

## Review

# A revision of the descriptions of ectomycorrhizas published since 1961

Miriam DE ROMAN<sup>1,3</sup>, Vanessa CLAVERIA<sup>2</sup> and Ana Maria DE MIGUEL<sup>2</sup>

<sup>1</sup>*CABI Bioscience, Bakeham Lane, Egham, Surrey TW20 9TY, UK.*

<sup>2</sup>*Department of Botany, University of Navarra, ES-31080 Pamplona, Spain.*

<sup>3</sup>*Department of Agriculture & Forestry, School of Biological Sciences, University of Aberdeen, Hilton Campus, Block M, Aberdeen AB24 4FA, UK.*

*E-mail: miriamderoman@hotmail.com*

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All available publications providing descriptions of ectomycorrhizas (ECM) were reviewed in order to build a database containing details on fungus forming the ECM, host tree, country where the material for description was collected, and habitat of the ECM. Other secondary data were also recorded. In all 1244 descriptions of ECM published since 1961 in 479 papers were reviewed. The number of different ECM morphotypes described was 814. Most ECM described were collected in Europe and North America. Gymnosperms were the most common tree associates, and boreal and temperate forests the most studied ecosystems. Fungal symbionts were mostly *Basidiomycota*, epigeous, and with mushroom-like morphology. The paper also addresses the gaps in ECM knowledge that mycorrhizologists should address in future studies.

## INTRODUCTION

Research on ectomycorrhizas (ECM) has evolved greatly over the last 40 years. From the first morphological analyses to the latest ecological, physiological and genetic studies, the range of information now available is outstanding. Despite all the scientific advances, the identification of the fungi involved remains one of the first steps to be followed when studying ECM communities. Molecular techniques are efficient tools to achieve this aim, but the morphological and anatomical features of the ECM are still an invaluable source of information for the better understanding of the fungal component.

Many ECM morphotypes have been more or less accurately described since the beginning of ectomycorrhizal symbiosis research in the late 19th century. A few authors have tried to establish classification systems in order to develop identification keys paralleling those available for plants and animals, but this is a difficult task. Dominik (1969) made a first attempt. A few years later Zak (1973) stated that a detailed description of each ECM was essential for its identification, and that this description should be based on several collections in order to note possible variations in the ECM over different developmental stages.

In spite of these general ideas, the methodology used by each author when describing an ECM varied greatly in descriptions published before 1986, when Agerer (1986a, 1987–2002, 1994a, 1999a) began to publish guidelines for the systematic of description and identification of ECM widely used nowadays. In addition, Agerer created a binomial nomenclature system for those ECM described but not yet identified, edited a *Colour Atlas of Ectomycorrhizas* (Agerer 1987–2002) with photographs of the ECM described to facilitate identification by comparison, and developed computer software to characterize and determine ECM (Agerer & Rambold 1998).

Other approaches for the description and identification of ECM also exist. Ingleby *et al.* (1990) developed a system to name the features of ECM, and published 24 brief descriptions of ECM including photographs and drawings.

Another widely used methodology is the so-called *Concise Descriptions of North American Ectomycorrhizas*, developed by Goodman *et al.* (1996–2000). The descriptions published according to this system are more detailed than those in Ingleby *et al.* (1990), but they lack the level of detail of the system proposed by Agerer (1986a, 1987–2002, 1994a, 1999a), and are confined to the North American geographical region.

**Table 1.** Compilation of the 1244 ECM descriptions reviewed. ECM descriptions are ordered alphabetically by name of ECM and then by reference, with details of the host tree, the country where the material was collected, and the habitat where the ECM was found (1, field; 2, synthesized *in vitro*; 3, nursery; 4, truffle ground stand; 5, various).

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Abierhiza fascicularis</i>	Haug <i>et al.</i> (1994)	<i>Abies kawakamii</i>	Taiwan	1
<i>A. tomentosa</i>	Haug <i>et al.</i> (1994)	<i>A. kawakamii</i>	Taiwan	1
AD (angle droit, Giraud 1988)	Águeda, Fernández & De Miguel (2001)	<i>Quercus ilex</i>	Spain	4
	Bencivenga <i>et al.</i> (1995)	Not specified	Italy	3
	De Román & De Miguel (2005)	<i>Q. ilex</i>	Spain	1
	Di Massimo <i>et al.</i> (1996)	<i>Q. ilex</i>	Spain	3
	Etayo & De Miguel (1998)	<i>Q. faginea, Q. ilex</i>	Spain	4
	Giraud (1988)	Not specified	France	4
	Granetti & Baciarelli (1997)	<i>Q. ilex</i>	Italy	4
	Sáez & De Miguel (1995)	Not specified	Spain	4
<i>Agaricales</i>	Buée, Vairelles & Garbaye (2004)	<i>Fagus sylvatica</i>	France	1
	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
<i>Albatrellus ovinus</i>	Agerer (1996b)	<i>Picea abies</i>	Germany	1
	Agerer (1996g)	<i>P. abies</i>	Germany	1
	Agerer <i>et al.</i> (1996a)	<i>P. abies</i>	Germany	1
<i>Alnirhiza atroverrucosa</i>	Pritsch, Munch & Buscot (1997)	<i>Alnus glutinosa</i>	Germany	1
<i>A. cremicolor</i>	Pritsch <i>et al.</i> (1997)	<i>A. glutinosa</i>	Germany	1
<i>A. cystidiobrunnea</i>	Pritsch <i>et al.</i> (1997)	<i>A. glutinosa</i>	Germany	1
<i>A. texta</i>	Pritsch <i>et al.</i> (1997)	<i>A. glutinosa</i>	Germany	1
<i>Alpova diplophloeus</i>	Godbout & Fortin (1983)	<i>A. crispa, A. rugosa</i>	Canada	2
	Miller, Koo & Molina (1990)	<i>A. rubra</i>	USA	5
	Wiedmer, Senn-Irlet & Agerer (2001)	<i>A. viridis</i>	Switzerland	1
<i>Amanita</i>	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
<i>A. caesarea</i>	Meotto <i>et al.</i> (1997)	<i>Quercus</i>	Italy	1
<i>A. citrina</i>	Mleczko (2002a)	<i>Pinus sylvestris</i>	Poland	1
	Mleczko (2004a)	<i>P. sylvestris</i>	Poland	1
<i>A. muscaria</i>	Chu-Chou & Grace (1983)	<i>Pseudotsuga menziesii</i>	N. Zealand	1
	Ingleby <i>et al.</i> (1990)	<i>Betula pendula</i>	UK	1
<i>A. spissa</i>	Torres & Honrubia (1994)	<i>Pinus halepensis</i>	Spain	2
<i>Amphinema</i>	Hagerman <i>et al.</i> (1999)	Not specified	Canada	1
	Hagerman, Sakakibara & Durall (2001)	<i>Pseudotsuga menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>Betula papyrifera, P. menziesii</i>	Canada	5
<i>A. byssoides</i>	Danielson & Pruden (1989)	<i>Picea pungens</i>	Canada	1
	Danielson, Zak & Parkinson (1984)	<i>Pinus banksiana</i>	Canada	3
	Fassi & De Vecchi (1962)	<i>P. strobus</i>	Italy	3
	Haug <i>et al.</i> (1994)	<i>P. taiwanensis</i>	Taiwan	1
	Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
	Kernaghan (2001)	<i>Abies lasiocarpa, Dryas octopetala, Picea engelmannii, Salix barrattiana</i>	Canada	1
	Massicotte <i>et al.</i> (1999b)	<i>A. grandis, Arbutus menziesii, Lithocarpus densiflora, Pinus ponderosa, Pseudotsuga menziesii</i>	USA	3
	Montecchio <i>et al.</i> (2002)	<i>Quercus ilex</i>	Italy	1
	Weiss (1989)	<i>Picea abies</i>	Germany	1
	Weiss (1991a)	<i>P. abies</i>	Germany	2

<i>A. byssoides</i> -like	Harniman & Durall (1996a)	<i>P. engelmannii</i>	Canada	1
<i>Arcangiella asterosperma</i>	Luppi & Gautero (1967)	<i>Quercus pubescens</i>	Italy	1
<i>A. borziana</i>	Egli <i>et al.</i> (2001)	<i>Picea abies</i>	Switzerland	1
<i>Ascomycota</i>	Al Sayegh & Kraigher (2000)	<i>Fagus</i>	Slovenia	1
	Haug <i>et al.</i> (2005)	<i>Neea</i>	Ecuador	1
	Ingleby <i>et al.</i> (1990)	<i>Betula pendula</i>	UK	1
	Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
	Kernaghan (2001)	<i>Dryas octopetala</i>	Canada	1
	Kernaghan (2001)	<i>Salix barrattiana</i>	Canada	1
<i>Astraeus hygrometricus</i>	Danielson (1984b)	<i>Pinus banksiana</i>	Canada	2
	Giraud (1988)	Not specified	France	4
	Schramm (1966)	<i>Pinus virginiana</i>	USA	1
<i>Austropaxillus boletinoides</i>	Palfner (2001)	<i>Nothofagus betuloides</i>	Chile	1
	Palfner (2001)	<i>N. pumilio</i>	Chile	1
	Palfner (2002a)	<i>N. pumilio</i>	Chile	1
<i>Balsamia alba</i>	Palfner & Agerer (1998a)	<i>Pinus jeffreyi</i>	USA	1
	Palfner (1998a)	<i>P. jeffreyi</i>	USA	1
<i>Bankera fuligineo-alba</i>	Agerer & Otto (1997)	<i>P. sylvestris</i>	Germany	1
	Agerer & Otto (1998)	<i>P. sylvestris</i>	Germany	1
	Danielson (1984b)	<i>P. banksiana</i>	Canada	2
<i>Basidiomycota</i>	Jones <i>et al.</i> (1997)	<i>Betula papyrifera, Pseudotsuga menziesii</i>	Canada	5
	Jones <i>et al.</i> (1997)	<i>B. papyrifera, P. menziesii</i>	Canada	5
	Jones <i>et al.</i> (1997)	<i>B. papyrifera, P. menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>B. papyrifera, P. menziesii</i>	Canada	5
	Jones <i>et al.</i> (1997)	<i>B. papyrifera, P. menziesii</i>	Canada	5
	Jones <i>et al.</i> (1997)	<i>B. papyrifera, P. menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>B. papyrifera, P. menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>B. papyrifera, P. menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>B. papyrifera, P. menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>Pseudotsuga menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>Pseudotsuga menziesii</i>	Canada	1
	Massicotte <i>et al.</i> (1999b)	<i>Abies grandis, Lithocarpus densiflora,</i> <i>Pinus ponderosa, Pseudotsuga menziesii</i>	USA	3
	Massicotte <i>et al.</i> (1999b)	<i>Abies grandis, P. menziesii</i>	USA	3
	Massicotte <i>et al.</i> (1999b)	<i>Arbutus menziesii, P. menziesii</i>	USA	3
	Massicotte <i>et al.</i> (1999b)	<i>Pinus ponderosa</i>	USA	3
<i>Betulaerhiza hystrix</i>	Müller & Agerer (1990)	<i>Betula pendula</i>	Germany	1
	Müller (1994)	<i>B. pendula</i>	Germany	1
<i>Boletaceae</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
	See, Alexander & Watling (1997)	<i>Shorea leprosula</i>	Malaysia	1
	Selosse, Bauer & Moyersoen (2002)	<i>Carpinus</i>	France	1
<i>Boletinus cavipes</i>	Treu (1990a)	<i>Larix decidua</i>	Germany	1
	Treu (1990b)	<i>L. decidua</i>	Germany	1
<i>Boletopsis leucomelaena</i>	Agerer (1992a)	<i>Picea abies</i>	Germany	1
	Agerer (1993a)	<i>P. abies</i>	Germany	1
<i>Boletus</i>	Chu-Chou & Grace (1983)	<i>Pseudotsuga menziesii</i>	N. Zealand	1
	Schramm (1966)	<i>Pinus virginiana</i>	USA	1
<i>B. aereus</i>	Ceruti <i>et al.</i> (1985)	<i>Castanea sativa</i>	Italy	2

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Boletus badius</i>	Voiry (1981)	<i>Quercus</i>	France	1
<i>B. edulis</i>	Agerer & Gronbach (1990a)	<i>Picea abies</i>	Germany	1
	Ceruti <i>et al.</i> (1987)	<i>P. excelsa</i>	Italy	2
	Ceruti <i>et al.</i> (1987)	<i>Pinus sylvestris</i>	Italy	2
	Gronbach (1988)	<i>Picea abies</i>	Germany	1
	Luppi & Gautero (1967)	<i>Quercus robur</i>	Italy	1
	Meotto & Pellegrino (1989)	<i>Castanea crenata</i> , <i>C. sativa</i> , <i>Quercus cerris</i> , <i>Quercus rubra</i>	Italy	3
	<i>B. luridus</i>	Brunner <i>et al.</i> (1992)	<i>Picea abies</i>	Switzerland
<i>B. loyo</i>	Palfner (2001)	<i>Nothofagus oblicua</i>	Chile	1
<i>B. pinophilus</i>	Duñabeitia <i>et al.</i> (1996)	<i>Pinus radiata</i>	Spain	3
<i>B. putidus</i>	Palfner (2001)	<i>Nothofagus oblicua</i>	Chile	1
<i>B. rhodoxanthus</i>	Hahn (2001)	<i>Cistus ladanifer</i>	Germany	1
<i>Byssocorticium atrovirens</i>	Brand (1991f)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Luppi & Gautero (1967)	<i>Quercus petraea</i>	Italy	1
	Massicotte <i>et al.</i> (1999b)	<i>Abies grandis</i> , <i>Arbutus menziesii</i> , <i>Lithocarpus densiflora</i> , <i>Pinus ponderosa</i> , <i>Pseudotsuga menziesii</i>	USA	3
<i>Cantharellus cibarius</i>	Zak & Larsen (1978)	<i>P. menziesii</i>	USA	1
	Mleczko (2002b)	<i>Pinus sylvestris</i>	Poland	1
	Mleczko (2004b)	<i>P. sylvestris</i>	Poland	1
<i>C. formosus</i>	Countess & Goodman (2000)	<i>Tsuga heterophylla</i>	Canada	1
<i>Castanopsis rhiza glabra</i>	Haug <i>et al.</i> (1994)	<i>Castanopsis borneensis</i>	Taiwan	1
<i>Cenococcum geophilum</i>	Abourouh & Najim (1995)	<i>Cedrus atlantica</i>	Morocco	1
	Agerer & Gronbach (1988)	<i>Picea abies</i>	Germany	1
	Águeda <i>et al.</i> (2001)	<i>Quercus ilex</i>	Spain	4
	Al Sayegh & Kraigher (1999)	<i>Picea abies</i>	Slovenia	1
	Azul & Freitas (1999)	<i>Quercus suber</i>	Portugal	1
	Baxter <i>et al.</i> (1999)	<i>Quercus</i>	USA	1
	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1
	Bradbury, Danielson & Visser (1998)	<i>P. contorta</i>	Canada	1
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Danielson & Pruden (1989)	<i>Picea pungens</i>	Canada	1
	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
	Di Battista <i>et al.</i> (2002)	<i>Pseudotsuga menziesii</i>	USA	3
	Di Massimo <i>et al.</i> (1996)	<i>Pinus nigra</i>	Spain	3
	Dickie <i>et al.</i> (2004)	<i>Helianthemum bicknellii</i>	USA	1
	Donnini & Bencivenga (1995)	<i>Corylus avellana</i> , <i>Quercus pubescens</i>	Italy	4
	Fontana & Centrella (1967)	<i>Quercus petraea</i>	Italy	1
	Giraud (1988)	Not specified	France	4
	Godbout & Fortin (1983)	<i>Alnus crispa</i> , <i>A. rugosa</i>	Canada	2
	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3

	Gronbach (1988)	<i>Picea abies</i>	Germany	1
	Hagerman <i>et al.</i> (1999)	Not specified	Canada	1
	Hagerman <i>et al.</i> (2001)	<i>Pseudotsuga menziesii</i>	Canada	1
	Harniman & Durall (1996b)	<i>Picea engelmannii</i>	Canada	1
	Ingleby <i>et al.</i> (1990)	<i>P. sitchensis</i>	UK	1
	Jany, Garbaye & Martin (2002)	<i>Fagus sylvatica</i>	France	1
	Jones <i>et al.</i> (1997)	<i>Betula papyrifera</i> , <i>Pseudotsuga menziesii</i>	Canada	5
	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
	Kernaghan (2001)	<i>Abies lasiocarpa</i> , <i>Dryas octopetala</i> , <i>Picea engelmannii</i> , <i>Salix barrattiana</i>	Canada	1
	Massicotte <i>et al.</i> (1999b)	<i>Abies grandis</i> , <i>Arbutus menziesii</i> , <i>Lithocarpus densiflora</i> , <i>Pinus ponderosa</i> , <i>Pseudotsuga menziesii</i>	USA	3
	Moser <i>et al.</i> (2005)	<i>Quercus garryana</i>	USA	1
	Palfner (2001)	<i>Nothofagus pumilio</i>	Chile	1
	Pigott (1982)	<i>Tilia cordata</i>	UK	3
	Rose, Gerald Van Dyke & Davey (1981)	<i>Eucalyptus nova-anglica</i>	USA	1
	Schramm (1966)	<i>Populus tremuloides</i>	USA	1
	See <i>et al.</i> (1997)	<i>Shorea leprosula</i>	Malaysia	1
	Torres & Honrubia (1997)	<i>Pinus halepensis</i>	Spain	3
	Voiry (1981)	<i>Fagus</i>	France	1
	Wöllecke (2001)	<i>Pinus sylvestris</i>	Germany	1
<i>Chamonixia caespitosa</i>	Raidl (1999)	<i>Picea abies</i>	Germany	1
<i>Chroogomphus</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
<i>C. helveticus</i>	Agerer (1990a)	<i>Picea abies</i>	Germany	1
	Agerer (1990b)	<i>P. abies</i>	Germany	1
<i>C. rutilus</i>	Agerer (1990a)	<i>Pinus sylvestris</i>	Germany	1
<i>Clavulicium delectabile</i>	Tedersoo <i>et al.</i> (2003)	<i>Betula pendula</i>	Estonia	1
	Tedersoo <i>et al.</i> (2003)	<i>Picea abies</i>	Estonia	1
<i>Clavulina cfr coralloides</i>	Tedersoo <i>et al.</i> (2003)	<i>Betula pendula</i>	Estonia	1
<i>C. cristata</i>	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
<i>Coltricia perennis</i>	Danielson (1984b)	<i>Pinus banksiana</i>	Canada	2
Cortinarioid	Selosse <i>et al.</i> (2002)	Not specified	France	1
<i>Cortinarius</i>	Águeda <i>et al.</i> (2001)	<i>Quercus ilex</i>	Spain	4
	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Dickie <i>et al.</i> (2004)	<i>Helianthemum bicknellii</i>	USA	1
	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	Jakucs (2002a)	<i>P. alba</i>	Hungary	1
	Kernaghan (2001)	<i>Picea engelmannii</i>	Canada	1
	Kernaghan (2001)	<i>Salix barrattiana</i>	Canada	1
	Treu (1990a)	<i>Larix decidua</i>	Germany	1
<i>C. alboviolaceus</i>	Voiry (1981)	<i>Quercus</i>	France	1
<i>C. alneus</i>	Pritsch <i>et al.</i> (1997)	<i>Alnus glutinosa</i>	Germany	1
<i>C. alnobetulae</i>	Wiedmer & Senn-Irlet (1999a)	<i>A. viridis</i>	Switzerland	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Cortinarius amoenolens</i>	Hagerman <i>et al.</i> (1999)	Not specified	Canada	1
<i>C. armillatus</i>	Cuvelier & Agerer (1991)	<i>Betula pendula</i>	Belgium	1
<i>C. atropusillus</i>	Wiedmer & Senn-Irlet (1999b)	<i>Alnus viridis</i>	Switzerland	1
<i>C. austrosalor</i>	Palfner (2001)	<i>Nothofagus nitida</i>	Chile	1
	Palfner (2002b)	<i>N. nitida</i>	Chile	1
<i>C. badiovestitus</i>	Wiedmer & Senn-Irlet (1999c)	<i>Alnus viridis</i>	Switzerland	1
<i>C. bibulus</i>	Miller <i>et al.</i> (1990)	<i>A. rubra</i>	USA	5
	Wiedmer & Senn-Irlet (2001a)	<i>A. viridis</i>	Switzerland	1
<i>C. bolaris</i>	Brand (1991)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1992c)	<i>F. sylvatica</i>	Germany	1
<i>C. calochrous</i>	Kernaghan (2001)	<i>Picea engelmannii</i>	Canada	1
<i>C. cinnabarinus</i>	Brand (1991)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1992d)	<i>F. sylvatica</i>	Germany	1
	Ceruti, Benvenuti & Luppi Mosca (1988)	<i>F. sylvatica</i>	Italy	1
<i>C. helodes</i>	Becerra <i>et al.</i> (2005)	<i>Alnus acuminata</i>	Argentina	1
<i>C. helvelloides</i>	Pritsch <i>et al.</i> (1997)	<i>A. glutinosa</i>	Germany	1
	Wiedmer & Senn-Irlet (2001b)	<i>A. viridis</i>	Switzerland	1
<i>C. hercynicus</i>	Agerer (1988b)	<i>Picea abies</i>	Germany	1
	Agerer (1990c)	<i>P. abies</i>	Germany	1
<i>C. himmuleus</i>	Kovacs <i>et al.</i> (2002)	<i>Betula celtiberica</i>	Spain	1
<i>C. huronensis</i>	Kuss, Raidl & Beenken (2004)	<i>Pinus rotundata</i>	Germany	1
<i>C. ionochlorus</i>	Montecchio <i>et al.</i> (2001a)	<i>Quercus ilex</i>	Italy	1
<i>C. kühneri</i>	Wiedmer & Senn-Irlet (1999d)	<i>Alnus viridis</i>	Switzerland	1
<i>C. laniger</i>	Hagerman <i>et al.</i> (2001)	<i>Pseudotsuga menziesii</i>	Canada	1
<i>C. magellanicus</i>	Palfner (2001)	<i>Nothofagus dombeyi</i>	Chile	1
	Palfner (2002c)	<i>N. dombeyi</i>	Chile	1
<i>C. multiformis</i>	Ceruti <i>et al.</i> (1988)	<i>Fagus sylvatica</i>	Italy	1
<i>C. multiformis</i>	Luppi & Gautero (1967)	<i>Quercus petraea</i>	Italy	1
<i>C. nemorensis</i>	Ceruti <i>et al.</i> (1988)	<i>Fagus sylvatica</i>	Italy	1
<i>C. obtusus</i>	Agerer (1987c)	<i>Picea abies</i>	Germany	1
	Gronbach & Agerer (1988)	<i>P. abies</i>	Germany	1
	Gronbach (1988)	<i>P. abies</i>	Germany	1
<i>C. pluvius</i>	Wiedmer & Senn-Irlet (1998)	<i>Alnus viridis</i>	Switzerland	1
<i>C. subporphyropus</i>	Godbout & Fortin (1983)	<i>A. crispa</i> , <i>A. rugosa</i>	Canada	2
<i>C. varicolor</i>	Agerer (1988b)	<i>Picea abies</i>	Germany	1
	Agerer (1989)	<i>P. abies</i>	Germany	1
<i>C. venetus</i>	Agerer (1987c)	<i>P. abies</i>	Germany	1
	Agerer (1988a)	<i>P. abies</i>	Germany	1
<i>Craterellus tubaeformis</i>	Fransson (2004a)	<i>Quercus robur</i>	Sweden	1
	Mleczko (2002c)	<i>Pinus sylvestris</i>	Poland	1
	Mleczko (2004c)	<i>P. sylvestris</i>	Poland	1
	Trappe, Eberhart & Luoma (2000)	<i>Tsuga heterophylla</i>	USA	1
<i>Cyclobalanopsis rhiza argenteogramulosa</i>	Haug <i>et al.</i> (1994)	<i>Cyclobalanopsis glauca</i>	Taiwan	1
<i>Dermocybe</i>	Bradbury <i>et al.</i> (1998)	<i>Pinus contorta</i>	Canada	1

<i>D. cinnamomea</i>	Agerer & Gronbach (1987)	<i>Picea abies</i>	Germany	1
	Agerer (1987a)	<i>P. abies</i>	Germany	1
	Gronbach (1988)	<i>P. abies</i>	Germany	1
<i>D. crocea</i>	Uhl & Agerer (1987)	<i>Pinus sylvestris</i>	Germany	1
	Uhl & Agerer (1988)	<i>P. sylvestris</i>	Germany	1
<i>D. palustris</i>	Uhl & Agerer (1987)	<i>P. mugo</i>	Germany	1
<i>D. sanguinea</i>	Agerer (1987a)	<i>Picea abies</i>	Germany	1
	Agerer (1987d)	<i>P. abies</i>	Germany	1
<i>D. semisanguinea</i>	Agerer & Uhl (1989)	<i>Pinus sylvestris</i>	Germany	1
<i>Descolea antarctica</i>	Palfner (1997)	<i>Nothofagus alpina</i>	Chile	1
	Palfner (1998b)	<i>N. alpina</i>	Chile	1
	Palfner (2001)	<i>N. alpina</i>	Chile	1
<i>Descomyces albus</i>	Agerer, Beenken & Bougher (2001)	<i>Eucalyptus</i>	Australia	1
<i>Elaphomyces aculeatus</i>	Agerer (1999c)	<i>Quercus robur</i>	Germany	1
	Agerer (2002a)	<i>Q. robur</i>	Germany	1
<i>E. muricatus</i>	Brand (1991g)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
	Fontana & Centrella (1967)	<i>Castanea sativa, F. sylvatica</i>	Italy	1
<i>Entoloma sinuatum</i>	Agerer (1997)	<i>Salix</i>	Germany	1
	Agerer (1998a)	<i>Salix</i>	Germany	1
<i>Fagirhiza arachnoidea</i>	Brand (1991l)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1992e)	<i>F. sylvatica</i>	Germany	1
<i>F. cystidiophora</i>	Brand (1988a)	<i>F. sylvatica</i>	Germany	1
<i>F. fusca</i>	Brand (1991d)	<i>F. sylvatica</i>	Germany	1
	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>F. globulifera</i>	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
	Brand (1992a)	<i>F. sylvatica</i>	Germany	1
<i>F. granulosa</i>	Brand (1988b)	<i>F. sylvatica</i>	Germany	1
<i>F. lanata</i>	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>F. oleifera</i>	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>F. pallida</i>	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>F. rosea</i>	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>F. setifera</i>	Brand (1991b)	<i>F. sylvatica</i>	Germany	1
	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>F. spinulosa</i>	Brand (1991a)	<i>F. sylvatica</i>	Germany	1
	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>F. tubulosa</i>	Brand (1988c)	<i>F. sylvatica</i>	Germany	1
<i>F. vermiculiformis</i>	Jakucs & Agerer (1998)	<i>F. sylvatica</i>	Hungary	1
	Jakucs (1998)	<i>F. sylvatica</i>	Hungary	1
<i>Gautieria inapire</i>	Palfner (2001)	<i>Nothofagus pumilio</i>	Chile	1
	Palfner (2002d)	<i>N. pumilio</i>	Chile	1
<i>G. othii</i>	Duñabeitia <i>et al.</i> (1996)	<i>Pinus radiata</i>	Spain	3
<i>Gastrum fimbriatum</i>	Agerer & Beenken (1998a)	<i>Fagus sylvatica</i>	Germany	1
	Agerer (1998b)	<i>F. sylvatica</i>	Germany	1
<i>Genea</i>	Jakucs (2002a)	<i>Populus alba</i>	Hungary	1
<i>G. hispidula</i>	Brand (1991e)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>G. klotzschii</i>	Fontana & Centrella (1967)	<i>Carpinus betulus, Quercus petraea</i>	Italy	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Genea verrucosa</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
	Jakucs & Bratek (1998a)	<i>Quercus</i>	Hungary	1
	Jakucs, Bratek & Agerer (1998a)	<i>Quercus</i>	Hungary	1
<i>Gomphidius glutinosus</i>	Agerer (1991a)	<i>Picea abies</i>	Germany	1
	Agerer (1991b)	<i>P. abies</i>	Germany	1
<i>G. roseus</i>	Agerer (1991a)	<i>P. abies</i>	Germany	1
	Agerer (1992b)	<i>Pinus sylvestris</i>	Germany	1
<i>Gomphus clavatus</i>	Agerer (2002b)	<i>Picea abies</i>	Germany	1
	Agerer, Beenken & Christan (1998a)	<i>P. abies</i>	Germany	1
<i>Gyrodon lividus</i>	Agerer & Treu (1993)	<i>Alnus incana</i>	Germany	1
<i>G. monticola</i>	Becerra <i>et al.</i> (2005)	<i>A. acuminata</i>	Argentina	1
<i>Gyroporus cyanescens</i>	Agerer (1999d)	<i>Pinus sylvestris</i>	Germany	1
	Agerer (2002c)	<i>P. sylvestris</i>	Germany	1
<i>Hebeloma</i>	Águeda <i>et al.</i> (2001)	<i>Quercus ilex</i>	Spain	4
	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Danielson & Pruden (1989)	<i>Picea pungens</i>	Canada	1
	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	Hagerman <i>et al.</i> (1999)	Not specified	Canada	1
	Jakucs (2002a)	<i>Populus alba</i>	Hungary	1
	Jones <i>et al.</i> (1997)	<i>Betula papyrifera</i> , <i>Pseudotsuga menziesii</i>	Canada	5
	Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	5
	Kernaghan (2001)	<i>Picea engelmannii</i>	Canada	1
	Ursic & Peterson (1997)	<i>Pinus strobus</i>	Canada	3
<i>H. alpinum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. ammophilum</i>	Jakucs (2002b)	<i>Fumana procumbens</i>	Hungary	1
	Jakucs, Magyar & Beenken (1999)	<i>F. procumbens</i>	Hungary	1
<i>H. anthracophilum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. calyptosporum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. circinans</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. claviceps</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. crustuliniforme</i>	Chu-Chou & Grace (1983)	<i>Pseudotsuga menziesii</i>	N. Zealand	1
	Giltrap (1982)	<i>Betula</i>	UK	2
	Godbout & Fortin (1983)	<i>Alnus crispa</i> , <i>A. rugosa</i>	Canada	2
	Miller <i>et al.</i> (1990)	<i>A. rubra</i>	USA	5
	Voiry (1981)	<i>Quercus</i>	France	1
<i>H. cylindrosporum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. edurum</i>	Torres & Honrubia (1994)	<i>Pinus halepensis</i>	Spain	2
	Treu (1990a)	<i>Larix decidua</i>	Germany	1
	Treu (1990c)	<i>L. decidua</i>	Germany	1
<i>H. helodes</i>	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
<i>H. hiemale</i>	Fassi & De Vecchi (1962)	<i>Pinus strobus</i>	Italy	3
	Fontana (1964)	<i>Populus</i>	Italy	1



	Fontana (1964)	<i>Salix purpurea</i>	Italy	1
	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. ingratum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. leucosarx</i>	Giltrap (1982)	<i>Betula radiata</i>	UK	2
<i>H. longicaudum</i>	Duñabeitia <i>et al.</i> (1996)	<i>Pinus radiata</i>	Spain	3
	Fontana (1961)	<i>Populus</i>	Italy	1
	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. mesophaeum</i>	Fassi & Fontana (1966)	<i>Pinus strobus</i>	Italy	3
	Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
<i>H. minus</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. pumilum</i>	Granetti & Angelini (1992)	<i>Corylus avellana, Ostrya carpinifolia, Quercus ilex, Q. pubescens</i>	Italy	4
		<i>Betula</i>	UK	2
<i>H. pusillum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. radicosum</i>	Giltrap (1982)	<i>B. pendula</i>	UK	1
<i>H. saccharioides</i>	Ingleby <i>et al.</i> (1990)	<i>Betula</i>	UK	2
<i>H. sarcophyllum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. sinapizans</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. cfr sinapizans</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
<i>H. spoliatum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. subsaponaceum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. truncatum</i>	Giltrap (1982)	<i>Betula</i>	UK	2
<i>H. velutipes</i>	Giltrap (1982)	<i>Betula</i>	UK	2
	Haug (2002a)	<i>Picea abies</i>	Germany	1
<i>H. velutipes group</i>	Haug (2002b)	<i>P. abies</i>	Germany	1
<i>H. cortinarius</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
<i>Helianthemirhiza hirsuta</i>	Kovacs & Jakucs (2001)	<i>Helianthemum ovatum</i>	Hungary	1
<i>Humaria hemisphaerica</i>	Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
<i>H. caeruleum</i>	Kernaghan (2001)	<i>P. engelmannii</i>	Canada	1
<i>Hydnellum peckii</i>	Agerer (1993b)	<i>P. abies</i>	Germany	1
	Agerer (1993d)	<i>P. abies</i>	Germany	1
<i>Hydnum rufescens</i>	Agerer, Kraigher & Javornik (1996b)	<i>Picea abies</i>	Germany	1
	Kraigher & Agerer (1996)	<i>P. abies</i>	Germany	1
<i>Hygrophorus</i>	Bradbury <i>et al.</i> (1998)	<i>Pinus contorta</i>	Canada	1
	Kernaghan (2001)	<i>Abies lasiocarpa, Picea engelmannii</i>	Canada	1
<i>H. lucorum</i>	Treu (1990a)	<i>Larix decidua</i>	Germany	1
<i>H. pustulatus</i>	Gronbach (1988)	<i>Picea abies</i>	Germany	1
	Gronbach (1989a)	<i>P. abies</i>	Germany	1
<i>Hymenogaster citrinus</i>	Bencivenga, Donnini & Di Massimo (1992)	<i>Corylus avellana, Quercus pubescens</i>	Italy	4
	Donnini & Bencivenga (1995)	<i>C. avellana, Populus alba, Q. pubescens</i>	Italy	4
	Etayo & De Miguel (1998)	Not specified	Spain	4
<i>H. hessei</i>	Fontana & Centrella (1967)	<i>Quercus petraea</i>	Italy	1
<i>H. tener</i>	Fontana & Centrella (1967)	<i>Q. petraea</i>	Italy	1
<i>Hysterangium clathroides</i>	Fontana & Centrella (1967)	<i>Q. petraea</i>	Italy	1
<i>H. crassirhachis</i>	Müller & Agerer (1996a)	<i>Pseudotsuga menziesii</i>	Germany	1
	Müller & Agerer (1996c)	<i>P. menziesii</i>	Germany	1
<i>H. stoloniferum</i>	Raidl & Agerer (1998a)	<i>Picea abies</i>	Germany	1
<i>Inocybe</i>	Azul & Freitas (1999)	<i>Quercus suber</i>	Portugal	1
	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Inocybe (cont.)</i>	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Schramm (1966)	<i>Pinus virginiana</i>	USA	1
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Kernaghan (2001)	<i>Dryas octopetala</i>	Canada	1
<i>I. albidodisca</i>	Hagerman <i>et al.</i> (2001)	<i>Pseudotsuga menziesii</i>	Canada	1
<i>I. appendiculata</i>	Beenken (1996a)	<i>Picea abies</i>	Germany	1
	Beenken, Agerer & Bahnweg (1996a)	<i>P. abies</i>	Germany	1
<i>I. avellana</i>	Ingleby (1999a)	<i>Shorea leprosula</i>	Indonesia	1
<i>I. fuscomarginata</i>	Beenken (1996b)	<i>Populus nigra</i>	Germany	1
	Beenken, Agerer & Bahnweg (1996b)	<i>Salix</i>	Germany	1
<i>I. heimii</i>	Jakucs (2002c)	<i>Fumana procumbens</i>	Hungary	1
	Magyar, Beenken & Jakucs (1999)	<i>F. procumbens</i>	Hungary	1
<i>I. lacera</i>	Cripps (1997a)	<i>Populus tremuloides</i>	USA	1
	Ingleby <i>et al.</i> (1990)	<i>Betula pendula</i>	UK	1
<i>I. obscuroidia</i>	Beenken (1996c)	<i>Picea abies</i>	Germany	1
	Beenken, Agerer & Bahnweg (1996c)	<i>P. abies</i>	Germany	1
<i>I. petiginosa</i>	Ingleby <i>et al.</i> (1990)	<i>P. sitchensis</i>	UK	1
<i>I. terrigena</i>	Beenken (1996d)	<i>Pinus sylvestris</i>	Germany	1
	Beenken, Agerer & Bahnweg (1996d)	<i>P. sylvestris</i>	Germany	1
<i>Ixocomus bovinus</i>	Fassi & De Vecchi (1962)	<i>P. strobus</i>	Italy	3
<i>Laccaria</i>	Di Battista <i>et al.</i> (2002)	<i>Pseudotsuga menziesii</i>	USA	3
	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
	Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
<i>L. amethystina</i>	Brand (1988d)	<i>Fagus sylvatica</i>	Germany	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
<i>L. bicolor</i>	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	Weiss (1991a)	<i>Picea abies</i>	Germany	2
<i>L. laccata</i>	Ceruti <i>et al.</i> (1988)	<i>Fagus sylvatica</i>	Italy	1
	Chu-Chou & Grace (1983)	<i>Pseudotsuga menziesii</i>	N. Zealand	1
	Dickie <i>et al.</i> (2004)	<i>Helianthemum bicknellii</i>	USA	1
	Fassi & Fontana (1966)	<i>Pinus strobus</i>	Italy	3
	Godbout & Fortin (1983)	<i>Alnus crispa</i> , <i>A. rugosa</i>	Canada	2
	Meotto (1988)	<i>Acacia dealbata</i>	Italy	1
	Miller <i>et al.</i> (1990)	<i>Alnus rubra</i>	USA	5
	Thomas & Jackson (1979)	<i>Picea sitchensis</i>	UK	3
	Torres <i>et al.</i> (1995)	<i>Cistus ladanifer</i>	Spain	3
<i>L. montana</i>	Kernaghan (2001)	<i>Abies lasiocarpa</i> , <i>Dryas octopetala</i> , <i>Picea engelmannii</i> , <i>Salix barrattiana</i>	Canada	1
<i>L. proxima</i>	Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
<i>L. tortilis</i>	Ingleby <i>et al.</i> (1990)	<i>P. sitchensis</i>	UK	1
<i>Lactarius</i>	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1

	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	Hagerman <i>et al.</i> (1999)	Not specified	Canada	1
	Haug <i>et al.</i> (1994)	<i>Tsuga chinensis</i>	Taiwan	1
	Haug <i>et al.</i> (2005)	<i>Neea</i>	Ecuador	1
	Jones <i>et al.</i> (1997)	<i>Betula papyrifera</i> , <i>Pseudotsuga menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	5
	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
<i>L. acris</i>	Brand (1991)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1992b)	<i>F. sylvatica</i>	Germany	1
<i>L. akahatsu</i>	Yamada, Ogura & Ohmasa (2001)	<i>Pinus densiflora</i>	Japan	5
<i>L. ahicola</i>	Kernaghan, Currah & Bayer (1997)	<i>Picea engelmannii</i>	Canada	1
<i>L. alpinus</i>	Treu (1990a)	<i>Alnus viridis</i>	Germany	1
	Treu (1990d)	<i>A. viridis</i>	Germany	1
	Treu (1990a)	<i>Picea abies</i>	Germany	1
<i>L. badiosanguineus</i>	Treu (1990a)	<i>Pinus cembra</i>	Germany	1
	Treu (1990e)	<i>P. cembra</i>	Germany	1
<i>L. blennius</i>	Ceruti <i>et al.</i> (1988)	<i>Fagus sylvatica</i>	Italy	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Voiry (1981)	<i>Fagus</i>	France	1
<i>L. caespitosus</i>	Kernaghan <i>et al.</i> (1997)	<i>Abies lasiocarpa</i>	Canada	1
<i>L. camphoratus</i>	Brand (1991)	<i>Fagus sylvatica</i>	Germany	1
<i>L. cfr mutabilis</i>	Dickie <i>et al.</i> (2004)	<i>Helianthemum bicknellii</i>	USA	1
<i>L. chrysorrhoeus</i>	Luppi & Gautero (1967)	<i>Quercus petraea</i>	Italy	1
	Palfner (1998c)	<i>Q. robur</i>	Germany	1
<i>L. controversus</i>	Jakucs (2002a)	<i>Populus alba</i>	Hungary	1
	Jakucs (2002d)	<i>P. alba</i>	Hungary	1
	Jakucs, Majoros & Beenken (2001)	<i>P. alba</i>	Hungary	1
<i>L. decipiens</i>	Gronbach (1988)	<i>Picea abies</i>	Germany	1
<i>L. deliciosus</i>	Bradbury <i>et al.</i> (1998)	<i>Pinus contorta</i>	Canada	1
	Kernaghan <i>et al.</i> (1997)	<i>Abies lasiocarpa</i>	Canada	1
	Massicotte <i>et al.</i> (1999b)	<i>Pinus ponderosa</i> , <i>Pseudotsuga menziesii</i>	USA	3
	Torres & Honrubia (1994)	<i>P. halepensis</i>	Spain	2
<i>L. deterrimus</i>	Agerer (1986b)	<i>Picea abies</i>	Germany	1
	Agerer (1987e)	<i>P. abies</i>	Germany	1
	Münzenberger <i>et al.</i> (1986)	<i>P. abies</i>	Germany	2
<i>L. flexuosus</i>	Luppi & Gautero (1967)	<i>Quercus pubescens</i>	Italy	1
<i>L. glyciosmus</i>	Ingleby <i>et al.</i> (1990)	<i>Betula pendula</i>	UK	1
<i>L. hatsudake</i>	Yamada <i>et al.</i> (2001)	<i>Pinus densiflora</i>	Japan	5
<i>L. intermedius</i>	Eberhardt <i>et al.</i> (2000)	<i>Abies alba</i>	Italy	1
<i>L. lepidotus</i>	Wiedmer & Senn-Irlet (2004)	<i>Alnus viridis</i>	Switzerland	1
<i>L. lignyotus</i>	Kraigher, Agerer & Javornik (1995)	<i>Picea abies</i>	Slovenia	1
<i>L. lilacinus</i>	Pritsch <i>et al.</i> (1997)	<i>Alnus glutinosa</i>	Germany	1
<i>L. mitissimus</i>	Weiss (1991a)	<i>Picea abies</i>	Germany	2
<i>L. obscuratus</i>	Miller <i>et al.</i> (1990)	<i>Alnus rubra</i>	USA	5
	Pritsch <i>et al.</i> (1997)	<i>A. glutinosa</i>	Germany	1
<i>L. omphaliformis</i>	Pritsch <i>et al.</i> (1997)	<i>A. glutinosa</i>	Germany	1
<i>L. pallidus</i>	Brand (1991h)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1991i)	<i>F. sylvatica</i>	Germany	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Lactarius paradoxus</i>	Danielson (1984b)	<i>Pinus banksiana</i>	Canada	2
<i>L. picinus</i>	Agerer (1986b)	<i>Picea abies</i>	Germany	1
	Agerer (1987f)	<i>P. abies</i>	Germany	1
<i>L. piperatus</i>	Luppi & Gautero (1967)	<i>Quercus petraea</i>	Italy	1
<i>L. porninsis</i>	Treu (1990a)	<i>Larix decidua</i>	Germany	1
	Treu (1990f)	<i>L. decidua</i>	Germany	1
<i>L. pterosporus</i>	Ceruti <i>et al.</i> (1988)	<i>Fagus sylvatica</i>	Italy	1
<i>L. pubescens</i>	Ingleby <i>et al.</i> (1990)	<i>Betula pendula</i>	UK	1
<i>L. rubrilacteus</i>	Eberhart & Luoma (1997)	<i>Pseudotsuga menziesii</i>	USA	1
<i>L. rubrocinctus</i>	Brand (1991i)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1991j)	<i>F. sylvatica</i>	Germany	1
<i>L. rufus</i>	Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
	Wöllecke (2001)	<i>Pinus sylvestris</i>	Germany	1
<i>L. salmonicolor</i>	Eberhardt <i>et al.</i> (2000)	<i>Abies alba</i>	Italy	1
	Pillukat (1996)	<i>A. alba</i>	Germany	1
<i>L. salmonicolor</i>	Pillukat (1998)	<i>A. alba</i>	Germany	1
<i>L. scrobiculatus</i>	Kernaghan & Berch (1997)	<i>Tsuga heterophylla</i>	Canada	1
<i>L. subdulcis</i>	Brand (1987a)	<i>Fagus sylvatica</i>	Germany	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
<i>L. subsericatus</i>	Eberhardt <i>et al.</i> (2000)	<i>Abies alba</i>	Italy	1
<i>L. tesquorum</i>	Nuytinck <i>et al.</i> (2004)	<i>Cistus</i>	Italy	1
<i>L. theiogalus</i>	Gronbach (1988)	<i>Picea abies</i>	Germany	1
<i>L. vellereus</i>	Brand (1987b)	<i>Fagus sylvatica</i>	Germany	1
	Ceruti <i>et al.</i> (1988)	<i>F. sylvatica</i>	Italy	1
	Luppi & Gautero (1967)	<i>Quercus petraea</i>	Italy	1
<i>L. vietus</i>	Hagerman <i>et al.</i> (2001)	<i>Pseudotsuga menziesii</i>	Canada	1
<i>Laricirhiza alpina</i>	Treu (1990a)	<i>Larix decidua</i>	Germany	1
	Treu (1990g)	<i>L. decidua</i>	Germany	1
<i>Leccinum</i>	Bradbury <i>et al.</i> (1998)	<i>Pinus contorta</i>	Canada	1
	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	Ingleby <i>et al.</i> (1990)	<i>Betula pendula</i>	UK	1
<i>L. holopus</i>	Godbout & Fortin (1983)	<i>Alnus crispa, A. rugosa</i>	Canada	2
<i>L. scabrum</i>	Müller & Agerer (1991)	<i>Betula pendula</i>	Germany	1
<i>L. subleucophaeum</i>	Godbout & Fortin (1983)	<i>Alnus crispa, A. rugosa</i>	Canada	2
<i>Leucangium carthusianum</i>	Palfner & Agerer (1998b)	<i>Pseudotsuga menziesii</i>	USA	1
	Palfner (1998d)	<i>P. menziesii</i>	USA	1
<i>Lyophyllum decastes</i>	Agerer & Beenken (1998b)	<i>Quercus robur</i>	Germany	1
	Agerer (1998c)	<i>Q. robur</i>	Germany	1
<i>L. semitale</i>	Yamada <i>et al.</i> (2001)	<i>Pinus densiflora</i>	Japan	5
<i>L. shimeji</i>	Yamada <i>et al.</i> (2001)	<i>P. densiflora</i>	Japan	5
<i>Melanogaster broomeianus</i>	Wiedmer <i>et al.</i> (2004)	<i>Alnus viridis</i>	Switzerland	1
<i>M. variegatus</i>	Giraud (1988)	Not specified	France	4
<i>Naucoria escharoides</i>	Becerra <i>et al.</i> (2002)	<i>Alnus acuminata</i>	Argentina	1
	Pritsch <i>et al.</i> (1997)	<i>A. glutinosa</i>	Germany	1

<i>N. subconspersa</i>	Pritsch <i>et al.</i> (1997)	<i>A. glutinosa</i>	Germany	1
<i>Nothofagirhiza reticulosa</i>	Palfner (2001)	<i>Nothofagus pumilio</i>	Chile	1
<i>N. tricystidiis</i>	Palfner (2001)	<i>N. oblicua</i>	Chile	1
<i>N. vesiculosa</i>	Palfner (2001)	<i>N. dombeyi</i>	Chile	1
<i>N. vinicolor</i>	Palfner (2001)	<i>N. pumilio</i>	Chile	1
	Palfner & Godoy (1996a)	<i>N. pumilio</i>	Chile	1
	Palfner & Godoy (1996c)	<i>N. pumilio</i>	Chile	1
<i>Pasanirhiza strigosa</i>	Haug <i>et al.</i> (1994)	<i>Pasania glabra</i>	Taiwan	1
<i>Paxillus</i>	Jones <i>et al.</i> (1997)	<i>Betula papyrifera</i> , <i>Pseudotsuga menziesii</i>	Canada	5
<i>P. involutus</i>	Agerer & Gronbach (1989)	<i>Picea abies</i>	Germany	1
<i>P. involutus</i>	Godbout & Fortin (1983)	<i>Alnus crispa</i> , <i>A. rugosa</i>	Canada	2
	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	Gronbach (1988)	<i>Picea abies</i>	Germany	1
	Ingleby <i>et al.</i> (1990)	<i>Betula pendula</i>	UK	1
	Miller <i>et al.</i> (1990)	<i>Alnus rubra</i>	USA	5
	Mleczko (1997a)	<i>Pinus sylvestris</i>	Poland	1
<i>Pezizaceae</i>	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
<i>Pezizalean</i>	Dickie <i>et al.</i> (2004)	<i>Helianthemum bicknellii</i>	USA	1
<i>Pezizales</i>	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
	Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
	Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
<i>Phellodon niger</i>	Agerer (1993c)	<i>Picea abies</i>	Germany	1
<i>Phialocephala fortinii</i>	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
<i>Piceirhiza bicolorata</i>	Brand, Gronbach & Taylor (1992)	<i>Picea abies</i>	Germany	1
	Gronbach (1988)	<i>P. abies</i>	Germany	1
<i>P. chordata</i>	Gronbach (1988)	<i>P. abies</i>	Germany	1
	Gronbach (1989b)	<i>P. abies</i>	Germany	1
<i>P. conspicua</i>	Gronbach (1988)	<i>P. abies</i>	Germany	1
	Gronbach (1989c)	<i>P. abies</i>	Germany	1
<i>P. cornuta</i>	Montecchio & Agerer (1997)	<i>P. abies</i>	Italy	1
<i>P. cortinacearum</i>	Haug (2002b)	<i>P. abies</i>	Germany	1
<i>P. gelatinosa</i>	Berg & Gronbach (1989)	<i>P. abies</i>	Germany	1
	Gronbach (1988)	<i>P. abies</i>	Germany	1
<i>P. glutinosa</i>	Gronbach (1988)	<i>P. abies</i>	Germany	1
	Gronbach (1989d)	<i>P. abies</i>	Germany	1
<i>P. guttata</i>	Gronbach (1988)	<i>P. abies</i>	Germany	1
	Gronbach (1989e)	<i>P. abies</i>	Germany	1
<i>P. horti-atrata</i>	Al Sayegh & Kraigher (1999)	<i>P. abies</i>	Slovenia	1
<i>P. internicrassihyphis</i>	Agerer (2002e)	<i>P. abies</i>	Germany	1
<i>P. nigra</i>	Berg & Gronbach (1988)	<i>P. abies</i>	Germany	1
	Gronbach (1988)	<i>P. abies</i>	Germany	1
<i>P. obscura</i>	Gronbach & Berg (1988)	<i>P. abies</i>	Germany	1
	Gronbach (1988)	<i>P. abies</i>	Germany	1
<i>P. oleiferans</i>	Waller <i>et al.</i> (1993)	<i>P. abies</i>	Germany	1
<i>P. rufosimilis</i>	Gronbach (1988)	<i>P. abies</i>	Germany	1
<i>P. stagonopleres</i>	Beenken & Agerer (1996)	<i>P. abies</i>	Germany	1
<i>P. tomentellarum</i>	Haug (2002b)	<i>P. abies</i>	Germany	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Picoa lefebvrei</i>	Gutierrez, Morte & Honrubia (2003)	<i>Helianthemum almeriense</i>	Spain	2
<i>Piloderma</i>	Hagerman <i>et al.</i> (1999)	Not specified	Canada	1
	Hagerman <i>et al.</i> (2001)	<i>Pseudotsuga menziesii</i>	Canada	1
	Massicotte <i>et al.</i> (1999b)	<i>Pinus ponderosa</i>	USA	3
<i>P. byssinum</i>	Bradbury (1998)	<i>P. contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
<i>P. croceum</i>	Brand (1991j)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1991l)	<i>F. sylvatica</i>	Germany	1
<i>P. fallax</i>	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
	Goodman & Trofymow (1996)	<i>Pseudotsuga menziesii</i>	Canada	1
	Kernaghan (2001)	<i>Picea engelmannii</i>	Canada	1
<i>Pinirhiza aciculata</i>	Haug <i>et al.</i> (1994)	<i>Pinus taiwanensis</i>	Taiwan	1
<i>P. amyloidea</i>	Mleczko (2002d)	<i>P. sylvestris</i>	Poland	1
	Mleczko (2004d)	<i>P. sylvestris</i>	Poland	1
<i>P. arachnorosea</i>	Wöllecke, Münzenberger & Hüttl (1997a)	<i>P. sylvestris</i>	Germany	1
	Wöllecke, Münzenberger & Hüttl (1998c)	<i>P. sylvestris</i>	Germany	1
<i>P. cephalocystidia</i>	Wöllecke, Münzenberger & Hüttl (1999a)	<i>P. sylvestris</i>	Germany	1
<i>P. crystallonitida</i>	Mleczko (2002e)	<i>P. sylvestris</i>	Poland	1
	Mleczko (2004e)	<i>P. sylvestris</i>	Poland	1
<i>P. cyaneoviridis</i>	Golldack, Münzenberger & Hüttl (1998a)	<i>P. sylvestris</i>	Germany	1
	Golldack, Münzenberger & Hüttl (1998c)	<i>P. sylvestris</i>	Germany	1
<i>P. dimorpha</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
	Golldack, Münzenberger & Hüttl (1999a)	<i>Pinus sylvestris</i>	Germany	1
<i>P. discolor</i>	Golldack, Münzenberger & Hüttl (1998b)	<i>P. sylvestris</i>	Germany	1
	Golldack, Münzenberger & Hüttl (1998d)	<i>P. sylvestris</i>	Germany	1
<i>P. echinata</i>	Haug <i>et al.</i> (1994)	<i>P. taiwanensis</i>	Taiwan	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
<i>P. epidermoides</i>	Haug <i>et al.</i> (1994)	<i>P. taiwanensis</i>	Taiwan	1
<i>P. flexipila</i>	Golldack, Münzenberger & Hüttl (1999b)	<i>P. sylvestris</i>	Germany	1
<i>P. globulifera</i>	Mleczko (1998a)	<i>P. sylvestris</i>	Poland	1
<i>P. gomphidioidea</i>	Mleczko (1998b)	<i>P. sylvestris</i>	Poland	1
	Mleczko (1998c)	<i>P. sylvestris</i>	Poland	1
<i>P. granulosa</i>	Golldack <i>et al.</i> (1996a)	<i>P. sylvestris</i>	Germany	1
	Golldack, Münzenberger & Hüttl (1996c)	<i>P. sylvestris</i>	Germany	1
<i>P. hyphocystidia</i>	Wöllecke, Münzenberger & Hüttl (1999b)	<i>P. sylvestris</i>	Germany	1
<i>P. lactariosimilis</i>	Golldack, Münzenberger & Hüttl (1997a)	<i>P. sylvestris</i>	Germany	1
<i>P. lactogelatinosa</i>	Golldack, Münzenberger & Hüttl (1997b)	<i>P. sylvestris</i>	Germany	1
<i>P. ligulata</i>	Mleczko (2002f)	<i>P. sylvestris</i>	Poland	1
	Mleczko (2004f)	<i>P. sylvestris</i>	Poland	1
<i>P. lutea</i>	Mleczko (1996a)	<i>P. sylvestris</i>	Poland	1
	Mleczko (1996b)	<i>P. sylvestris</i>	Poland	1
<i>P. luteoalba</i>	Wöllecke, Münzenberger & Hüttl (1997b)	<i>P. sylvestris</i>	Germany	1
<i>P. luteomicacea</i>	Mleczko (2002g)	<i>P. sylvestris</i>	Poland	1
	Mleczko (2004g)	<i>P. sylvestris</i>	Poland	1

<i>P. nigra</i>	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
<i>P. rufomaculata</i>	Wöllecke, Münzenberger & Hüttl (1998a)	<i>P. sylvestris</i>	Germany	1
	Wöllecke, Münzenberger & Hüttl (1998d)	<i>P. sylvestris</i>	Germany	1
<i>P. stellamulata</i>	Gollmack <i>et al.</i> (1996b)	<i>P. sylvestris</i>	Germany	1
	Gollmack <i>et al.</i> (1996d)	<i>P. sylvestris</i>	Germany	1
<i>P. subalpina</i>	Treu (1990a)	<i>P. cembra</i>	Germany	1
<i>P. sulphurea</i>	Wöllecke, Münzenberger & Hüttl (1998b)	<i>P. sylvestris</i>	Germany	1
<i>Pisolithus</i>	Águeda <i>et al.</i> (2001)	<i>Quercus ilex</i>	Spain	4
	Moyersoen & Beever (2004)	<i>Kunzea ericoides</i>	N. Zealand	1
	Moyersoen & Beever (2004)	<i>Leptospermum scoparium</i>	N. Zealand	1
<i>P. aurantioscabrosus</i>	Watling <i>et al.</i> (1995a)	<i>Shorea parviflora</i>	Malaysia	1
	Watling <i>et al.</i> (1995b)	<i>S. parviflora</i>	Malaysia	1
<i>P. tinctorius</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
	Godbout & Fortin (1983)	<i>Alnus crispa, A. rugosa</i>	Canada	2
	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	Rose <i>et al.</i> (1981)	<i>Eucalyptus nova-anglica</i>	USA	1
	Torres & Honrubia (1994)	<i>Torinus halepensis</i>	Spain	2
	Weiss (1991b)	<i>Picea abies</i>	Germany	1
	Weiss (1992)	<i>P. abies</i>	Germany	1
<i>Polyporoletus sublividus</i>	Agerer & Ammirati (1998)	<i>Abies amabilis</i>	USA	1
	Agerer, Beenken & Ammirati (1998b)	<i>A. amabilis</i>	USA	1
<i>Populirhiza pustulosa</i>	Mleczko (1997b)	<i>Populus tremula</i>	Poland	1
	Mleczko (1998d)	<i>P. tremula</i>	Poland	1
<i>Pseudotomentella tristis</i>	Agerer (1994b)	<i>Salix herbacea</i>	Germany	1
<i>Pseudotsugaerhiza baculifera</i>	Müller & Agerer (1996b)	<i>Pseudotsuga menziesii</i>	Germany	1
	Müller & Agerer (1996d)	<i>P. menziesii</i>	Germany	1
<i>Pulvinulla constellatio</i>	Amicucci <i>et al.</i> (2001)	<i>Quercus pubescens</i>	Italy	3
	Bencivenga <i>et al.</i> (1995)	Not specified	Italy	3
<i>Quercirhiza alboviolacea</i>	Jakucs (2001)	<i>Quercus robur</i>	Hungary	1
	Jakucs (2002e)	<i>Q. robur</i>	Hungary	1
<i>Q. araneosa</i>	Montecchio <i>et al.</i> (1999a)	<i>Q. ilex</i>	Italy	1
<i>Q. argenteobrunneola</i>	Fischer & Agerer (1996)	<i>Q. ilex</i>	Spain	1
<i>Q. atrata</i>	Al Sayegh & Kraigher (1999)	<i>Picea abies</i>	Slovenia	1
<i>Q. bicolor</i>	Montecchio <i>et al.</i> (1999b)	<i>Quercus ilex</i>	Italy	1
<i>Q. cistidiophora</i>	Montecchio <i>et al.</i> (2004)	<i>Q. ilex</i>	Italy	1
<i>Q. cumulosa</i>	De Román & De Miguel (2005)	<i>Q. ilex</i>	Spain	1
	De Román, Agerer & De Miguel (2002a)	<i>Q. ilex</i>	Spain	1
<i>Q. ectendotrophica</i>	Azul, Agerer & Freitas (2001a)	<i>Q. suber</i>	Portugal	1
<i>Q. fibulocystidiata</i>	Jakucs, Agerer & Bratek (1997)	<i>Quercus</i>	Hungary	1
	Jakucs, Agerer & Bratek (1998c)	<i>Quercus</i>	Hungary	1
<i>Q. incrustata</i>	Montecchio, Rossi & Causin (2001b)	<i>Q. ilex</i>	Italy	1
<i>Q. internangularis</i>	Azul, Agerer & Freitas (2001b)	<i>Q. suber</i>	Portugal	1
<i>Q. nodulosomorpha</i>	Azul & Freitas (1999)	<i>Q. suber</i>	Portugal	1
	Azul, Agerer & Freitas (1999)	<i>Q. suber</i>	Portugal	1
<i>Q. pedicae</i>	Azul, Agerer & Freitas (2001c)	<i>Q. suber</i>	Portugal	1
<i>Q. russulocystidiata</i>	Azul, Agerer & Freitas (2001d)	<i>Q. suber</i>	Portugal	1
<i>Q. sclerotiigera</i>	Azul, Agerer & Freitas (2001e)	<i>Q. suber</i>	Portugal	1
<i>Q. squamosa</i>	Palfner (1995a)	<i>Q. robur</i>	Slovenia	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
	Palfner & Agerer (1996)	<i>Q. robur</i>	Slovenia	1
<i>Quercirhiza stellata</i>	De Román, Agerer & De Miguel (2002b)	<i>Quercus ilex</i>	Spain	1
<i>Q. sublutea</i>	Montecchio <i>et al.</i> (1998a)	<i>Q. ilex</i>	Italy	1
	Montecchio <i>et al.</i> (1998b)	<i>Q. ilex</i>	Italy	1
<i>Ramaria</i>	Nouhra <i>et al.</i> (2005)	<i>Pseudotsuga menziesii</i> , <i>Tsuga heterophylla</i>	USA	1
<i>R. aurea</i>	Agerer (1996c)	<i>Fagus sylvatica</i>	Germany	1
<i>R. largentii</i>	Agerer (1996d)	<i>Picea abies</i>	Germany	1
	Agerer (1996h)	<i>P. abies</i>	Germany	1
<i>R. spinulosa</i>	Agerer (1996e)	<i>Fagus sylvatica</i>	Germany	1
<i>R. subbotrytis</i>	Agerer (1996f)	<i>Quercus robur</i>	Germany	1
	Agerer (1998d)	<i>Q. robur</i>	Germany	1
<i>Rhizopogon</i>	Al Sayegh & Kraigher (2000)	<i>Fagus</i>	Slovenia	1
	Chu-Chou & Grace (1983)	<i>Pseudotsuga menziesii</i>	N. Zealand	1
	Di Battista <i>et al.</i> (2002)	<i>P. menziesii</i>	USA	3
	Hagerman <i>et al.</i> (2001)	<i>P. menziesii</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>P. menziesii</i>	Canada	5
	Torres & Honrubia (1997)	<i>Pinus halepensis</i>	Spain	3
	Danielson <i>et al.</i> (1984)	<i>P. banksiana</i>	Canada	3
<i>R. arctostaphyli</i>	Massicotte <i>et al.</i> (1999a)	<i>P. ponderosa</i>	Canada	3
<i>R. ellenae</i>	Massicotte <i>et al.</i> (1999a)	<i>P. ponderosa</i>	Canada	3
<i>R. flavofibrillosus</i>	Massicotte <i>et al.</i> (1999a)	<i>P. ponderosa</i>	Canada	3
<i>R. luteolus</i>	Mohan, Natarajan & Ingleby (1993)	<i>P. patula</i>	India	3
	Uhl (1988b)	<i>P. sylvestris</i>	Germany	1
<i>R. melanogastroides</i>	Raidl (1998a)	<i>P. mugo</i>	Germany	1
	Raidl, Beenken & Agerer (1998)	<i>P. mugo</i>	Germany	1
<i>R. occidentalis</i>	Massicotte <i>et al.</i> (1999a)	<i>P. ponderosa</i>	Canada	3
<i>R. parksii</i>	Massicotte <i>et al.</i> (2000)	<i>Pseudotsuga menziesii</i>	Canada	3
<i>R. roseolus</i>	Raidl & Agerer (1998b)	<i>Pinus sylvestris</i>	Germany	1
	Torres & Honrubia (1994)	<i>P. halepensis</i>	Spain	2
<i>R. rubescens</i>	Fontana & Centrella (1967)	<i>P. sylvestris</i>	Italy	1
	Massicotte <i>et al.</i> (1999b)	<i>Arbutus menziesii</i> , <i>Pinus ponderosa</i>	USA	3
	Yamada <i>et al.</i> (2001)	<i>P. densiflora</i>	Japan	5
<i>R. subcaerulescens</i>	Agerer (1996i)	<i>Tsuga heterophylla</i>	Germany	1
	Agerer, Müller & Bahnweg (1996c)	<i>T. heterophylla</i>	Germany	1
	Massicotte <i>et al.</i> (1999a)	<i>Pinus ponderosa</i>	Canada	3
	Massicotte <i>et al.</i> (2000)	<i>Pseudotsuga menziesii</i>	Canada	3
<i>R. truncatus</i>	Massicotte <i>et al.</i> (1999a)	<i>Pinus ponderosa</i>	Canada	3
	Massicotte <i>et al.</i> (1999b)	<i>P. ponderosa</i>	USA	3
<i>R. vinicolor</i>	Chu-Chou & Grace (1983)	<i>Pseudotsuga menziesii</i>	N. Zealand	1
	Massicotte <i>et al.</i> (2000)	<i>P. menziesii</i>	Canada	3
	Zak (1971)	<i>P. menziesii</i>	USA	1
<i>R. vinicolor</i> -like	Goodman (1996e)	<i>P. menziesii</i>	Canada	1
<i>R. vulgaris</i>	Jakucs & Bratek (1998b)	<i>Pinus nigra</i>	Hungary	1
	Jakucs <i>et al.</i> (1998b)	<i>P. nigra</i>	Hungary	1
<i>Rhodocollybia butyracea</i>	Mleczko (2002h)	<i>P. sylvestris</i>	Poland	1
	Mleczko (2004h)	<i>P. sylvestris</i>	Poland	1



<i>Rhodopaxillus nudus</i>	Fontana (1961)	<i>Populus</i>	Italy	1
<i>Riessia radiculicola</i>	See <i>et al.</i> (1997)	<i>Shorea leprosula</i>	Malaysia	1
<i>Riessiella clavata</i>	See <i>et al.</i> (1997)	<i>S. leprosula</i>	Malaysia	1
<i>Rozites caperatus</i>	Agerer (1999b)	<i>Pinus sylvestris</i>	Germany	1
	Agerer (2002d)	<i>P. sylvestris</i>	Germany	1
<i>Russula</i>	Azul & Freitas (1999)	<i>Quercus suber</i>	Portugal	1
	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Jones <i>et al.</i> (1997)	<i>Betula papyrifera</i>	Canada	1
	Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>Pseudotsuga menziesii</i>	Canada	5
	Massicotte <i>et al.</i> (1999b)	<i>Lithocarpus densiflora</i> , <i>Pinus ponderosa</i> , <i>P. menziesii</i>	USA	3
		<i>Picea abies</i>	Germany	1
<i>R. acrifolia</i>	Agerer (1996j)	<i>Betula pendula</i>	Germany	1
<i>R. aeruginea</i>	Beenken (2001a)	<i>Helianthemum bicknellii</i>	USA	1
<i>R. aff. amoenolens</i>	Dickie <i>et al.</i> (2004)	<i>H. bicknellii</i>	USA	1
<i>R. aff. pectinatoides</i>	Dickie <i>et al.</i> (2004)	<i>Alnus viridis</i>	Germany	1
<i>R. alnetorum</i>	Beenken (2001b)	<i>Populus alba</i>	Hungary	1
<i>R. amoenolens</i>	Jakucs & Beenken (1999)	<i>P. alba</i>	Hungary	1
	Jakucs (2002a)	<i>P. alba</i>	Hungary	1
	Jakucs (2002a)	<i>P. alba</i>	Hungary	1
	Jakucs (2002f)	<i>P. alba</i>	Hungary	1
<i>R. atroglauca</i>	Beenken (2001c)	<i>Betula pubescens</i>	Germany	1
<i>R. brevipes</i>	Kernaghan <i>et al.</i> (1997)	<i>Abies lasiocarpa</i>	Canada	1
<i>R. cyanoxantha</i>	Beenken (2001d)	<i>Fagus sylvatica</i>	Germany	1
<i>R. decolorans</i>	Fransson (2004b)	<i>Pinus sylvestris</i>	Sweden	1
<i>R. delica</i>	Beenken (2001e)	<i>Tilia</i>	Germany	1
	Yamada (1998a)	<i>Betula platyphylla</i>	Japan	1
<i>R. densifolia</i>	Beenken (2001f)	<i>Fagus sylvatica</i>	Germany	1
	Beenken (2001g)	<i>Picea abies</i>	Germany	1
	Ceruti <i>et al.</i> (1988)	<i>Fagus sylvatica</i>	Italy	1
	Eberhart & Luoma (2000)	<i>Pseudotsuga menziesii</i>	USA	1
<i>R. firmula</i>	Treu (1990a)	<i>Pinus mugo</i>	Germany	1
	Treu (1990h)	<i>P. mugo</i>	Germany	1
<i>R. foetens</i>	Beenken (2001h)	<i>Fagus sylvatica</i>	Germany	1
<i>R. fuegiana</i>	Palfner (2001)	<i>Nothofagus pumilio</i>	Chile	1
	Palfner & Godoy (1996b)	<i>N. pumilio</i>	Chile	1
	Palfner & Godoy (1996d)	<i>N. pumilio</i>	Chile	1
<i>R. illota</i>	Brand (1991k)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1991l)	<i>Fagus sylvatica</i>	Germany	1
<i>R. integra</i>	Kernaghan (2001)	<i>Abies lasiocarpa</i>	Canada	1
<i>R. laricina</i>	Treu (1990a)	<i>Larix decidua</i>	Germany	1
	Treu (1990i)	<i>L. decidua</i>	Germany	1
<i>R. mairei</i>	Brand (1991c)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1991l)	<i>F. sylvatica</i>	Germany	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Russula medullata</i>	Beenken (2001i)	<i>Populus tremula</i>	Germany	1
<i>R. nigricans</i>	Hagerman <i>et al.</i> (2001)	<i>Pseudotsuga menziesii</i>	Canada	1
	Mleczko (2002i)	<i>Pinus sylvestris</i>	Poland	1
	Mleczko (2004i)	<i>P. sylvestris</i>	Poland	1
	Yamada (1998b)	<i>Betula platyphylla</i>	Japan	1
<i>R. nothofaginea</i>	Beenken (2001j)	<i>Nothofagus dombeyi</i>	Germany	1
<i>R. ochroleuca</i>	Agerer (1986b)	<i>Picea abies</i>	Germany	1
	Agerer (1987g)	<i>P. abies</i>	Germany	1
	Brand (1991l)	<i>Fagus sylvatica</i>	Germany	1
	Gronbach (1988)	<i>Picea abies</i>	Germany	1
	Wöllecke (2001)	<i>Pinus sylvestris</i>	Germany	1
<i>R. puiggarii</i>	Haug <i>et al.</i> (2005)	<i>Neea</i>	Ecuador	1
<i>R. pumila</i>	Pritsch <i>et al.</i> (1997)	<i>Alnus glutinosa</i>	Germany	1
<i>R. sanguinea</i>	Duñabeitia <i>et al.</i> (1996)	<i>Pinus radiata</i>	Spain	3
<i>R. sardonja</i>	Mleczko (2002j)	<i>P. sylvestris</i>	Poland	1
	Mleczko (2004j)	<i>P. sylvestris</i>	Poland	1
<i>R. silvicola</i>	Kernaghan <i>et al.</i> (1997)	<i>Abies lasiocarpa</i>	Canada	1
<i>R. versicolor</i>	Beenken (2001k)	<i>Betula pubescens</i>	Germany	1
<i>R. vesca</i>	Beenken (2001l)	<i>Quercus robur</i>	Germany	1
	Luppi & Gautero (1967)	<i>Q. petraea</i>	Italy	1
<i>R. vinosa</i>	Beenken (2001m)	<i>Picea abies</i>	Germany	1
<i>R. violascens</i>	Luppi & Gautero (1967)	<i>Quercus petraea</i>	Italy	1
<i>R. virescens</i>	Beenken (2001n)	<i>Q. robur</i>	Germany	1
<i>R. xerampelina</i>	Agerer (1986b)	<i>Picea abies</i>	Germany	1
	Agerer (1987h)	<i>P. abies</i>	Germany	1
<i>Russulaceae</i>	See <i>et al.</i> (1997)	<i>Shorea leprosula</i>	Malaysia	1
<i>Russula</i> -like	Goodman (1997b)	<i>Tsuga heterophylla</i>	Canada	1
<i>Sarcodon imbricatus</i>	Agerer (1991c)	<i>Picea abies</i>	Germany	1
SB (spinules buclées, Giraud 1988)	Giraud (1988)	Not specified	France	4
	Sáez & De Miguel (1995)	Not specified	Spain	4
<i>Scleroderma</i>	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	See <i>et al.</i> (1997)	<i>Shorea leprosula</i>	Malaysia	1
<i>S. areolatum</i>	Meotto, Pellegrino & Craddock (1994)	<i>Castanea sativa</i>	Italy	3
<i>S. aurantium</i>	Voiry (1981)	<i>Quercus</i>	France	1
<i>S. bovista</i>	Jakucs & Agerer (1999a)	<i>Populus alba</i>	Hungary	1
	Jakucs (2002a)	<i>P. alba</i>	Hungary	1
	Jakucs (2002g)	<i>P. alba</i>	Hungary	1
<i>S. citrinum</i>	Brunner <i>et al.</i> (1992)	<i>Picea abies</i>	Switzerland	2
	Godbout & Fortin (1983)	<i>Alnus crispa, A. rugosa</i>	Canada	2
	Mohan <i>et al.</i> (1993)	<i>Pinus patula</i>	India	3
	Richter & Bruhn (1990)	<i>Larix decidua</i>	USA	2
	Waller & Agerer (1993)	<i>Betula pendula</i>	Germany	1
<i>S. geaster</i>	Rose <i>et al.</i> (1981)	<i>Eucalyptus nova-anglica</i>	USA	1

<i>S. polyrhizum</i>	Duñabeitia <i>et al.</i> (1996)	<i>Pinus radiata</i>	Spain	3
<i>S. sinnamarensense</i>	Ingleby (1999b)	<i>Gnetum africanum</i>	Cameroon	1
<i>Sebacina</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
<i>S. incrustans</i>	Urban, Weiss & Bauer (2003)	<i>Picea abies</i>	Austria	1
<i>Sebacinaceae</i>	Selosse <i>et al.</i> (2002)	<i>Carpinus</i>	France	1
	Selosse <i>et al.</i> (2002)	<i>Corylus</i>	France	1
Sebacinoid	Urban <i>et al.</i> (2003)	<i>Tilia</i>	Austria	1
<i>Sphaerosporella brunnea</i>	Bencivenga <i>et al.</i> (1995)	Not specified	Italy	3
	Danielson (1984a)	<i>Pinus banksiana</i>	Canada	2
	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
	Di Massimo <i>et al.</i> (1996)	<i>Q. ilex</i>	Spain	3
	Meotto & Carraturo (1988)	<i>Populus nigra</i>	Italy	3
<i>Stephanopus stropharioides</i>	Palfner (2001)	<i>Nothofagus dombeyi</i>	Chile	1
<i>Suillus</i>	Torres & Honrubia (1997)	<i>Pinus halepensis</i>	Spain	3
<i>S. bovinus</i>	Yamada <i>et al.</i> (2001)	<i>P. densiflora</i>	Japan	5
<i>S. brevipes</i>	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
<i>S. caerulescens</i>	Hoch, Goodman & Chyplýk (1998)	<i>Pseudotsuga menziesii</i>	Canada	1
<i>S. collinitus</i>	Torres & Honrubia (1994)	<i>Pinus halepensis</i>	Spain	2
<i>S. flavus</i>	Treu (1990a)	<i>Larix decidua</i>	Germany	1
	Treu (1990j)	<i>L. decidua</i>	Germany	1
<i>S. granulatus</i>	Yamada <i>et al.</i> (2001)	<i>Pinus densiflora</i>	Japan	5
<i>S. laricinus</i>	Treu (1990a)	<i>Larix decidua</i>	Germany	1
	Treu (1993)	<i>L. decidua</i>	Germany	1
<i>S. luteus</i>	Torres & Honrubia (1994)	<i>Pinus halepensis</i>	Spain	2
	Yamada <i>et al.</i> (2001)	<i>P. densiflora</i>	Japan	5
<i>S. plorans</i>	Treu (1990a)	<i>P. cembra</i>	Germany	1
	Treu (1990k)	<i>P. cembra</i>	Germany	1
<i>S. sibiricus</i>	Treu (1990a)	<i>P. cembra</i>	Germany	1
	Treu (1990l)	<i>P. cembra</i>	Germany	1
<i>S. tomentosus</i>	Bradbury (1998)	<i>P. contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
	Danielson (1984b)	<i>P. banksiana</i>	Canada	2
<i>S. tridentinus</i>	Treu (1990a)	<i>Larix decidua</i>	Germany	1
<i>S. umbonatus</i>	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
<i>S. variegatus</i>	Torres & Honrubia (1994)	<i>P. halepensis</i>	Spain	2
<i>Terfezia clavervyi</i>	Gutierrez <i>et al.</i> (2003)	<i>Helianthemum almeriense</i>	Spain	2
<i>Tetraberliniaerhiza bicolor</i>	Moyersoen (1996a)	<i>Tetraberlinia bifoliolata</i>	Cameroon	1
	Moyersoen (1996d)	<i>T. bifoliolata</i>	Cameroon	1
<i>T. cerviformis</i>	Moyersoen (1996b)	<i>T. bifoliolata</i>	Cameroon	1
	Moyersoen (1996e)	<i>T. bifoliolata</i>	Cameroon	1
<i>T. heterocystidiae</i>	Moyersoen (1996c)	<i>T. bifoliolata</i>	Cameroon	1
	Moyersoen (1996f)	<i>T. bifoliolata</i>	Cameroon	1
<i>Thaxterogaster albocanus</i>	Palfner (1996a)	<i>Nothofagus pumilio</i>	Chile	1
	Palfner (1996b)	<i>N. pumilio</i>	Chile	1
	Palfner (2001)	<i>N. pumilio</i>	Chile	1
<i>Thelephora</i>	Di Battista <i>et al.</i> (2002)	<i>Pseudotsuga menziesii</i>	USA	3
	Jones <i>et al.</i> (1997)	<i>Betula papyrifera, Pseudotsuga menziesii</i>	Canada	5

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Thelephora</i> (cont.)	Massicotte <i>et al.</i> (1999b)	<i>Abies grandis</i> , <i>Lithocarpus densiflora</i> , <i>Pinus ponderosa</i> , <i>Pseudotsuga menziesii</i>	USA	3
<i>T. terrestris</i>	Agerer & Weiss (1989)	<i>Picea abies</i>	Germany	1
	Agerer & Weiss (1990)	<i>P. abies</i>	Germany	1
	Chu-Chou & Grace (1983)	<i>Pseudotsuga menziesii</i>	N. Zealand	1
	Fassi & Fontana (1966)	<i>Pinus strobus</i>	Italy	3
	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
	Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
	Miller <i>et al.</i> (1990)	<i>Alnus rubra</i>	USA	5
	Schramm (1966)	<i>Pinus virginiana</i>	USA	1
	Thomas & Jackson (1979)	<i>Picea sitchensis</i>	UK	3
	Ursic & Peterson (1997)	<i>Pinus strobus</i>	Canada	3
<i>T. terrestris</i> -like <i>Thelephoraceae</i>	Gillespie, Durall & Hagerman (2000)	<i>Betula papyrifera</i>	Canada	1
	Haug <i>et al.</i> (2005)	<i>Guapira</i>	Ecuador	1
	Haug <i>et al.</i> (2005)	<i>Neea</i>	Ecuador	1
	Haug <i>et al.</i> (2005)	<i>Neea</i>	Ecuador	1
	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
	Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
	Kernaghan (2001)	<i>Abies lasiocarpa</i> , <i>Picea engelmannii</i>	Canada	1
	Kernaghan (2001)	<i>A. lasiocarpa</i> , <i>Salix barrattiana</i>	Canada	1
	Kernaghan (2001)	<i>Picea engelmannii</i> , <i>S. barrattiana</i>	Canada	1
	Selosse <i>et al.</i> (2002)	<i>Carpinus</i>	France	1
<i>Tomentella</i>	Selosse <i>et al.</i> (2002)	<i>Carpinus</i>	France	1
	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1
	Bradbury <i>et al.</i> (1998)	<i>P. contorta</i>	Canada	1
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Danielson & Pruden (1989)	<i>Picea pungens</i>	Canada	1
	Danielson <i>et al.</i> (1984)	<i>Pinus banksiana</i>	Canada	3
	Dickie <i>et al.</i> (2004)	<i>Helianthemum bicknellii</i>	USA	1
	Jakucs <i>et al.</i> (2004)	<i>Populus alba</i>	Hungary	1
	Jakucs <i>et al.</i> (2005)	<i>P. alba</i>	Hungary	1
Jakucs <i>et al.</i> (2005)	<i>P. alba</i>	Hungary	1	
Jakucs <i>et al.</i> (2005)	<i>P. alba</i>	Hungary	1	
Jakucs <i>et al.</i> (2005)	<i>Quercus cerris</i>	Hungary	1	

	Jakucs <i>et al.</i> (2005)	<i>Q. robur</i>	Hungary	1
	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
	Massicotte <i>et al.</i> (1999b)	<i>Abies grandis</i> , <i>Arbutus menziesii</i> , <i>Lithocarpus densiflora</i> , <i>Pinus ponderosa</i> , <i>Pseudotsuga menziesii</i>	USA	3
<i>T. albomarginata</i>	Hagerman <i>et al.</i> (2001)	<i>P. menziesii</i>	Canada	1
	Agerer (1996a)	<i>Pinus sylvestris</i>	Germany	1
	Agerer (1996k)	<i>P. sylvestris</i>	Germany	1
<i>T. brunneorufa</i>	Agerer & Bougher (2001)	<i>Eucalyptus</i>	Australia	1
<i>T. ferruginea</i>	Raidl & Müller (1996)	<i>Fagus sylvatica</i>	Germany	1
	Raidl (1998b)	<i>F. sylvatica</i>	Germany	1
<i>T. galzinii</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
	Jakucs (2002a)	<i>Populus alba</i>	Hungary	1
<i>T. pilosa</i>	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
<i>T. pilosa</i>	Jakucs & Agerer (1999b)	<i>Populus alba</i>	Hungary	1
	Jakucs (2002a)	<i>P. alba</i>	Hungary	1
	Jakucs (2002h)	<i>P. alba</i>	Hungary	1
<i>T. stuposus</i>	Jakucs <i>et al.</i> (2004)	<i>Picea abies</i>	Germany	1
<i>T. subtestacea</i>	Jakucs & Agerer (2001)	<i>Populus alba</i>	Hungary	1
	Jakucs (2002a)	<i>P. alba</i>	Hungary	1
	Jakucs (2002i)	<i>P. alba</i>	Hungary	1
<i>Tomentella</i> -like	Goodman (1996a)	<i>Pseudotsuga menziesii</i>	Canada	1
<i>Tomentelloid</i>	Jakucs (2002a)	<i>Populus alba</i>	Hungary	1
<i>Tomentellopsis submollis</i>	Agerer (1998e)	<i>Pinus sylvestris</i>	Germany	1
<i>Tricharina gilva</i>	Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
<i>Tricholoma</i>	Godbout & Fortin (1985)	<i>Populus tremuloides</i>	Canada	3
<i>T. acerbum</i>	Agerer & Waller (1993)	<i>Fagus sylvatica</i>	Germany	1
<i>T. albobrunneum</i>	Duñabeitia <i>et al.</i> (1996)	<i>Pinus radiata</i>	Spain	3
	Luppi & Gautero (1967)	<i>Quercus petraea</i>	Italy	1
	Uhl (1988a)	<i>Pinus sylvestris</i>	Germany	1
<i>T. auratum</i>	Comandini <i>et al.</i> (2004)	<i>Abies alba</i>	Italy	1
<i>T. bufonium</i>	Abourouh & Najim (1995)	<i>Cedrus atlantica</i>	Morocco	1
<i>T. caligatum</i>	Uhl (1988a)	<i>Betula pendula</i>	Germany	1
<i>T. flavobrunneum</i>	Danielson (1984b)	<i>Pinus banksiana</i>	Canada	2
<i>T. flavovirens</i>	Yamada <i>et al.</i> (2001)	<i>P. densiflora</i>	Japan	5
	Treu (1990a)	<i>Larix decidua</i>	Germany	1
<i>T. imbricatum</i>	Lefevre & Müller (1998)	<i>Pinus contorta</i>	Germany	1
<i>T. magnivelare</i>	Gill <i>et al.</i> (2000)	<i>P. densiflora</i>	Japan	1
<i>T. matsutake</i>	Danielson (1984b)	<i>P. banksiana</i>	Canada	2
<i>T. pessundatum</i>	Yamada <i>et al.</i> (2001)	<i>P. densiflora</i>	Japan	5
<i>T. portentosum</i>	Yamada <i>et al.</i> (2001)	<i>P. densiflora</i>	Japan	5
<i>T. saponaceum</i>	Cripps (1997b)	<i>Populus tremuloides</i>	USA	1
<i>T. sculpturatum</i>	Brand (1992f)	<i>Fagus sylvatica</i>	Germany	1
<i>T. sciodes</i>	Brand (1991)	<i>F. sylvatica</i>	Germany	1
	Agerer (1987b)	<i>Picea abies</i>	Germany	1
<i>T. sulphureum</i>	Agerer (1987i)	<i>P. abies</i>	Germany	1
	Comandini <i>et al.</i> (2004)	<i>Castanea sativa</i>	Italy	1
<i>T. vaccinum</i>	Agerer (1987b)	<i>Picea abies</i>	Germany	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat	
<i>Tricholoma vaccinum</i> (cont.)	Agerer (1987j)	<i>Picea abies</i>	Germany	1	
	Brunner <i>et al.</i> (1992)	<i>P. abies</i>	Switzerland	2	
<i>Tricholomataceae</i>	See <i>et al.</i> (1997)	<i>Shorea leprosula</i>	Malaysia	1	
<i>Truncocolumella citrina</i>	Eberhart & Luoma (1996)	<i>Pseudotsuga menziesii</i>	USA	1	
	Hagerman <i>et al.</i> (2001)	<i>P. menziesii</i>	Canada	1	
	Massicotte <i>et al.</i> (2000)	<i>P. menziesii</i>	Canada	3	
<i>Tsugaerhiza luteoannulata</i>	Agerer & Molina (1997)	<i>Tsuga heterophylla</i>	USA	1	
	Agerer (1998f)	<i>T. heterophylla</i>	Germany	1	
<i>T. tripigmentata</i>	Agerer & Trappe (1996)	<i>T. heterophylla</i>	USA	1	
	Agerer (1998g)	<i>T. heterophylla</i>	Germany	1	
<i>Tuber</i>	Bradbury (1998)	<i>Pinus contorta</i>	Canada	1	
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1	
	Chu-Chou & Grace (1983)	<i>Pseudotsuga menziesii</i>	N. Zealand	1	
	Danielson & Pruden (1989)	<i>Picea pungens</i>	Canada	1	
	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1	
	Ingleby <i>et al.</i> (1990)	<i>Betula pendula</i>	UK	1	
	Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>Pseudotsuga menziesii</i>	Canada	5	
	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1	
	Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1	
	Torres & Honrubia (1997)	<i>Pinus halepensis</i>	Spain	3	
	Ursic & Peterson (1997)	<i>Pinus strobus</i>	Canada	3	
	<i>T. aestivum</i>	Bencivenga <i>et al.</i> (1992)	<i>Corylus avellana</i> , <i>Quercus pubescens</i>	Italy	4
		Etayo & De Miguel (1998)	<i>C. avellana</i>	Spain	4
		Giraud (1988)	Not specified	France	4
		Granetti (1995)	<i>Corylus avellana</i> , <i>C. colurna</i> , <i>Ostrya carpinifolia</i> , <i>Pinus halepensis</i> , <i>P. nigra</i> , <i>P. pinea</i> , <i>Quercus cerris</i> , <i>Q. ilex</i> , <i>Q. pubescens</i>	Italy	3
		Granetti <i>et al.</i> (1995b)	<i>Corylus avellana</i>	Italy	3
		Granetti <i>et al.</i> (1995b)	<i>C. colurna</i>	Italy	3
		Granetti <i>et al.</i> (1995b)	<i>Pinus laricio</i>	Italy	3
		Granetti <i>et al.</i> (1995b)	<i>P. pinea</i>	Italy	3
		Granetti <i>et al.</i> (1995b)	<i>Quercus cerris</i>	Italy	3
Granetti <i>et al.</i> (1995b)		<i>Q. ilex</i>	Italy	3	
Granetti, Rubini & Angelini (1995b)	<i>Q. pubescens</i>	Italy	3		
Meotto, Nosenzo & Fontana (1995)	<i>Q. robur</i>	Italy	3		
Müller <i>et al.</i> (1996a)	<i>Corylus avellana</i>	France	3		
Palenzona (1969)	<i>C. avellana</i>	Italy	3		
Rauscher <i>et al.</i> (1996b)	<i>C. avellana</i>	France	3		
Sáez & De Miguel (1995)	Not specified	Spain	4		
Zambonelli, Salomoni & Pisi (1993)	<i>Quercus pubescens</i>	Italy	3		
Zambonelli, Salomoni & Pisi (1995)	<i>Pinus pinea</i>	Italy	3		
<i>T. albidum</i>	Bencivenga <i>et al.</i> (1992)	<i>Corylus avellana</i> , <i>Quercus pubescens</i>	Italy	4	
	Etayo & De Miguel (1998)	<i>Q. faginea</i> , <i>Q. ilex</i>	Spain	4	
	Fontana & Centrella (1967)	<i>Corylus avellana</i> , <i>Pinus pinea</i> , <i>Quercus petraea</i>	Italy	1	

	Meotto <i>et al.</i> (1995)	<i>Q. robur</i>	Italy	3
	Sáez & De Miguel (1995)	Not specified	Spain	4
	Scannerini & Palenzona (1967)	<i>Pinus strobus</i>	Italy	3
	Voiry (1981)	<i>Fagus</i>	France	1
<i>T. borechii</i>	Zambonelli <i>et al.</i> (1993)	<i>Quercus pubescens</i>	Italy	3
	Duñabeitia <i>et al.</i> (1996)	<i>Pinus radiata</i>	Spain	3
	Giomaro <i>et al.</i> (2000)	<i>Tilia platyphyllos</i>	Italy	2
	Giraud (1988)	Not specified	France	4
	Granetti & Baciarelli (1997)	<i>Quercus ilex</i>	Italy	4
	Granetti (1995)	<i>Cistus incanus, Corylus avellana, C. colurna, Ostrya carpinifolia, Quercus cerris, Q. pubescens, Pinus pinea, Populus alba, P. nigra, Salix caprea, Tilia platyphyllos</i>	Italy	3
	Granetti, Angelini & Rubini (1995a)	<i>T. platyphyllos</i>	Italy	3
	Rauscher <i>et al.</i> (1996a)	<i>Corylus avellana</i>	France	3
	Rauscher <i>et al.</i> (1996c)	<i>C. avellana</i>	France	3
	Zambonelli <i>et al.</i> (1995)	<i>Pinus pinea</i>	Italy	3
<i>T. brumale</i>	Zambonelli, Iotti & Govi (1998)	<i>P. pinea</i>	Italy	4
	Azul & Freitas (1999)	<i>Quercus suber</i>	Portugal	1
	Chevalier (1973)	<i>Corylus avellana</i>	France	2
	Chevalier (1973)	<i>Pinus halepensis</i>	France	2
	Chevalier (1973)	<i>P. nigra</i>	France	2
	Chevalier (1973)	<i>P. sylvestris</i>	France	2
	De Román & De Miguel (2005)	<i>Quercus ilex</i>	Spain	1
	Etayo & De Miguel (1998)	<i>Corylus avellana, Q. faginea</i>	Spain	4
	Fischer <i>et al.</i> (2004)	<i>Q. ilex</i>	Spain	4
	Fontana & Bonfante-Fasolo (1971)	<i>Pinus nigra</i>	Italy	3
	Giraud (1988)	Not specified	France	4
	Granetti & Baciarelli (1997)	<i>Quercus ilex</i>	Italy	4
	Granetti (1995)	<i>Corylus avellana, Ostrya carpinifolia, Quercus ilex, Q. pubescens</i>	Italy	3
	Meotto <i>et al.</i> (1995)	<i>Q. robur</i>	Italy	3
	Palenzona (1969)	<i>Corylus avellana</i>	Italy	3
	Palenzona, Chevalier & Fontana (1972)	<i>C. avellana, Pinus nigra, Quercus pubescens</i>	Italy	3
	Sáez & De Miguel (1995)	Not specified	Spain	4
	Zambonelli <i>et al.</i> (1993)	<i>Quercus pubescens</i>	Italy	3
<i>T. californicum</i>	Zambonelli <i>et al.</i> (1995)	<i>Pinus pinea</i>	Italy	3
	Massicotte <i>et al.</i> (1999b)	<i>Abies grandis, Lithocarpus densiflora, Pinus ponderosa, Pseudotsuga menziesii</i>	USA	3
<i>T. excavatum</i>	Giraud (1988)	Not specified	France	4
	Pirazzi (1998)	<i>Quercus pubescens</i>	Italy	3
	Sáez & De Miguel (1995)	Not specified	Spain	4
<i>T. himalayense</i>	Comandini & Pacioni (1997)	<i>Quercus pubescens</i>	Italy	3
<i>T. indicum</i>	Comandini & Pacioni (1997)	<i>Q. pubescens</i>	Italy	3
	Zambonelli <i>et al.</i> (1997)	<i>Pinus pinea</i>	Italy	3
	Zambonelli, Tibiletti & Pisi (1997)	<i>Quercus cerris</i>	Italy	3

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
<i>Tuber macrosporum</i>	Giovannetti & Fontana (1981)	<i>Betula</i>	Italy	1
	Granetti (1995)	<i>Quercus cerris</i>	Italy	3
	Meotto <i>et al.</i> (1995)	<i>Q. robur</i>	Italy	3
<i>T. maculatum</i>	Zambonelli <i>et al.</i> (1993)	<i>Q. pubescens</i>	Italy	3
	Fassi & De Vecchi (1962)	<i>Pinus strobus</i>	Italy	3
<i>T. magnatum</i>	Zambonelli <i>et al.</i> (1999)	<i>Ostrya carpinifolia</i>	Italy	3
	Angelini & Granetti (1995)	<i>Populus alba</i>	Italy	2
	Granetti (1995)	<i>Corylus avellana</i> , <i>C. colurna</i> , <i>Ostrya carpinifolia</i> , <i>Quercus cerris</i> , <i>Q. pubescens</i> , <i>Q. robur</i> , <i>Populus alba</i> , <i>P. nigra</i> , <i>Salix alba</i> , <i>S. caprea</i>	Italy	3
	Granetti <i>et al.</i> (1995a)	<i>Tilia platyphyllos</i>	Italy	3
	Mello <i>et al.</i> (2001)	<i>Quercus robur</i>	Italy	3
	Meotto <i>et al.</i> (1995)	<i>Q. robur</i>	Italy	3
	Palenzona & Fontana (1978)	<i>Q. pubescens</i>	Italy	3
	Rubini <i>et al.</i> (2001)	<i>Q. cerris</i>	Italy	3
	Sáez & De Miguel (1995)	Not specified	Spain	4
	Zambonelli <i>et al.</i> (1993)	<i>Quercus pubescens</i>	Italy	3
<i>T. melanosporum</i>	Águeda <i>et al.</i> (2001)	<i>Q. ilex</i>	Spain	4
	Bencivenga <i>et al.</i> (1992)	<i>Corylus avellana</i> , <i>Q. pubescens</i>	Italy	4
	Etayo & De Miguel (1998)	<i>C. avellana</i> , <i>Q. faginea</i> , <i>Q. ilex</i>	Spain	4
	Giraud (1988)	Not specified	France	4
	Granetti & Baciarelli (1997)	<i>Quercus ilex</i>	Italy	4
	Granetti (1995)	<i>Cistus incanus</i> , <i>Corylus avellana</i> , <i>C. colurna</i> , <i>Ostrya carpinifolia</i> , <i>Quercus cerris</i> , <i>Q. ilex</i> , <i>Q. pubescens</i> , <i>Q. robur</i>	Italy	3
	Meotto <i>et al.</i> (1995)	<i>Q. robur</i>	Italy	3
	Palenzona (1969)	<i>Corylus avellana</i>	Italy	3
	Palenzona <i>et al.</i> (1972)	<i>C. avellana</i> , <i>Pinus sylvestris</i> , <i>Quercus pubescens</i>	Italy	3
	Rauscher & Chevalier (1995a)	<i>Corylus avellana</i>	France	3
<i>T. mesentericum</i>	Rauscher, Agerer & Chevalier (1995)	<i>C. avellana</i>	France	3
	Sáez & De Miguel (1995)	Not specified	Spain	4
	Zambonelli <i>et al.</i> (1993)	<i>Quercus pubescens</i>	Italy	3
	Zambonelli <i>et al.</i> (1995)	<i>Pinus pinea</i>	Italy	3
	Giraud (1988)	Not specified	France	4
	Granetti (1995)	<i>Corylus avellana</i>	Italy	3
	Meotto <i>et al.</i> (1995)	<i>Ostrya carpinifolia</i>	Italy	3
	Rauscher & Chevalier (1995b)	<i>Corylus avellana</i>	France	3
	Rauscher <i>et al.</i> (1995)	<i>C. avellana</i>	France	3
	Sáez & De Miguel (1995)	Not specified	Spain	4
<i>T. oligospermum</i>	Zambonelli <i>et al.</i> (1993)	<i>Quercus pubescens</i>	Italy	3
	Zambonelli <i>et al.</i> (1995)	<i>Pinus pinea</i>	Italy	3
	Bencivenga, Tanfulli & Donnini (1997)	<i>Quercus cerris</i>	Italy	3



<i>T. panniferum</i>	Pirazzi (1998)	<i>Corylus avellana</i>	Italy	3
<i>T. puberulum</i>	Blaschke (1988)	<i>Picea abies</i>	Germany	1
<i>T. rapaeodorum</i>	Jakucs (2002a)	<i>Populus alba</i>	Hungary	1
<i>T. rufum</i>	Giraud (1988)	Not specified	France	4
	Palenzona <i>et al.</i> (1972)	<i>Abies alba</i> , <i>Carpinus betulus</i> , <i>Corylus avellana</i> , <i>Fagus sylvatica</i> , <i>Pinus halepensis</i> , <i>P. nigra</i> , <i>P. strobus</i> , <i>P. sylvestris</i> , <i>Quercus pubescens</i> , <i>Tilia platyphyllos</i>	Italy	3
	Pirazzi (1998)	<i>Q. pubescens</i>	Italy	3
	Rauscher & Chevalier (1995c)	<i>Corylus avellana</i>	France	3
	Rauscher <i>et al.</i> (1995)	<i>C. avellana</i>	France	3
	Sáez & De Miguel (1995)	Not specified	Spain	4
<i>T. uncinatum</i>	Müller <i>et al.</i> (1996b)	<i>Corylus avellana</i>	France	3
<i>Tuberaceae</i>	See <i>et al.</i> (1997)	<i>Shorea leprosula</i>	Malaysia	1
<i>Tubulicrinis</i>	Kernaghan (2001)	<i>Picea engelmannii</i>	Canada	1
<i>Tylopilus felleus</i>	Uhl (1989)	<i>Pinus sylvestris</i>	Germany	1
<i>Tylospora asterophora</i>	Eberhardt, Walter & Kottke (1999)	<i>Picea abies</i>	Germany	1
<i>T. fibrillosa</i>	Eberhardt <i>et al.</i> (1999)	<i>P. abies</i>	Germany	1
Unidentified	Taylor & Alexander (1991)	<i>P. sitchensis</i>	UK	1
	Abourouh & Najim (1995)	<i>Cedrus atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Abourouh & Najim (1995)	<i>C. atlantica</i>	Morocco	1
	Águeda <i>et al.</i> (2001)	<i>Quercus ilex</i>	Spain	4
	Águeda <i>et al.</i> (2001)	<i>Q. ilex</i>	Spain	4
	Águeda <i>et al.</i> (2001)	<i>Q. ilex</i>	Spain	4
	Águeda <i>et al.</i> (2001)	<i>Q. ilex</i>	Spain	4
	Águeda <i>et al.</i> (2001)	<i>Q. ilex</i>	Spain	4
	Águeda <i>et al.</i> (2001)	<i>Q. ilex</i>	Spain	4
	Azul & Freitas (1999)	<i>Q. suber</i>	Portugal	1
	Azul & Freitas (1999)	<i>Q. suber</i>	Portugal	1
	Baxter <i>et al.</i> (1999)	<i>Quercus</i>	USA	1
	Bencivenga <i>et al.</i> (1992)	<i>Corylus avellana</i> , <i>Quercus pubescens</i>	Italy	4
	Bencivenga <i>et al.</i> (1992)	<i>C. avellana</i> , <i>Q. pubescens</i>	Italy	4
	Bencivenga <i>et al.</i> (1992)	<i>C. avellana</i> , <i>Q. pubescens</i>	Italy	4
	Bencivenga <i>et al.</i> (1995)	Not specified	Italy	3
	Bencivenga <i>et al.</i> (1995)	Not specified	Italy	3
	Buée <i>et al.</i> (2004)	<i>Fagus sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1
	Buée <i>et al.</i> (2004)	<i>F. sylvatica</i>	France	1



Fontana (1961)	<i>Populus</i>	Italy	1
Fontana (1961)	<i>Populus</i>	Italy	1
Fontana (1961)	<i>Populus</i>	Italy	1
Fontana (1961)	<i>Populus</i>	Italy	1
Goodman (1996b)	<i>Pseudotsuga menziesii</i>	Canada	1
Goodman (1996c)	<i>P. menziesii</i>	Canada	1
Goodman (1996d)	<i>P. menziesii</i>	Canada	1
Goodman (1996f)	<i>P. menziesii</i>	Canada	1
Goodman (1997a)	<i>Tsuga heterophylla</i>	Canada	1
Goodman (1997c)	<i>T. heterophylla</i>	Canada	1
Granetti & Angelini (1992)	<i>Corylus avellana</i> , <i>Ostrya carpinifolia</i> , <i>Quercus ilex</i> , <i>Q. pubescens</i>	Italy	4
Granetti & Angelini (1992)	<i>Ostrya carpinifolia</i>	Italy	4
Granetti & Baciarelli (1997)	<i>Quercus ilex</i>	Italy	4
Granetti & Baciarelli (1997)	<i>Q. ilex</i>	Italy	4
Granetti & Baciarelli (1997)	<i>Q. ilex</i>	Italy	4
Granetti & Baciarelli (1997)	<i>Q. ilex</i>	Italy	4
Granetti & Baciarelli (1997)	<i>Q. ilex</i>	Italy	4
Hagerman <i>et al.</i> (2001)	<i>Pseudotsuga menziesii</i>	Canada	1
Ingleby <i>et al.</i> (1990)	<i>Picea sitchensis</i>	UK	1
Ingleby <i>et al.</i> (1990)	<i>P. sitchensis</i>	UK	1
Ingleby <i>et al.</i> (1990)	<i>P. sitchensis</i>	UK	1
Ingleby <i>et al.</i> (1990)	<i>P. sitchensis</i>	UK	1
Jones <i>et al.</i> (1997)	<i>Betula papyrifera</i> , <i>Pseudotsuga menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>Pseudotsuga menziesii</i>	Canada	5
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	5
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	5
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>B. papyrifera</i> , <i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>P. menziesii</i>	Canada	5
Jones <i>et al.</i> (1997)	<i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>P. menziesii</i>	Canada	1
Jones <i>et al.</i> (1997)	<i>P. menziesii</i>	Canada	1
Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1
Kaldorf (2004)	<i>P. tremula</i> × <i>P. tremuloides</i>	Germany	1

Table 1. (Cont.)

Ectomycorrhiza	Reference	Host tree	Country	Habitat
Unidentified (cont.)	Kaldorf (2004)	<i>Populus tremula</i> × <i>P. tremuloides</i>	Germany	1
	Massicotte <i>et al.</i> (1999b)	<i>Abies grandis</i> , <i>Lithocarpus densiflora</i> ,	USA	3
		<i>Pseudotsuga menziesii</i>		
	Miller <i>et al.</i> (1990)	<i>Alnus rubra</i>	USA	5
	Miller <i>et al.</i> (1990)	<i>A. rubra</i>	USA	5
	Miller <i>et al.</i> (1990)	<i>A. rubra</i>	USA	5
	Miller <i>et al.</i> (1990)	<i>A. rubra</i>	USA	5
	Moser <i>et al.</i> (2005)	<i>Quercus garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Moser <i>et al.</i> (2005)	<i>Q. garryana</i>	USA	1
	Thomas & Jackson (1979)	<i>Picea sitchensis</i>	UK	3
	Thomas & Jackson (1979)	<i>P. sitchensis</i>	UK	3
	Thomas & Jackson (1979)	<i>P. sitchensis</i>	UK	3
	Thomas & Jackson (1979)	<i>P. sitchensis</i>	UK	3
	Thomas & Jackson (1979)	<i>P. sitchensis</i>	UK	3
	Torres & Honrubia (1997)	<i>Pinus halepensis</i>	Spain	3
	Treu (1990a)	<i>Larix decidua</i>	Germany	1
	Trost <i>et al.</i> (1999)	<i>Picea abies</i>	Slovenia	1
Trost <i>et al.</i> (1999)	<i>P. abies</i>	Slovenia	1	

	Trost <i>et al.</i> (1999)	<i>P. abies</i>	Slovenia	1
	Trost <i>et al.</i> (1999)	<i>P. abies</i>	Slovenia	1
	Trost <i>et al.</i> (1999)	<i>P. abies</i>	Slovenia	1
	Trost <i>et al.</i> (1999)	<i>P. abies</i>	Slovenia	1
	Trost <i>et al.</i> (1999)	<i>P. abies</i>	Slovenia	1
	Ursic & Peterson (1997)	<i>Pinus strobus</i>	Canada	3
	Voiry (1981)	<i>Fagus</i>	France	1
	Voiry (1981)	<i>Fagus</i>	France	1
	Voiry (1981)	<i>Fagus</i>	France	1
	Voiry (1981)	<i>Fagus</i>	France	1
	Voiry (1981)	<i>Fagus</i>	France	1
	Wöllecke (2001)	<i>Pinus sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Wöllecke (2001)	<i>P. sylvestris</i>	Germany	1
	Zambonelli <i>et al.</i> (1998)	<i>P. pinea</i>	Italy	4
	Zambonelli <i>et al.</i> (1998)	<i>P. pinea</i>	Italy	4
	Zambonelli <i>et al.</i> (1998)	<i>P. pinea</i>	Italy	4
	Zambonelli <i>et al.</i> (1998)	<i>P. pinea</i>	Italy	4
	Zambonelli <i>et al.</i> (1998)	<i>P. pinea</i>	Italy	4
	Torres & Honrubia (1997)	<i>P. halepensis</i>	Spain	3
	Jakucs (2002a)	<i>Populus alba</i>	Hungary	1
	Agerer & Gronbach (1990b)	<i>Picea abies</i>	Germany	1
	Duñabeitia <i>et al.</i> (1996)	<i>Pinus radiata</i>	Spain	3
	Gronbach (1988)	<i>Picea abies</i>	Germany	1
	Wöllecke (2001)	<i>Pinus sylvestris</i>	Germany	1
	Azul & Freitas (1999)	<i>Quercus suber</i>	Portugal	1
	Brand (1989a)	<i>Fagus sylvatica</i>	Germany	1
	Brand (1989b)	<i>F. sylvatica</i>	Germany	1
	Jakucs & Beenken (2001)	<i>Quercus cerris</i>	Hungary	1
	Jakucs (2002j)	<i>Q. cerris</i>	Hungary	1
	Palfner (1995b)	<i>Q. robur</i>	Germany	1
<i>Xerocomus</i>				
<i>X. armeniacus</i>				
<i>X. badius</i>				
<i>X. chrysenteron</i>				
<i>X. lanatus</i>				
<i>X. submentosus</i>				

Numerous descriptions of ECM have also been published in different journals following any of the systems mentioned above, but the information on the topic is typically difficult to approach due to the varied nature of the sources. Therefore, we considered it necessary to gather and review these published sources in order to build a database of the descriptions of ECM published so far useful to all mycorrhizologists. We have focused exclusively on morphological descriptions of ECM. It is outside the scope of this work to refer to other types of mycorrhizas (e.g. ectendomycorrhizas, ericoid, or arbutoid mycorrhizas) or to ECM morphotypes cited in papers dealing with molecular techniques which do not provide a morphological description. Although this revision is very extensive, some sources could not be accessed, and there may be other descriptions hidden as grey literature or in journals with little circulation. Contributions by other authors are thus expected and welcome in order to enrich the database.

## MATERIALS AND METHODS

Each published source containing a description of an ECM, no matter how brief the description, was reviewed to record the following details: (1) fungus forming the ECM; (2) host tree; (3) country where the material for description was collected; and (4) habitat of the ECM, i.e. whether the ECM was collected from the field, a nursery, a truffle growing stand, or if it was synthesized *in vitro*. Only published sources were reviewed, i.e. ECM descriptions contained in theses, reports, or other kinds of unpublished material were not considered. ECM from nurseries included artificially inoculated or naturally occurring in the nursery. When an ECM morphotype was collected in more than one habitat, the term 'various' was applied. For simplicity, subspecies and varieties of fungi and host trees were not considered. In some cases, several host tree species were reported to be associated with the same ECM morphotype in the same description, but no morphological or anatomical distinction was made between ECM tips from the different tree species. In these cases, all host tree species were cited in Table 1 within the same entry. The term 'not specified' was used when several host tree species were mentioned in a paper, but there was no specific information about the tree species actually associated with each ECM described.

Other secondary data were also recorded: the division, order, sporocarp morphology and sporocarp development (epigeous or hypogeous) of the fungus forming the ECM; whether the description was detailed (Agerer 1986a, 1987–2002, 1994a, 1999a); and whether drawings and photos were also available together with the description. The categories used for fruit body morphology were: gasteroid, mushroom (both agaricoid and boletoid), truffle (any hypogeous fungus, including *Ascomycota* and *Basidiomycota*), and other morphology (apothecial, perithecial, clavarioid,

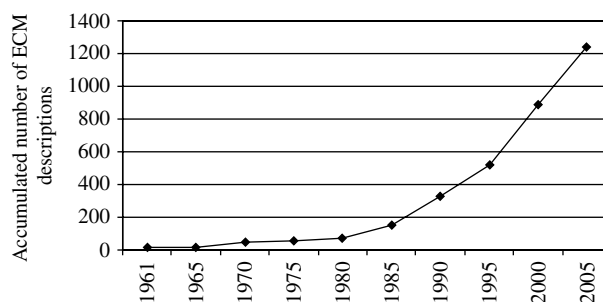


Fig. 1. Accumulated number of ECM descriptions published since 1961.

ramarioid or resupinate). Although some comments are made in this review regarding these secondary data, the data are not included in full due to space constraints, but the corresponding author will provide them if contacted.

## RESULTS AND DISCUSSION

In all 1244 descriptions of ECM published in 479 papers were reviewed (Table 1). The number of different ECM morphotypes described was 814, with each ECM not identified to species level considered a different ECM. 345 ECM morphotypes were identified to species, 132 to genus, 21 to family, five to order, and 20 to division; four had another level of identification (cortinarioid, pezizalean, sebacinoid, and tomentelloid, respectively), 99 were unidentified ECM morphotypes published under a binomial name (Agerer 1986a, 1987–2002, 1994a, 1999a) or other name widely used in the literature (morphotypes AD and SB; Giraud 1988), and 188 were unidentified ECM morphotypes lacking a name. Only 330 of the 1244 descriptions reviewed were detailed (Agerer 1986a, 1987–2002, 1994a, 1999a); 379 descriptions included drawings and 771 provided photographs.

The descriptions reviewed date back to 1961, and include all papers published until May 2005, when the revision of this article was submitted. Fig. 1 shows the accumulated number of ECM descriptions published over the years, and it is important to note the sharp increase in publications from 1985 onwards, when Agerer (1986a) started to develop the more defined system.

Most of the ECM described were collected in Europe, with 862 descriptions recorded as follows: Austria, 2; Belgium, 1; Estonia, 3; France, 83; Germany, 331; Hungary, 46; Italy, 177; Poland, 28; Portugal, 14; Slovenia, 15; Spain, 93; Sweden, 2; Switzerland, 14; UK, 53. A significant number, 271 ECM, were collected in North America (Canada, 175; USA, 96). All other continents remain poorly represented: 37 ECM were collected in South America (Argentina, 3; Chile, 28; Ecuador, 6), 21 in Africa (Cameroon, 7; Morocco, 14), 37 in Asia (India, 2; Indonesia, 1; Japan, 14;

Malaysia, 10; Taiwan, 10) and 16 in Oceania (Australia, 2; New Zealand, 14). It is interesting to note that most descriptions came from Germany, Italy, and Canada. The material collected in Germany was usually described in detail following the system developed by Agerer (1986a, 1987–2002, 1994a, 1999a), and is the most extensive source of information on morphology and anatomy of ECM. In contrast, the ECM described in Canada were usually collected in ecological studies of ectomycorrhizal communities, and the descriptions provided were typically short, with the exception of those published by Goodman *et al.* (1996–2000). In Italy, research on ECM is often linked to the interest in cultivating truffles, and most ECM described were either *Tuber* species of commercial interest or competitive fungi that threaten truffle production.

Gymnosperms were the most common tree associates, recorded in 510 descriptions (*Abies*, 15; *Cedrus*, 14; *Gnetum*, 1; *Larix*, 20; *Picea*, 162; *Pinus*, 226; *Pseudotsuga*, 59; *Tsuga*, 13). Genera in the *Fagaceae* were also well represented, with 339 descriptions (*Castanea*, 3; *Castanopsis*, 1; *Cyclobalanopsis*, 1; *Fagus*, 116; *Nothofagus*, 29; *Pasania*, 1; *Quercus*, 188). Other families recorded as hosts were: *Betulaceae*, 131 (*Alnus*, 50; *Betula*, 48; *Carpinus*, 4; *Corylus*, 26; *Ostrya*, 3); *Salicaceae*, 94 (*Populus*, 87; *Salix*, 7); *Cistaceae*, 18 (*Cistus*, 3; *Fumana*, 4; *Helianthemum*, 11); *Myrtaceae*, 7 (*Eucalyptus*, 5; *Kunzea*, 1; *Leptospermum*, 1); *Leguminosae*, 7 (*Acacia*, 1; *Tetraberlinia*, 6); *Nyctaginaceae*, 6 (*Guapira*, 1; *Neea*, 5); *Dipterocarpaceae*, 11 (*Shorea*); *Rosaceae*, 1 (*Dryas*); *Tiliaceae*, 6 (*Tilia*). The remaining 113 ECM were associated with either ‘not specified’ host trees (35), or with more than one host tree species, within the same description (78). If the ECM description applied to more than one host tree species, the records were not considered individually for the count to avoid an artificial increase in the total number of descriptions. A careful analysis of the host species involved in the ECM described revealed that boreal and temperate forests are the best-known ecosystems so far, whereas there is little information on ECM communities of tropical and Mediterranean ecosystems.

Most ECM were collected from the field (899), 159 in a nursery, 81 in a truffle growing stand. Sixty five descriptions were based in ECM material synthesized *in vitro*, and in 40 descriptions, the material was collected in more than one habitat (indicated by the term ‘various’). Many ECM morphotypes collected from the field could not be identified, whereas the aim of inoculating ECM fungi in nurseries or synthesizing them *in vitro* was precisely to know the identity of the fungal symbiont beforehand. Fungi recorded in truffle growing stands were typically truffle species or their competitors.

The associated fungi recorded in the 1244 ECM descriptions reviewed were mostly *Basidiomycota* (707), 200 were *Ascomycota*, and in 337 descriptions the

fungal division could not be ascertained. As most *Ascomycota* ECM were *Tuber* species, it is clear that there is a lack of knowledge on the ECM of this fungal division. Fungal orders were represented in ECM descriptions as follows: *Agaricales*, 220; *Boletales*, 166; *Cantharellales*, 13; *Elaphomycetales*, 5; *Hymenochaetales*, 1; *Pezizales*, 150; *Phallales*, 18; *Polyporales*, 41; *Russulales*, 148; *Thelephorales*, 77; *Tremellales*, 5; unidentified order, 400.

The majority of fungal species cited were epigeous (638), with only 198 descriptions belonging to hypogeous fungi. The type of fruit body development of the fungal symbiont was unknown in the remaining 408 descriptions. These data show that, with the exception of *Tuber* species again, the ECM of hypogeous fungi are poorly known. The fact that fruit bodies of hypogeous fungi are typically difficult to find is definitely related to the scarce interest researchers have hitherto shown for ECM formed by these species.

The fruit body morphology of the associated fungus was mushroom-like in 460 ECM descriptions, gasteroid in 35, truffle-like in 198, had other morphologies in 142, and could not be assigned to any morphology in 409 descriptions. These data indicated that fungi which lack the usual ‘mushroom’ morphology or which have inconspicuous fruit bodies have been traditionally overlooked in ECM community studies (Gardes & Bruns 1996, Dahlberg, Jonsson & Nylund 1997, Stendell, Horton & Bruns 1999, Taylor & Bruns 1999, Peter *et al.* 2001).

The amount of research carried out so far on description and identification of fungi involved in ECM communities is outstanding. Nevertheless, this review reveals that many gaps in knowledge remain to be filled, and mycorrhizologists should focus on little-known geographic areas, ecosystems, host trees and fungal groups in future studies in order to face the challenges the ECM community poses.

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