson & Gerd.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 13 (2010).  
 = *Endogone macrocarpa* var. *caledonia* T.H. Nicolson & Gerd., Mycologia 60: 322 (1968).  
 = *Glomus caledonium* (T.H. Nicolson & Gerd.) Trappe & Gerd., Mycologia Memoirs 5: 56 (1974).  
 = *Glomus caledonius* (T.H. Nicolson & Gerd.) Trappe & Gerd. (1974).  
 Vegetation type: Lowland evergreen rainforest, Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems and Mining).
95. ***Funneliformis coronatus*** (Giovann.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 13 (2010).  
 = *Glomus coronatum* Giovann., Canadian Journal of Botany 69: 162 (1991).  
 Vegetation type: Lowland evergreen rainforest and Anthropogenic sites (Agrosystems and Mining).
96. ***Funneliformis dimorphicus*** (Boyetchko & J.P. Tewari) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 102 (2011).  
 = *Glomus dimorphicum* Boyetchko & J.P. Tewari, Canadian Journal of Botany 64: 90 (1986).  
 Vegetation type: Dry forest, Mangrove and Anthropogenic sites (Agrosystems).
97. ***Funneliformis fragilistratus*** (Skou & I. Jakobsen) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 13 (2010).  
 = *Glomus fragilistratum* Skou & I. Jakobsen, Mycotaxon 36: 276 (1989).  
 Vegetation type: Lowland evergreen rainforest.
98. ***Funneliformis geosporus*** (T.H. Nicolson & Gerd.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 14 (2010).  
 = *Endogone macrocarpa* var. *geospora* T.H. Nicolson & Gerd., Mycologia 60: 318 (1968).  
 = *Glomus macrocarpum* var. *geosporus* (T.H. Nicolson & Gerd.) Gerd. & Trappe (1974).  
 = *Glomus macrocarpum* var. *geosporum* (T.H. Nicolson & Gerd.) Gerd. & Trappe, Mycologia Memoirs 5: 55 (1974).  
 = *Glomus geosporum* (T.H. Nicolson & Gerd.) C. Walker, Mycotaxon 15:56 (1982).  
 = *Glomus macrocarpum* var. *geosporus* (T.H. Nicolson & Gerd.) Gerd. & Trappe (1974).  
 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems, Pasture and Mining).
99. ***Funneliformis halonatus*** (S.L. Rose & Trappe) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 102 (2011).  
 = *Glomus halonatum* S.L. Rose & Trappe, Mycotaxon 10: 413 (1980).  
 = *Glomus halonatus* S.L. Rose & Trappe (1980).  
 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Desertification).
100. ***Funneliformis monosporus*** (Gerd. & Trappe) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 102 (2011).  
 = *Glomus monosporum* Gerd. & Trappe, Mycologia Memoirs 5: 41 (1974).  
 = *Glomus monosporus* Gerd. & Trappe (1974).  
 Vegetation type: Dry forest and Anthropogenic sites (Agrosystems, Pasture and Mining).
101. ***Funneliformis mosseae*** (T.H. Nicolson & Gerd.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 13 (2010).  
 = *Endogone mosseae* T.H. Nicolson & Gerd., Mycologia 60: 314 (1968).  
 = *Glomus mosseae* (T.H. Nicolson & Gerd.) Gerd. & Trappe, Mycologia Memoirs 5: 40 (1974).  
 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Lower montane forest, Upper montane forest, Dry forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).
102. ***Funneliformis multiforum*** (Tadych & Błaszk.) Oehl, G.A. Silva & Sieverd., Mycotaxon 116: 103 (2011).  
 = *Glomus multiforum* Tadych & Błaszk., Mycologia 89:805 (1997).  
 Vegetation type: Dry forest and Anthropogenic sites (Mining).
103. ***Funneliformis verruculosus*** (Błaszk.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 14 (2010).  
 = *Glomus verruculosum* Błaszk., Mycologia 89: 809 (1997).  
 Vegetation type: Lowland evergreen rainforest and Semi-evergreen rainforest.

**Glomus**

104. ***Glomus ambisporum*** G.S. Sm. & N.C. Schenck, Mycologia 77: 566 (1985).  
 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Mining).
105. ***Glomus arboreense*** McGee, Transactions of the British Mycological Society 87: 123 (1986).  
 Vegetation type: Anthropogenic sites (Agrosystems).
106. ***Glomus australe*** (Berk.) S.M. Berch, Canadian Journal of Botany 61: 2611 (1983).  
 = *Endogone australis* Berk., Botany of the Antarctic Voyage. III Flora Tasmaniae. 2: 282 (1859).  
 Vegetation type: Mangrove.
107. ***Glomus badium*** Oehl, D. Redecker & Sieverd., Journal of Applied Botany 79: 39 (2005).  
 = *Funneliformis badium* (Oehl, D. Redecker & Sieverd.) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 13 (2010).  
 Vegetation type: Lowland evergreen rainforest, Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems).
108. ***Glomus bagyarajii*** V.S. Mehrotra, Philippine Journal of Science Section C Botany 126: 235 (1997).  
 = *Glomus bagyarasjii* V.S. Mehrotra (1997).  
 Vegetation type: Dry forest.
109. ***Glomus boreale*** (Thaxt.) Trappe & Gerd., Mycologia Memoirs 5: 58 (1974).  
 = *Endogone borealis* Thaxt., Proceedings of the American Academy of Arts and Sciences 57: 318 (1922).  
 = *Glomus borealis* (Thaxt.) Trappe & Gerd. (1974).  
 Vegetation type: Anthropogenic sites (Agrosystems).

110. *Glomus botryoides* F.M. Rothwell & Victor, Mycotaxon 20: 163 (1984).  
Vegetation type: Lowland evergreen rainforest.
111. *Glomus brohultii* R.A. Herrera, Ferrer & Sieverd.: 37 (2003).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
112. *Glomus cerebriforme* McGee, Transactions of the British Mycological Society 87: 123 (1986).  
Vegetation type: Anthropogenic sites (Agrosystems).
113. *Glomus citricola* D.Z. Tang & M. Zang, Acta Botanica Yunnanica: 301 (1984).  
Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
114. *Glomus convolutum* Gerd. & Trappe, Mycologia Memoirs 5: 42 (1974).  
= *Glomus convolutus* Gerd. & Trappe (1974).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
115. *Glomus cubense* Y. Rodriguez & Dalpé, Mycotaxon 118: 339 (2011).  
Vegetation type: Semi-evergreen rainforest and Dry forest.
116. *Glomus delhiensis* Mukerji, Bhattacharjee & J.P. Tewari, Transactions of the British Mycological Society 81: 643 (1983).  
Vegetation type: Semi-evergreen rainforest.
117. *Glomus diaphanum* J.B. Morton & C. Walker, Mycotaxon 21: 433 (1984).  
= *Rhizophagus diaphanum* (J.B. Morton & C. Walker) C. Walker & A. Schüssler, The Glomeromycota: a species list with new families and new genera: 19 (2010).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems and Mining).
118. *Glomus dolichosporum* M.Q. Zhang & You S. Wang, Mycosystema: 241 (1997).  
Vegetation type: Lowland evergreen rainforest.
119. *Glomus flavisporum* (M. Lange & E.M. Lund) Trappe & Gerd., Mycologia Memoirs 5:58 (1974).  
= *Endogone flavispora* M. Lange & E.M. Lund, Friesia 5:93 (1954).  
= *Glomus flavisporus* (M. Lange & E.M. Lund) Trappe & Gerd. (1974).  
Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Mining).
120. *Glomus formosanum* C.G. Wu & Z.C. Chen, Taiwania 31: 71 (1986).  
Vegetation type: Dry forest, Mangrove and Anthropogenic sites (Agrosystems).
121. *Glomus fuegianum* (Speg.) Trappe & Gerd., Mycologia Memoirs 5: 58 (1974).  
= *Endogone fuegiana* Speg., Anales de la Sociedad Científica Argentina 24: 125 (1887).  
= *Glomus fuegianus* (Speg.) Trappe & Gerd. (1974).  
Vegetation type: Lowland evergreen rainforest and Dry forest.
122. *Glomus glomerulatum* Sieverd., Mycotaxon 29: 74 (1987).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
123. *Glomus goaensis* Khade: 21 (2009).  
Vegetation type: Anthropogenic sites (Agrosystems).
124. *Glomus herrerae* Torres-Arias, Furrázola & B.T. Goto. Current Research in Environmental & Applied Mycology 7: 155–160 (2017).  
Vegetation type: Semi-evergreen rainforest.
125. *Glomus heterosporum* G.S. Sm. & N.C. Schenck, Mycologia 77: 567 (1985).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems and Mining).
126. *Glomus hyderabadensis* Swarupa, Kunwar, G.S. Prasad & Manohar., Mycotaxon 89: 247 (2004).  
Vegetation type: Dry forest, Mangrove and Anthropogenic sites (Agrosystems).
127. *Glomus macrocarpum* Tul. & C. Tul., Giornale Botanico Italiano 1: 63 (1845).  
= *Glomus macrocarpus* Tul. & C. Tul. (1845).  
= *Endogone macrocarpa* (Tul. & C. Tul.) Tul. & C. Tul., Fungi Hypogaei: Histoire et Monographie des Champignons Hypogés: 182 20:1 (1851).  
= *Endogone macrocarpa* var. *macrocarpa*, Fungi Hypogaei: Histoire et Monographie des Champignons Hypogés: 182 (1851).  
= *Paurocotylis fulva* var. *zaelandica* Cooke (1879).  
= *Paurocotylis fulva* var. *zealandica* Cooke, Grevillea 8 (46): 59 (1879).  
= *Endogone pampaloniana* Bacc., G. bot. ital.: 79 (1903).  
= *Endogone guttulata* E. Fisch., Berichte Schweiz bot. Ges.: 13 (1923).  
= *Endogone nuda* Petch, Annals of the Royal Botanic Gardens Peradeniya 9 (3): 322 (1925).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems and Mining).
128. *Glomus maculosum* D.D. Mill. & C. Walker, Mycotaxon 25: 218 (1986).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Mangrove and Anthropogenic sites (Agrosystems).
129. *Glomus magnicaule* I.R. Hall, Transactions of the British Mycological Society 68: 345 (1977).  
= *Glomus magnicaulis* I.R. Hall (1977).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
130. *Glomus melanosporum* Gerd. & Trappe, Mycologia Memoirs 5: 46 (1974).  
Gerd. & Trappe (1974).  
*Glomus melanosporum* Gerd. & Trappe.  
Vegetation type: Lowland evergreen rainforest and Lower montane forest.
131. *Glomus microcarpum* Tul. & C. Tul., Giornale Botanico Italiano 1: 63 (1845).  
= *Glomus microcarpus* Tul. & C. Tul. (1845).

- = *Endogone microcarpa* (Tul. & C. Tul.) Tul. & C. Tul., Fungi Hypogaei: Histoire et Monographie des Champignons Hypogés: 182, t. 20: 2 (1851).  
= *Endogone neglecta* Rodway, Papers and Proceedings of the Royal Society of Tasmania 1917: 107 (1918).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper forest and Anthropogenic sites (Agrosystems and Mining).
132. *Glomus multicaule* Gerd. & B.K. Bakshi, Transactions of the British Mycological Society 66: 340 (1976).  
= *Glomus multicaulis* Gerd. & B.K. Bakshi (1976).  
Vegetation type: Lowland evergreen rainforest, Dry forest, Mangrove, Lower montane forest and Anthropogenic sites (Agrosystems).
133. *Glomus multisubstansum* Mukerji, Bhattacharjee & J.P. Tewari, Transactions of the British Mycological Society 81: 641 (1983).  
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Vegetation type: Semi-evergreen rainforest.
134. *Glomus nanolumen* Koske & Gemma, Mycologia 81: 935 (1990).  
Vegetation type: Anthropogenic sites (Mining).
135. *Glomus pallidum* I.R. Hall, Transactions of the British Mycological Society 68: 343 (1977).  
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Vegetation type: Dry forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).
136. *Glomus pansihalos* S.M. Berch & Koske, Mycologia 78: 832 (1986).  
Vegetation type: Lowland evergreen rainforest and Anthropogenic sites (Agrosystems).
137. *Glomus reticulatum* Bhattacharjee & Mukerji, Sydowia 33: 14 (1980).  
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Vegetation type: Dry forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).
138. *Glomus segmentatum* Trappe, Spooner & Ivory, Transactions of the British Mycological Society 73: 362 (1979).  
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Vegetation type: Anthropogenic sites (Agrosystems).
139. *Glomus spinuliferum* Sieverd. & Oehl, Mycotaxon 86: 158 (2003).  
Vegetation type: Dry forest.
140. *Glomus tenebrosum* (Thaxt.) S.M. Berch, Canadian Journal of Botany 61: 2615 (1983).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
141. *Glomus truffemii* B.T. Goto, G.A. Silva & F. Oehl, Mycotaxon 120: 3 (2012).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
142. *Glomus vesiculiferum* (Thaxt.) Gerd. & Trappe, Mycologia Memoirs 5: 49 (1974).  
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Vegetation type: Semi-evergreen rainforest.
143. *Glomus warcupii* McGee, Transactions of the British Mycological Society 87: 125 (1986).  
Vegetation type: Lowland evergreen rainforest.
- Kamienskia**
144. *Kamienskia perpusilla* (Błaszk. & Kovács) Błaszk., Chwat & Kovács, Nova Hedwigia 100: 231 (2015).  
= *Glomus perpusillum* Błaszk. & Kovács, Mycologia 101: 249 (2009).  
Vegetation type: Lowland evergreen rainforest.
- Rhizoglomus**
145. *Rhizoglomus aggregatum* (N.C. Schenck & G.S. Sm.) Sieverd., G.A. Silva & Oehl, Mycotaxon 129: 378 (2015).  
= *Glomus aggregatum* N.C. Schenck & G.S. Sm., Mycologia 74: 80 (1982).  
= *Rhizophagus aggregatus* (N.C. Schenck & G.S. Sm.) C. Walker, Index Fungorum 286: 1 (2016).  
Vegetation type: Lowland evergreen rainforest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems and Mining).
146. *Rhizoglomus arabicum* (Błaszk., Symanczik & Al-Yahya'ei) Sieverd., G. A. Silva & Oehl, Mycotaxon 129: 380 (2015).  
= *Rhizophagus arabicus* Błaszk., Symanczik & Al-Yahya'ei, Mycologia 106: 253 (2014).  
Vegetation type: Anthropogenic sites (Agrosystems).
147. *Rhizoglomus clarum* (T.H. Nicolson & N.C. Schenck) Sieverd., G. A. Silva & Oehl, Mycotaxon 129: 380 (2015).  
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= *Glomus clarum* T.H. Nicolson & N.C. Schenck, Mycologia 71: 182 (1979).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Upper montane forest, Lower montane forest, Mangrove forest and Anthropogenic sites (Agrosystems, Pasture and Mining).
148. *Rhizoglomus fasciculatum* (Thaxt.) Sieverd., G.A. Silva & Oehl, Mycotaxon 129: 380 (2015).  
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Vegetation type: Lowland evergreen rainforest, Dry forest, Upper montane forest, Lower montane forest, Man-

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149. *Rhizoglossum intraradices* (N.C. Schenck & G.S. Sm.) Sieverd., G.A. Silva & Oehl, Mycotaxon 129(2): 380 (2015).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Upper montane forest, Mangrove forest and Anthropogenic sites (Agrosystems, Pasture and Mining).
150. *Rhizoglossum invermaium* (I.R. Hall) Sieverd., G.A. Silva & Oehl, Mycotaxon 129 (2): 381 (2015).  
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Vegetation type: Semi-evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems and Mining).
151. *Rhizoglossum irregulare* (Błaszk., Wubet, Renker & Buscot) Sieverd., G.A. Silva & Oehl, Mycotaxon 129 (2): 381 (2015).  
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Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
152. *Rhizoglossum manihotis* (R.H. Howeler, Sieverd. & N.C. Schenck) Sieverd., G.A. Silva & Oehl, Mycotaxon 129(2): 381 (2015).  
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Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
153. *Rhizoglossum microaggregatum* (Koske, Gemma & P.D. Olexia) Sieverd., G.A. Silva & Oehl, Mycotaxon 129 (2): 381 (2015).  
= *Glomus microaggregatum* Koske, Gemma & P.D. Olexia, Mycotaxon 26: 125 (1986).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove forest and Anthropogenic sites (Agrosystems, Pasture and Mining).
154. *Rhizoglossum natalense* (Błaszk., Chwat & B.T. Goto) Sieverd., G.A. Silva & Oehl, Mycotaxon 129 (2): 382 (2015).  
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Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
155. *Rhizoglossum proliferum* (Dalpé & Declerck) Sieverd., G.A. Silva & Oehl, Mycotaxon 129 (2): 382 (2015).  
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Vegetation type: Anthropogenic sites (Agrosystems).
- Sclerocystis**
156. *Sclerocystis clavispora* Trappe, Mycotaxon 6(2): 359 (1977).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
157. *Sclerocystis coremioides* Berk. & Broome, Botanical Journal of the Linnean Society 14: 137 (1873).  
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Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems and Pasture).
158. *Sclerocystis liquidambaris* C.G. Wu & Z.C. Chen, Transactions of the Mycological Society of the Republic of China 2(2): 74 (1987).  
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Vegetation type: Anthropogenic sites (Agrosystems).
159. *Sclerocystis pachycaulis* C.G. Wu & Z.C. Chen, Taiwaniana 31: 74 (1986).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
160. *Sclerocystis rubiformis* Gerd. & Trappe, Mycologia Memoirs 5: 60 (1974).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).

161. *Sclerocystis sinuosa* Gerd. & B.K. Bakshi, Transactions of the British Mycological Society 66(2): 343 (1976).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Upper montane forest, Mangrove forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
162. *Sclerocystis taiwanensis* C.G. Wu & Z.C. Chen, Transactions of the Mycological Society of the Republic of China 2 (2): 78 (1987).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Mangrove forest and Anthropogenic sites (Agrosystems and Desertification).
- Septoglomus**
163. *Septoglomus constrictum* (Trappe) Sieverd., G.A. Silva & Oehl, Mycotaxon 116: 105 (2011).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove forest and Anthropogenic sites (Agrosystems, Mining and Desertification).
164. *Septoglomus deserticola* (Trappe, Bloss & J.A. Menge) G.A. Silva, Oehl & Sieverd., Mycotaxon 116: 106 (2011).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest and Anthropogenic sites (Agrosystems and Mining).
165. *Septoglomus furcatum* Blaszk., Chwat & Kovács, Ryszka, Mycologia 105(3): 676 (2013).  
Vegetation type: Dry forest.
166. *Septoglomus titan* B.T. Goto & G.A. Silva, Mycotaxon 124: 105 (2013).  
Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
167. *Septoglomus xanthium* (Blaszk., Blanke, Renker & Buscot) G.A. Silva, Oehl & Sieverd., Mycotaxon 116: 106 (2011).  
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Vegetation type: Anthropogenic sites (Mining).
- Simiglomus**
168. *Simiglomus hoi* (S.M. Berch & Trappe) G.A. Silva, Oehl & Sieverd., Mycotaxon 116: 104 (2011).  
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Vegetation type: Lowland evergreen rainforest, Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems).
- Intraornatosporaceae**
- Intraornatospora**
169. *Intraornatospora intraornata* (B.T. Goto & Oehl) B.T. Goto, Oehl & G.A. Silva, Mycotaxon 119: 122 (2012).  
= *Racocetra intraornata* B.T. Goto & Oehl, Mycotaxon 109: 485 (2009).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Desertification).
- Paradentiscutata**
170. *Paradentiscutata bahiana* Oehl, Magna, B.T. Goto & G.A. Silva, Mycotaxon 119 (2012).  
Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
171. *Paradentiscutata maritima* B.T. Goto, D.K. Silva, Oehl & G.A. Silva, Mycotaxon 119 (2012).  
Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
- Pacisporaceae**
- Pacispora**
172. *Pacispora chimonobambusae* (C.G. Wu & Y.S. Liu) Sieverd. & Oehl, Journal of Applied Botany 78: 76 (2004).  
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Vegetation type: Lowland evergreen rainforest.
173. *Pacispora dominikii* (Blaszk.) Sieverd. & Oehl, Journal of Applied Botany 78: 76 (2004).  
= *Glomus dominikii* Blaszk., Karstenia 27: 37 (1988).  
Vegetation type: Dry forest and Lower montane forest.
174. *Pacispora franciscana* Sieverd. & Oehl, Journal of Applied Botany 78: 74 (2004).  
Vegetation type: Dry forest and Anthropogenic sites (Mining).
175. *Pacispora robiginia* Sieverd. & Oehl, Journal of Applied Botany 78: 75 (2004).  
Vegetation type: Lowland evergreen rainforest and Dry forest.
176. *Pacispora scintillans* (S.L. Rose & Trappe) Sieverd. & Oehl, Journal of Applied Botany 78: 76 (2004).  
= *Glomus scintillans* S.L. Rose & Trappe, Mycotaxon 10 (2): 417 (1980).

- = *Gerdemannia scintillans* (S.L. Rose & Trappe) C. Walker, Blaszcz., A. Schüssler & Schwarzott, Mycological Research 108 (6): 716 (2004).  
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 Vegetation type: Upper montane forest and Anthropogenic sites (Agrosystems and Mining).

## Racocetraceae

### Cetraspora

177. *Cetraspora armeniaca* (Blaszcz.) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 338 (2009).  
 = *Scutellospora armeniaca* Blaszcz., Mycologia 84: 939 (1993).  
 Vegetation type: Anthropogenic sites (Agrosystems and Mining).
178. *Cetraspora auronigra* Oehl, L.L. Lima, Kozovits, Magna & G.A. Silva, Sydowia 66(2): 301 (2014).  
 Vegetation type: Dry forest and Lower montane forest.
179. *Cetraspora gilmorei* Trappe & Gerd.) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 338 (2009).  
 = *Gigaspora gilmorei* Trappe & Gerd., Mycologia Memoirs 5: 27 (1974).  
 = *Scutellospora gilmorei* (Trappe & Gerd.) C. Walker & F.E. Sanders, Mycotaxon 27: 181 (1986).  
 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems).
180. *Cetraspora pellucida* (T.H. Nicolson & N.C. Schenck) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 338 (2009).  
 = *Gigaspora pellucida* T.H. Nicolson & N.C. Schenck, Mycologia 71 (1): 189 (1979).  
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 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Mangrove, Upper montane forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
181. *Racocetra alborosea* (Ferrer & R.A. Herrera) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 336 (2009).  
 = *Gigaspora alborosea* Ferrer & R.A. Herrera, Revista del Jardín Botánico Nacional Habana 1(1): 55 (1981).  
 = *Scutellospora alborosea* (Ferrer & R.A. Herrera) C. Walker & F.E. Sanders, Mycotaxon 27: 180 (1986).  
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 Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
182. *Racocetra beninensis* Oehl, Tchabi & Lawouin, Mycotaxon 110: 201 (2010).  
 Vegetation type: Dry forest.
183. *Racocetra castanea* (C. Walker) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 336 (2009).  
*Scutellospora castanea* C. Walker, Cryptogamie Mycologie 14(4): 280 (1993).  
 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest and Anthropogenic sites (Agrosystems).
184. *Racocetra coralloidea* (Trappe, Gerd. & I. Ho) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 336 (2009).  
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 = *Scutellospora coralloidea* (Trappe, Gerd. & I. Ho) C. Walker & F.E. Sanders, Mycotaxon 27: 181 (1986).  
 Vegetation type: : Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Pasture).
185. *Racocetra fulgida* (Koske & C. Walker) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 336 (2009).  
 = *Scutellospora fulgida* Koske & C. Walker, Mycotaxon 27: 221 (1986).  
 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest and Anthropogenic sites (Agrosystems and Desertification).
186. *Racocetra gregaria* (N.C. Schenck & T.H. Nicolson) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 337 (2009).  
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 Vegetation type: Semi-evergreen rainforest, Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems, Mining and Desertification).
187. *Racocetra minuta* (Ferrer & R.A. Herrera) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 337 (2009).  
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 = *Scutellospora minuta* (Ferrer & R.A. Herrera) C. Walker & F.E. Sanders, Mycotaxon 27: 180 (1986).  
 Vegetation type: Mangrove and Anthropogenic sites (Agrosystems).
188. *Racocetra persica* (Koske & C. Walker) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 337 (2009).  
 = *Gigaspora persica* Koske & C. Walker, Mycologia 77(5): 708 (1985).  
 = *Scutellospora persica* (Koske & C. Walker) C. Walker & F.E. Sanders, Mycotaxon 27: 181 (1986).  
 Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems and Pasture).
189. *Racocetra tropicana* Oehl, B.T. Goto & G.A. Silva, Nova Hedwigia 92 (1–2): 72 (2011).  
 Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Mangrove forest and Anthropogenic sites (Agrosystems).
190. *Racocetra undulata* T.C. Lin & C.H. Yen, Mycotaxon 116: 402 (2011).  
 Vegetation type: Dry forest.
191. *Racocetra verrucosa* (Koske & C. Walker) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 337 (2009).  
 = *Gigaspora verrucosa* Koske & C. Walker, Mycologia 77(5): 705 (1985).  
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 Vegetation type: Semi-evergreen rainforest, Dry forest, Upper montane forest, Lower montane forest, Mangrove forest and Anthropogenic sites (Agrosystems, Mining and Desertification).

192. *Racocetra weresubiae* (Koske & C. Walker) Oehl, F.A. Souza & Sieverd., Mycotaxon 106: 337 (2009).  
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Vegetation type: Dry forest, Mangrove forest and Anthropogenic sites (Agrosystems and Desertification).
- Sacculosporaceae**
- Sacculospora**
193. *Sacculospora baltica* (Błaszk., Madej & Tadych) Oehl, Palenzuela, I.C. Sánchez, B.T. Goto, G.A. Silva & Sieverd., Mycotaxon 117: 311 (2012).  
= *Entrophospora baltica* Błaszk., Madej & Tadych, Mycotaxon 68: 167 (1998).  
Vegetation type: Anthropogenic sites (Mining).
194. *Sacculospora felinovii* Willis, Błaszk., T. Prabhu, Chwat, Góralska, Sashidhar, Harris, J. D'Souza, Vaingankar & Adholeya, Mycological Progress 15(7): 793 (2016).  
Vegetation type: Semi-evergreen rainforest.
- Scutellosporaceae**
- Bulbospora**
195. *Bulbospora minima* Oehl, Marinho, B.T. Goto & G.A. Silva, Sydowia 66(2): 316 (2014).  
Vegetation type: Dry forest.
- Orbispora**
196. *Orbispora pernambucana* (Oehl, D.K. Silva, N. Freitas, L.C. Maia) Oehl, G.A. Silva & D.K. Silva, Mycotaxon 116: 166 (2011).  
= *Scutellospora pernambucana* Oehl, D.K. Silva, N. Freitas & L.C. Maia, Mycotaxon 106: 363 (2009).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane and Anthropogenic sites (Agrosystems).
197. *Orbispora projecturata* (Kramad. & C. Walker) Oehl, G.A. Silva & D.K. Silva, Mycotaxon 116: 166 (2011).  
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Vegetation type: Lower montane, Mangrove and Anthropogenic sites (Agrosystems).
- Scutellospora**
198. *Scutellospora alterata* Oehl, J.S. Pontes, Palenz., Sánchez-Castro & G.A. Silva, Mycotaxon 125: 172 (2013).  
Vegetation type: Dry forest.
199. *Scutellospora arenicola* Koske & Halvorson, Mycologia 81: 927 (1990).  
Vegetation type: Lowland evergreen rainforest and Dry forest.
200. *Scutellospora aurigloba* (I.R. Hall) C. Walker & F.E. Sanders, Mycotaxon 27: 180 (1986).  
= *Gigaspora aurigloba* I.R. Hall, Transactions of the British Mycological Society 68 (3): 351 (1977).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Desertification).
201. *Scutellospora calospora* (T.H. Nicolson & Gerd.) C. Walker & F.E. Sanders, Mycotaxon 27: 180 (1986).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Upper montane forest, Mangrove forest and Anthropogenic sites (Agrosystems, Pasture and Desertification).
202. *Scutellospora crenulata* R.A. Herrera, Cuenca & C. Walker, Canadian Journal of Botany 79(6): 674 (2001).  
Vegetation type: Dry forest.
203. *Scutellospora dipapillosa* (C. Walker & Koske) C. Walker & F.E. Sanders, Mycotaxon 27: 181 (1986).  
= *Gigaspora dipapillosa* C. Walker & Koske, Mycologia 77(5): 709 (1985).  
Vegetation type: Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems).
204. *Scutellospora dipurpurescens* J.B. Morton & Koske, Mycologia 80(4): 520 (1988).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Mangrove forest and Anthropogenic sites (Agrosystems).
205. *Scutellospora spinosissima* C. Walker & Cuenca, Annals of Botany 82: 723 (1998).  
Vegetation type: Dry Forest.
206. *Scutellospora striata* Cuenca & R.A. Herrera, Mycotaxon 105: 81 (2008).  
Vegetation type: Dry Forest.
207. *Scutellospora tepuiensis* Furrázola & Cuenca, Mycotaxon 132(1): 11 (2017).  
Vegetation type: Upper montane forest.
208. *Scutellospora tricalypta* (R.A. Herrera & Ferrer) C. Walker & F.E. Sanders, Mycotaxon 27: 180 (1986).  
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Vegetation type: Dry forest.
- Archaeosporomycetes**
- Archaeosporales**
- Ambisporaceae**
- Ambispora**
209. *Ambispora appendicula* (Spain, Sieverd. & N.C. Schenck) C. Walker, Mycological Research 112(3): 298 (2008).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
210. *Ambispora brasiliensis* B.T. Goto, L.C. Maia & Oehl, Mycotaxon 105:13 (2008).  
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Vegetation type: Lowland evergreen rainforest, Dry forest and Lower montane forest.

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 = *Appendicispora callosa* (Sieverd.) C. Walker, Vestberg & A. Schüssler, Mycological Research 111: 254 (2007).  
 Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems, Mining and Desertification).
212. *Ambispora fecundispora* (N.C. Schenck & G.S. Sm.) C. Walker, Mycological Research 112: 298 (2008).  
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 Vegetation type: Semi-evergreen rainforest and Dry forest.
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 Vegetation type: Anthropogenic sites (Agrosystems and Mining).
214. *Ambispora gerdemannii* (S.L. Rose, B.A. Daniels & Trappe) C. Walker, Vestberg & A. Schüssler, Mycological Research 111: 148 (2006).  
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 Vegetation type: Lowland evergreen rainforest, Dry forest, Upper montane forest and Anthropogenic sites (Agrosystems, Pasture and Desertification).
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 = *Appendicispora jimgerdemannii* Spain, Oehl & Sieverd., Mycotaxon 97: 176 (2006).  
 Vegetation type: Dry forest and Anthropogenic sites (Agrosystems).
216. *Ambispora leptoticha* (N.C. Schenck & G.S. Sm.) C. Walker, Vestberg & A. Schüssler, Mycological Research 111:148 (2006).  
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Vegetation type: Lowland evergreen rainforest, Dry forest, Lower montane forest and Anthropogenic sites (Agrosystems and Pasture).

217. *Ambispora nicolsonii* C. Walker, L.E. Reed & F.E. Sanders) Oehl, G.A. Silva, B.T. Goto & Sieverd., Mycotaxon 117: 431 (2012).  
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 Vegetation type: Dry forest, Mangrove and Anthropogenic sites (Agrosystems).

## Archaeosporaceae

### Archaeospora

218. *Archaeospora myriocarpa* (Spain, Sieverd. & N.C. Schenck) Oehl, G.A. Silva, B.T. Goto & Sieverd., Mycotaxon 117: 430 (2011).  
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 Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).
219. *Archaeospora trappei* (R.N. Ames & Linderman) J.B. Morton & D. Redecker, Mycologia 93: 183 (2001).  
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 Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
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 = *Acaulospora undulata* Sieverd., Angewandte Botanik 62: 373 (1988).  
 Vegetation type: Upper montane forest, Mangrove and Anthropogenic sites (Agrosystems).

## Intraspora

221. *Intraspora schenckii* (Sieverd. & S. Toro) Oehl & Sieverd., Journal of Applied Botany 80: 77 (2006).  
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 Vegetation type: Lowland evergreen rainforest and Anthropogenic sites (Pasture and Mining).

## Paraglomeromycetes

### Paraglomerales

#### Paraglomeraceae

##### Paraglomus

222. *Paraglomus albidum* (C. Walker & L.H. Rhodes) Oehl, F.A. Souza, G.A. Silva & Sieverd., Mycotaxon 116: 112 (2011).  
 = *Glomus albidum* C. Walker & L.H. Rhodes, Mycotaxon 12(2): 509 (1981).  
 = *Glomus albidus* C. Walker & L.H. Rhodes (1981).  
 Vegetation type: Lowland evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).

223. *Paraglomus bolivianum* (Sieverd. & Oehl) Oehl & G.A. Silva, Journal of Applied Botany and Food Quality 86: 115 (2013).  
= *Pacispora boliviana* Sieverd. & Oehl, Journal of Applied Botany 78: 79 (2004).  
Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems and Desertification).
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Vegetation type: Dry forest and Anthropogenic sites (Agrosystems and Mining).
225. *Paraglomus laccatum* (Błaszk.) Renker, Błaszk. & Buscot, Nova Hedwigia 84(3–4): 400 (2007).  
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Vegetation type: Anthropogenic sites (Mining).
226. *Paraglomus lacteum* S.L. Rose & Trappe, Mycotaxon 10 (2): 415 (1980).  
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Vegetation type: Anthropogenic sites (Mining).
227. *Paraglomus occultum* (C. Walker) J.B. Morton & D. Redecker, Mycologia 93 (1): 190 (2001).  
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Vegetation type: Lowland evergreen rainforest, Semi-evergreen rainforest, Dry forest, Lower montane forest, Mangrove and Anthropogenic sites (Agrosystems, Pasture, Mining and Desertification).
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Vegetation type: Semi-evergreen rainforest, Dry forest and Anthropogenic sites (Agrosystems).

## Discussion

Tropical forests are hotspots for the conservation of AMF, as they harbor 75 % of the currently known richness of Glomeromycotina (Mukerji & Bhattacharjee 1983; Rhatwal & Gandhe 2009; Błaszkowski & Chwat 2013; Błaszkowski et al. 2014, 2017; Sieverding et al. 2014; Andrade et al. 2017; Goto & Jobim 2017). Of this total, 21 % of the species were described from samples of tropical origin. Even with a large number of species of these fungi in tropical forests, the richness must be much larger, considering that several studies have mentioned possible new species, which have not yet been described due to insufficient material (de Carvalho et al. 2012, de Assis et al. 2016, da Silva et al. 2017b, Pontes et al. 2017a, b).

Dry forests have the highest recorded richness of AMF among the vegetation types of tropical forests, representing 54 % of the species described (Uhlmann et al. 2004, Tchabi et al. 2009, da Silva et al. 2014, Harikumar et al. 2015, Pontes et al. 2017 a, b, Sousa et al. 2017).

The most representative genera in tropical forests are *Glomus* and *Acaulospora*, which represent 35 % of the recorded richness, possibly due to their ability to adapt to different environments (Loss et al. 2009), tolerance of a wide pH range (Maia & Trufem 1990), and production of numerous small-diameter spores (Dandan & Zhiwei 2007). However, when evaluating the set of species at the order level, it is possible to observe that Glomerales has about 70 % of the species in tropical forests, while the largest number of records belongs to Gigasporales, with 88 % of the species recorded, which suggests that tropical areas are reservoirs of Gigasporales taxa (Silva et al. 2012, Marinho et al. 2014).

The influence of anthropic land use has negatively impacted the richness of AMF in areas of Tropical Forests, which exhibit a 15 % loss when compared to natural areas. When evaluating the conversion of natural areas to cultivated areas, Xiang et al. (2014) observed that the abundance and richness of AMF were negatively impacted, possibly due to the addition of phosphorus compounds and soil plowing, as was also observed by Oehl et al. (2003), Săle et al. (2015) and Pontes et al. (2017b).

Data on species register are relevant to the creation of effective conservation policies for the maintenance of tropical forests and respective biological richness they harbor. These policies need to consider the impact of anthropic actions not only on macrodiversity, but also on the communities of microorganisms, including the AMF, which are still little known despite the great relevance for the ecological balance.

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