DARWINIANA 47(1): 108-124. 2009 ISSN 0011-6793

DIVERSITY OF SAPROTROPHIC ANAMORPHIC ASCOMYCETES FROM NATIVE FORESTS IN ARGENTINA: AN UPDATED REVIEW

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Abstract. Allegrucci, N.; M. N. Cabello & A. M. Arambarri. 2009. Diversity of Saprotrophic Anamorphic Ascomycetes from native forests in Argentina: an updated review. *Darwiniana* 47(1): 108-124.

Eight regions of native forests have been recognized in Argentina: Chaco forest, Misiones rain forest, Tucumán-Bolivia forest (Yunga), Andean-Patagonian forest, "Monte", "Espinal", fluvial forests of the Paraguay, Paraná and Uruguay rivers, and "Talares" in the Pampean region. We reviewed the available data concerning biodiversity of saprotrophic micro-fungi (anamorphic Ascomycota) in those native forests from Argentina, from the earliest collections, done by Spegazzini, to present. Among the above mentioned regions most studies on saprotrophic micro-fungi concentrates on the Andean-Patagonian forest, the fluvial forests of the Paraguay, Paraná and Uruguay rivers and the "Talares", in the Pampean region. There are only a few records of fungal species in other native forests. No record of anamorphic species of Ascomycota was previously available for "Monte" forests. From a comprehensive bibliographic review, a total of 344 species were registered, of which 81 (23,5%) are new species.This work manifests the lack of explorations in important areas of the country, and demonstrates the need to increase those studies.

Keywords. Anamorphic Ascomycota, Argentina, biodiversity, forests.

Resumen. Allegrucci, N.; M. N. Cabello & A. M. Arambarri. 2009. Diversidad de Ascomycetes Anamórficos Saprótrofos de los bosques nativos de Argentina: una revisión actual. *Darwiniana* 47(1):108-124.

En Argentina se reconocen ocho regiones de bosques nativos: bosque Andino-Patagónico, Talares de la Región Pampeana, Parque Chaqueño, Selva Misionera, Selva Tucumano-Boliviana, Monte, Espinal y Bosques Pluviales de los ríos Paraguay, Paraná y Uruguay. El objetivo de este trabajo ha sido reunir y revisar la información sobre la biodiversidad de microhongos saprótrofos (Ascomycetes anamórficos) citados en los bosques nativos de Argentina, desde las primeras colecciones de Spegazzini hasta el presente. De las regiones anteriormente mencionadas los bosques Andino-Patagónicos, Bosques Pluviales de los ríos Paraguay, Paraná y Uruguay y recientemente los Talares de la provincia de Buenos Aires son aquellos donde se han realizado más exploraciones de microhongos saprótrofos. Por otro lado se obtuvieron muy pocos registros de especies fúngicas del resto de los bosques; para la región de Monte en particular no se han realizado hasta el presente estudios de hongos anamórficos, por lo cual no se cuenta con registros de especies anamórficas de Ascomycetes. Como resultado de una revisión bibliográfica exhaustiva, se registraron 344 especies, de las cuales 81 (23,5%) son nuevas especies. Este trabajo pone de manifiesto la falta de exploraciones de áreas de importancia en nuestro país, y muestra la necesidad de incrementar estos estudios.

Palabras clave. *Argentina, Ascomycetes anamórficos, biodiversidad, bosques.*

Original recibido el 9 de mayo de 2008; aceptado el 14 de abril de 2009.

INTRODUCTION

Fungi represent some of the most vital organisms on the planet, not only due to the role they perform in ecosystems, but also due to their influence on man and related activities (Mueller & Bills, 2004). However, scarce information on most species is available, and estimations about their number are likely to be significantly different. This need to obtain further data on the taxonomic biodiversity has greatly influenced evolutionary biology. An estimate of 1.5 million fungal species is currently used, though it has been severely criticized. Data about geographical distributions, levels of endemicity and host specificity must be taken into account when the whole fungal diversity is evaluated (Muller & Schmit, 2007).

Functional properties of the ecosystem are stabilized by fungal species diversity (Kennedy & Gewin, 1997). In consequence, the response of microbial biodiversity to certain environmental conditions is essential to understand the impact of anthropogenic action on its sustainability (Turco et al., 1994).

Despite the importance of fungi in the above mentioned processes, little attention has been paid to their role in ecosystems and conservation of biodiversity (Hawksworth, 2001). Unlike agricultural crops, native forests as well as soil and water are vital systems with autoconservation and autoregulation capacity. They present maximal complexity, covering a wide range of tangible and intangible benefits that are indispensable for life on this planet. According to the Forest Department, Ministry of Social Development, Argentina in 2002 (modified by Frangi et al., 2004), eight major forest areas can be characterized in Argentina: 1) Chaco forest, 2) Misiones rain forest, 3) Tucumán-Bolivia forest (Yunga), 4) Andean-Patagonean forest, 5) "Monte", 6) "Espinal", 7) fluvial forests that are near the Paraguay, Paraná and Uruguay rivers, and 8) "Talares" in the Pampean region. The aim of this work was to review the available information concerning biodiversity of micro-fungi (anamorphic Ascomycota) that live in native forests of Argentina, starting from the early collections of Spegazzini to present.

CURRENT DATA ON ANAMORPHIC ASCOMYCOTA IN NATIVE FORESTS

Table 1 shows the list of anamorphic Ascomycota species identified in each area of native forests from Argentina.

1. Chaco forest

No systematic study on these fungi has been carried out. For this reason, knowledge about mycobiota in this area is poor; only 4 micromycete species were identified.

2. Misiones rain forest

Lignolytic and cellulolytic Basidiomycota species could be found in this forest, though a few anamorphic species were identified. These studies were done by Spegazzini (1898, 1908, 1919) who described 26 micro fungal species, of which 23 were found to be new species.

3. Tucumán-Bolivia forest (Yunga)

Despite the vast diversity of vascular plants in this region, as well as in the Misiones rain forest, anamorphic Ascomycota have not been studied yet. The early collections were performed by Spegazzini (1919) who described 4 species (3 then described as new species). Catania & Romero (2006) described Hyphomycetes and Coelomycetes species, associated with the bark and wood of *Podocarpus paltatorei* Pilg.

4. Andean Patagonian forest

In these forests, 107 species have been identified in soil, dead leaves, ligneous remains, and water courses. Identification revealed that 27 had been described as new species (Gamundí et al., 1977; Godeas et al., 1977; Gamundí et al., 1979; Arambarri, 1981; Arambarri et al., 1981; Gamundí et al., 1983; Arambarri & Spinedi, 1984; Godeas et al., 1985; Gamundí et al., 1987; Gamundí et al., 1988; Arambarri & Godeas, 1994a and b;

Godeas & Arambarri, 1993; Godeas & Arambarri, 1996).

5. "Monte"

No anamorphic species have been identified in these forests which represent one of the most arid regions in Argentina.

6. "Espinal"

Mycobiota of this region is poorly known, though several studies concerning anamorphic fungi in *Geoffroea decorticans* (Gill. ex Hook. et Arn.) Burkart were carried out; 22 species were identified, 3 of them were discovered to be new species (Bianchinotti, 1992, 1993, 1997, 1998).

7. Fluvial forests close to Paraguay, Paraná and Uruguay rivers

Several systematic studies on Hyphomycetes were carried out in Río Santiago, province of Buenos Aires. In this area, 71 species isolated from floating decaying material were identified; 23 of them were then described as new species (Arambarri et al., 1987a, 1987b, 1987c, 1987d, 1989; Arambarri & Cabello, 1990; Cabello, et al., 1990; Cazau, et al., 1990; Arambarri et al., 1991; Arambarri et al., 1992; Cazau et al., 1993; Cabello et al., 1993; Cabello et al., 1998).

8. "Talares" in the Pampean region

In this area, 110 species present in soil and dead leaves were identified (Cabello & Arambarri, 2002; Elíades et al., 2004; Allegrucci et al., 2005). Also, *Dematiocladium celtidis* (Crous et al., 2005)

Table 1. List of anamorphic Ascomycota species identified in each area of native forests of Argentina. Abreviations: 1, Chaco forest; 2, Misiones rain forest; 3, Tucumán-Bolivia forest (Yunga); 4, Andean-Patagonean forest; 5, "Monte"; 6, "Espinal"; 7, Fluvial forests close to Paraguay, Paraná and Uruguay rivers; 8, "Talares" in the Pampean region; *, new species.

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Acremonium butyri (Beyma) Gams (1971) (= *Cosmospora vilior*); Nectriaceae, Hypocreales, Sordariomycetidae				4				8
Acremonium cereale (Karst.) Gams (1971) (= *Gliomastix cerealis*); Anamorphic Ascomycetes, Hypocreales, Sordariomycetidae								8
Acremonium furcatum Moreau & Moreau ex Gams (1969); Anamorphic Hypocreales								8
Acremonium fusidioides (Nicot) Gams (1971); Anamorphic Hypocreales								8
Acremonium griseoviride (Onions & Barron) Gams (1971) (= *Sagenomella griseoviridis*); Anamorphic Sagenoma Trichocomaceae, Eurotiales				4				
Acremonium kiliense Grütz (1925); Anamorphic Hypocreales								8
Acremonium rutilum Gams (1971); Anamorphic Hypocreales								8
Acrogenospora sphaerocephala (Berk. & Broome) Ellis (1971); Anamorphic Farlowiella, Pleosporales, pleosporomycetidae							7	
* ***Acrophragmis laevispora*** Gamundí & Aramb. (1979); Anamorphic Ascomycetes				4				
Acrostalagmus luteoalbus (Link) Zare, Gams & Schroers (2004); Anamorphic Hypomyces, Hypocreacea, Hypocreales, Sordariomycetidae								8
Alternaria alternata (Fr.) Keissl. (1912); Anamorphic Lewia , Pleosporaceae, Pleosporales, Pleosporomycetidae				4		6		8
Alternaria tenuissima (Kunze) Wiltshire (1933); Anamorphic Lewia, Pleosporaceae, Pleosporales, Pleosporomycetidae								8

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Anungitea freagilis Sutton (1973); Anamorphic Ascomycetes				4				
Aphanocladium album (Preuss) Gams (1971); Anamorphic Ascomycetes				4				
* ***Aphanocladium tomentosum*** Aramb. (1981); Anamorphic Ascomycetes				4				
Arthrobotrys cladodes Drechsler (1937); Anamorphic Orbilia, Orbilliaceae, Orbilliales, Obilliomycetidae				4				
Arthrobotrys oligosporas; Anamorphic Orbilia , Orbilliaceae, Orbilliales, Obilliomycetidae								8
Arxiella terrestris Papendorf (1967); Anamorphic Ascomycetes							7	
Aspergillius niger Tiegh. (1867) (= *Aspergillus niger* var. *niger*); Anamorphic Emericella , Trichocomaceae, Eurotiales, Eurotiomycetidae				4				8
Aspergillus fischeri Wehmer (1907); Anamorphic Emericella, Trichocomaceae, Eurotiales, Eurotiomycetidae	1							
Aspergillus flavus Link (1809); Anamorphic Emericella, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				8
Aspergillus phaeocephalus Durieu & Mont.; Anamorphic Emericella, Trichocomaceae, Eurotiales, Eurotiomycetidae		2						
Aspergillus sidowii (Bain. & Start.) Thom & Church (1926); Anamorphic Emericella, Trichocomaceae, Eurotiales, Eurotiomycetidae								8
Aspergillus terreus Thom (1918); Anamorphic Emericella, Trichocomaceae, Eurotiales, Eurotiomycetidae								8
Aspergillus ustus (Bainier) Thom & Church (1926); Anamorphic Emericella, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				8
Aspergillus versicolor (Vuill.) Tirab. (1908); Anamorphic Emericella, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				
Avettaea salvadorae (Petr.) Abbas & Sutton (1988); Anamorphic Ascomycetes						6		
Bactrodesmium traversianum (Peyronel) Ellis (1959); Anamorphic Stuartella , Dotidiomycetes				4				
Beauveria bassiana (Bals. Criv.) Vuill. (1912), [RSD]; Anamorphic Clavicipitaceae, Hypocreales, Sordariomycetidae								8
Beltrania rhombica Penz. (1882); Anamorphic Ascomycetes							7	8
Beverwykella pulmonaria (Beverw.) Tubaki (1975); Anamorphic Ascomycetes							7	
Bipolaris spicifera (Bainier) Subram. (1971) (= *Cochliobolus spicifer*); Pleosporaceae								8
* ***Bloxamia cremea*** Aramb., Cabello & Cazau (1992); Anamorphic Bisporella, Elotiales, Leotiomycetidae							7	
Botrytis cinerea Pers. (1794); Anamorphic Botryotinia, Sclerotiniaceae, Helotiales, Leotiomycetidae				4				
Camposporium antennatum Harkn. (1884); Anamorphic Ascomycetes							7	
Camposporium antillanum Castañeda (1985); Anamorphic Ascomycetes							7	

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Camposporium pellucidum (Grove) Hughes (1951); Anamorphic Ascomycetes							7	
Campylospora chaetocladia Ranzoni (1953); Anamorphic Ascomycetes				4				
Candelabrum spinulosum Beverw. (1951); Anamorphic Ascomycetes				4				
* ***Capsicumyces delicatus*** Gamundí, Aramb. & Giaiotti (1979); Anamorphic Ascomycetes				4				
Cephalosporium acremonium Corda (1839) (= *Acremonium strictum*); Anamorphic Hypocreales		2						
* ***Cercospora balansae*** Speg.; Anamorphic Mycosphaerella , Mycosphaerelaceae, Capnodiales, Dothideomycetidae		2						
* ***Cercospora bignoniicola*** Speg.; Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae		2						
* ***Cercospora curcubitina*** Speg. (1886); Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae		2						
* ***Cercospora leprosa*** Speg. (1883); Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae		2						
* ***Cercospora myrticola*** Speg. (1886) (= *Pseudocercospora myrticola*); Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae		2						
* ***Cercospora solimani*** Speg. (1886) (= *Phaeoisariopsis griseola*); Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae		2						
* ***Cercospora stylosanthis*** Speg. (1883) Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae		2						
* *Cercospora vasconcelliae* Speg. (1886) Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae		2						
Chaetodiplodia hirta Sacc (1884); Anamorphic Ascomycetes						6		
Chaetopsina ramifera Matsush. (1971) (= *Kionochaeta ramifera*); Anamorphic Ascomycetes								8
* ***Chaetostroma migricans*** Speg. (1886); Anamorphic Ascomycetes		2						
* ***Chaetostroma subantarcticum*** Speg. (1923); Anamorphic Ascomycetes				4				
Chalara aurea (Corda) Hughes (1958); Anamorphic Ascomycetes				4				
* ***Chalara brevicaulis*** Aramb. & Gamundí (1981); Anamorphic Ascomycetes				4				
Chalara brevipes Nag Raj & Kendr. (1975); Anamorphic Ascomycetes				4				
* *Chalara dualis* Aramb. & Gamundí (1981); Anamorphic Ascomycetes				4				
Chalara fusidioides (Corda) Rabenh. (1844); Anamorphic Ascomycetes				4				
Chalara hughesii Nag Raj & Kendr. (1974); Anamorphic Ascomycetes				4				8
Chalara microspora (Corda) Hughes (1958); Anamorphic Ascomycetes				4				
Chalara minima Höhn. (1904); Anamorphic Ascomycetes								8

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Chalara nothofagi Nag Raj & Kendr. (1975); Anamorphic Ascomycetes				4				
Chalara nova-zelandiae Nag Raj & Kendr. (1975); Anamorphic Ascomycetes				4				
* ***Cheiromyces wrightii*** Mengasc., Cabello & Aramb. (1987); Anamorphic Ascomycetes							7	
Chloridium lignicola (Mangenot) Gams & Hol.-Jech. (1976); Anamorphic Chaetosphaeria, Chatosphaeriaceae, Chaetosphaeriales, Sordariomycetidae				4				
Chrysosporium xerophilum Pitt (1966); Anamorphic Onygenaceae								8
Chrysosporium pannorum (Link) Hughes (1958) (= *Geomyces pannorum*); Anamorphic Pseudogymnoascus, Pseudoeurotiaceae, Dotidiomycetes				4				
Chrysosporium queenslandicum Apinis & Rees (1976); Anamorphic Onygenaceae								8
Circinotrichum chathamiense McKenzie (1993); Anamorphic Ascomycetes								8
Circinotrichum maculiforme Nees (1817); Anamorphic Ascomycetes							7	8
Circinotrichum papakurae Hughes & Piroz. (1971); Anamorphic Ascomycetes								8
* ***Circinotrichum olivaceum*** (Speg.) Piroz. (1962); Anamorphic Ascomycetes								8
Cladosporium cladosporioides (Fresen.) Vries (1952); Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae				4				8
* ***Cladosporium cyttariicola*** Speg. (1923); Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae				4				
Cladosporium herbarum (Pers.) Link (1816); Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae				4		6		8
* ***Cladosporium ushuwaiense*** Speg. (1924); Anamorphic Mycosphaerella, Mycosphaerelaceae, Capnodiales, Dothideomycetidae				4				
Clathrosphaerina zalewskii Beverw. (1951); Anamorphic Hyaloscypha , Hyaloscyphaceae, Helotiales, Leotiomycetidae				4				
Clonostachys compactiuscula (Sacc.) Hawksw. & Gams (1975); Anamorphic Bionectriaceae							7	8
Clonostachys cylindrospora Höhn. (1952); Anamorphic Bionectriaceae								8
Clonostachys rogersoniana Schroers (2001); Anamorphic Bionectriaceae								8
Clonostachys rosea (Preuss) Mussat (1901); Anamorphic Bionectriaceae								8
Clonostachys setosa (Vittal) Schroers (2001); Anamorphic Bionectriaceae								8
* ***Coniothecium antarcticum*** Speg. (1888); Anamorphic Ascomycetes				4				
* ***Cordana andinopatagonica*** Gamundí & Aramb. (1979); Anamorphic Ascomycetes				4				
Cordana pauciseptata Preuss (1851); Anamorphic Ascomycetes				4				
* ***Cordella coniosporioides*** Speg. (1886); Anamorphic Apiospora, Apiosporaceae, Sordariomycetidae		2						

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
* ***Cordella spinulosa*** Speg. (1886); Anamorphic Apiospora, Apiosporaceae, Sordariomycetidae		2						
Curvularia lunata (Wakker) Boedijn (1933) (= *Cochliobolus lunatus*); Pleosporaceae								8
Cylindrocarpon didymum (Harting) Wollenw. (1926); Anamorphic Nectria, Nectriaceae, Hypocreales, Sordariomycetidae				4				8
Cylindrocarpon lucidum Booth (1966) (= *Neonectria lucida*); Nectriaceae, Hypocreales, Sordariomycetidae								8
Cylindrocarpon olidum (Wollenw.) Wollenw. (1916); Anamorphic Nectria, Nectriaceae, Hypocreales, Sordariomycetidae								8
Cylindrocarpon orthosporum (Sacc.) Wollenw. (1926); Anamorphic Nectria, Nectriaceae, Hypocreales, Sordariomycetidae								8
Cylindrocarpon tenue Bugnic. (1939) (= *Gliocladiopsis tenuis*); Anamorphic Calonectria, Nectriaceae, Hypocreales, Sordariomycetidae				4				
Cylindrocladium colhounii Peerally (1973) (= *Calonectria colhounii*); Nectriaceae, Hypocreales, Sordariomycetidae								8
* ***Cylindrocolla macrospora*** Aramb. & Gamundí (1981); Anamorphic Calloria, Helotiales, Leotimycetidae				4				
Cylindrocolla urticae (Pers.) Bonord. (1851) (= *Crocicreas cyathoideum* var. *cyathoideum*), Helotiaceae				4				
Cylindrotrichum clavatum Gams (1976); Anamorphic Chaetosphaeria, Chaetosphaeriaceae, Chaetophaeriales, Sordariomycetidae							7	
Cylindrotrichum ellisii Morgan-Jones (1977); Anamorphic Chaetosphaeria, Chaetosphaeriaceae, Chaetophaeriales, Sordariomycetidae							7	
* ***Cylindrotrichum menisporioides*** Cabello & Aramb. (1991); Anamorphic Chaetosphaeria, Chaetosphaeriaceae, Chaetophaeriales, Sordariomycetidae							7	
* ***Dactylaria appendiculata*** Cazau, Aramb. & Cabello (1990); Anamorphic Ascomycetes							7	
* ***Dactylaria argentina*** (Aramb. & Mengasc.) Cabello & Cazau (1990); Anamorphic Ascomycetes							7	
Dactylaria fusiformis Shearer & J.L. Crane (1971); Anamorphic Ascomycetes								8
* ***Dactylaria isthmospora*** Cabello, Mengasc. & Aramb. (1987); Anamorphic Ascomycetes							7	
* ***Dactylaria longidentata*** Cazau, Aramb. & Cabello (1990); Anamorphic Ascomycetes							7	
Dactylaria obtriangularia Matsush. (1975); Anamorphic Ascomycetes							7	8
Dactylaria parvispora (Preuss) de Hoog & Arx (1973); Anamorphic Ascomycetes				4			7	
Dactylella brochopaga Drechsler (1937) (= *Arthrobotrys brochopaga*); Anamorphic Orbilia, Orbiliaceae, Orbiliales, Orbiliomycetydae				4				
Dactylella parvicollis Drechsler (1962) (= *Gamsylella parvicollis*); Anamorphic Ascomycetes				4				
* ***Dematiocladium celtidis*** Allegr., Aramb., Cazau & Crous (2005); Nectriaceae, Hypocreales, Sordariomycetidae								8
Dendrosporium lobatum Plakidas & Edgerton ex Crane (1972); Anamorphic Ascomycetes							7	

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
* ***Dictyochaeta assamica*** (Agnihothr.) Aramb., Cabello & Mengasc. (1988); Anamorphic Chaetosphaeria, Chaetosphaeriaceae, Chaetophaeriales							7	
* ***Dictyochaeta gamundiae*** Aramb. & Cabello (1987); Anamorphic Chaetosphaeria, Chaetosphaeriaceae, Chaetophaeriales, Sordariomycetidae							7	
Dictyochaeta tripseptata (Matsush.) Castañeda (1986); Anamorphic Chaetosphaeria, Chaetosphaeriaceae, Chaetophaeriales, Sordariomycetidae							7	
* ***Dictyochaeta fuegiana*** Speg. (1923); Anamorphic Chaetosphaeria Chaetosphaeriaceae, Chaetophaeriales, Sordariomycetidae				4				
Dictyosporium elegans Corda (1838); Anamorphic Ascomycetes							7	
* ***Dictyosporium triramosum*** Aramb., Cabello & Cazau (2001); Anamorphic Ascomycetes							7	
Dinemasporium canadense Morgan-Jones (1971); Anamorphic Phomatospora, Xilariales, Xilariomycetidae						6		
* ***Diplocladiella taurina*** Cazau, Aramb. & Cabello (1993); Anamorphic Ascomycetes							7	
Doratomyces microsporus (Sacc.) Morton & Sm. (1963) (= *Cephalotrichum microsporum*); Anamorphic Microascaceae								8
Doratomyces stemonitis (Pers.) Morton & Sm. (1963) (= *Cephalotrichum stemonitis*); Anamorphic Ascomycetes								8
* ***Dwayaangam gamundia*** Cazau, Aramb. & Cabello (1993); Anamorphic Orbilia, Orbiliaceae, Orbiliales, Orbiliomycetydae							7	
* ***Edmundmasonia gamundiae*** Aramb. & Godeas (1994); Anamorphic Ascotaiwania, Sordariales, Sordariomycetidae				4				
Ellisiopsis gallesiae Bat. & Nascim. (1956) (= *Beltraniella portoricensis*); Anamorphic Leiosphaerella, Xilariales, Xilariomycetidae								8
Endophragmiella boewe (Crane) Hughes (1979); Anamorphic Lasiosphaeriaceae							7	
Endophragmiella oblonga (Matsush.) Hughes (1979); Anamorphic Lasiosphaeriaceae							7	
Endophragmiella socia (Ellis) Hughes (1979) (= *Sporidesmium socium*); Anamorphic Ascomycetes							7	
Epicoccum nigrum Link (1815); Anamorphic Ascomycetes				4		6		8
* ***Erysiphopsis myrothecioides*** Speg. (1910); Anamorphic Ascomycetes			3					
Fusariella atrovirens (Berk.) Sacc. (1884); Anamorphic Ascomycetes								8
Fusarium moniliforme Sheld. (1904) (= *Gibberella moniliformis*); Nectriaceae, Nectriaceae, Hypocreales, Sordariomycetidae								8
Fusarium lateritium Nees (1817) (= *Gibberella baccata*); Nectriaceae, Nectriaceae, Hypocreales, Sordariomycetidae						6		
Fusarium oxysporum Schltdl. (1824); Anamorphic Gibberella, Nectriaceae, Hypocreales, Sordariomycetidae								8
Fusarium semitectum Berk. & Ravenel (1875) (= *Fusarium incarnatum*); Anamorphic Gibberella, Nectriaceae, Hypocreales, Sordariomycetidae								8

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Fusarium solani (Mart.) Sacc. (1881) (= *Haematonectria haematococca*); Nectriacea, Nectriaceae, Hypocreales, Sordariomycetidae								8
Fusarium sulphureum Schltdl. (1824); Anamorphic Gibberella, Nectriaceae, Hypocreales, Sordariomycetidae				4				8
Geotrichum candidum Link (1809); Anamorphic Dipodascus, Dipodascaceae, Saccharomycetales, Sccharomycetidae								8
Gliocephalotrichum bulbilium Ellis & Hesselt. (1962); Anamorphic Leuconectria, Nectriaceae, Hypocreales, Sordariomycetidae							7	
Gliocladium penicillioides Corda (1840) (= *Sphaerostilbella aureonitens*); Hypocreaceae								8
Gliomastix cerealis (Karst.) Dickinson (1968); Anamorphic Ascomycetes				4				
Gliomatix murorum (Corda) Hughes (1958) (= *Gliomastix murorum* var. *murorum*); Anamorphic Ascomycetes				4				8
Gonatobotrys simplex Corda (1839) (= *Melanospora damnosa*); Ceratostomataceae						6		
Gonatobotryum apiculatum (Peck) Hughes (1953); Anamorphic Ascomycetes						6		
Gonytrichum macrocladum (Sacc.) Hughes (1951); Anamorphic Chaetosphaeria, Chaetosphaeriaceae, Chaetosphaeriales, Sordariomycetidae								8
* ***Graphium giganteum*** Speg. (1886); Anamorphic Microascaceae, Microascales, Hypocreomycetidae		2						
* ***Graphium verticillioide*** Speg. (1886); Anamorphic Microascaceae, Microascales, Hypocreomycetidae		2						
Gyoerffyella gemellipara Marvanová (1975); Anamorphic Ascomycetes				4				
Gyrothrix circinata (Berk. & Curtis) Hughes (1958); Anamorphic Ascomycetes							7	
Gyrothrix citricola Piroz. (1962); Anamorphic Ascomycetes								8
Gyrothix flagella (Cooke & Ellis) Piroz. (1962); Anamorphic Ascomycetes								8
Gyrothrix grisea Piroz. (1962); Anamorphic Ascomycetes							7	8
Gyrothrix pediculata Cunn. (1974); Anamorphic Ascomycetes				4				
Gyrothix podosperma (Corda) Rabenh. (1844); Anamorphic Ascomycetes						6		8
Gyrothix verticiclada (Goid.) Hughes & Piroz. (1971); Anamorphic Ascomycetes								8
Gyrothrix verticillata Piroz. (1962); Anamorphic Ascomycetes							7	8
* ***Harknessia antarctica*** Speg. (1881); Anamorphic Wuestneia, Diaporthales, Sordariomycetidae				4				
Helicodendron paradoxum Peyr. (1918); Anamorphic Hymenoscyphus, Helotiaceae, Helotiales, Leotiomycetidae							7	
Helicoma monilipes Ellis & Johnson (1894); Anamorphic Tubeufia, Tubeufiaceae, Pleosporales, Pleosporomycetidae							7	
* ***Helicomyces larviformis*** Speg. (1886); Anamorphic Tubeufiaceae, Pleosporales, Pleosporomycetidae		2						

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Helicoon pluriseptatum Beverw. (1954); Anamorphic Ascomycetes				4				
* ***Helicoon septatissimum*** Godeas & Aramb. (1996); Anamorphic Ascomycetes				4				
Helicosporium griseum (Bonord.) Sacc. (1886); Anamorphic Tubeufia, Tubeufiaceae, Pleosporales, Pleosporomycetidae							7	8
Helicosporium lumbricoides Sacc. (1877); Anamorphic Tubeufia, Tubeufiaceae, Pleosporales, Pleosporomycetidae							7	
* ***Helminthosporium pararaguayense*** Speg. (1886); Anamorphic Splanchnonema, Pleomassariceae, Pleosporales, Pleosporomycetidae		2						
* ***Helminthosporium guaraniticum*** Speg. (1886); Anamorphic Splanchnonema, Pleomassariceae, Pleosporales, Pleosporomycetidae		2						
Humicola fuscoatra Traaen (1914); Anamorphic Ascomycetes								8
Humicola grisea Traaen (1914); Anamorphic Ascomycetes								8
* ***Humicolopsis cephalosporioides*** Cabral & Marchand (1976); Anamorphic Ascomycetes				4				
* ***Hymenopsis argentinensis*** (Speg.) Sutton (1980); Anamorphic Ascomycetes						6		
Hyphodiscosia jaipurensis Lodha & Reddy (1974); Anamorphic Ascomycetes							7	
Idriella lunata Nelson & Wilh. (1956); Anamorphic Hymenoscyphus, Helotiaceae, Helotiales, Leotiomycetidae				4				8
Idriella tropicalis Lunghini & Rambelli (1978); Anamorphic Hymenoscyphus, Helotiaceae, Helotiales, Leotiomycetidae								8
Idriella variabilis Matsush. (1971); Anamorphic Hymenoscyphus, Helotiaceae, Helotiales, Leotiomycetidae								8
Isaria citrinula Speg.			3					
* ***Isaria edessicola*** Speg. (1910); Anamorphic Ascomycetes			3					
* ***Isthmolongispora asymmetrica*** Aramb. & Cabello (1987); Anamorphic Ascomycetes							7	
* ***Janetia bacilliformis*** Gamundí, Aramb. & Giaiotti (1979); Anamorphic Ascomycetes				4				
* ***Kostermansinda minima*** Cabello & Aramb. (1987); Anamorphic Ascomycetes							7	
Lateriramulosa bi-inflata Matsush. (1975); Anamorphic Ascomycetes							7	
Melanographium cookei Ellis (1963), Anamorphic Ascomycetes		2						
* ***Menispora fuegiana*** Aramb. & Godeas (1994); Anamorphic Chaetosphaeria, Chaetosphaeriaceae, Chaetosphaeriales, Sordariomycetidae				4				
Menisporopsis pirozynskii Varghese & Rao (1978); Anamorphic Ascomycetes							7	
Metarhizium anisopliae (Metschn.) Sorok?n (1883); Anamorphic Nectriaceae								8
Microsphaeropsis concentrica (Desm.) Morgan-Jones (1975) (= *Coniothyrium concentricum*); Anamorphic Leptosphaeria, Leptosphaeriaceae						6		
* ***Microsphaeropsis diffusa*** Bianchin. (2001); Anamorphic Paraphaeosphaeria, Montagnulaceae, Pleosporales, Pleosporomycetidae						6		

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
* ***Minimidochium parvum*** Cabello, Aramb. & Cazau (1998); Anamorphic Ascomycetes							7	
Mirandina brevisphora Matsush. (1971); Anamorphic Ascomycetes							7	
Mirandina corticola Arnaud ex Matsush. (1975); Anamorphic Ascomycetes							7	8
Mirandina tipica Matsush. (1971); Anamorphic Ascomycetes				4				
Monacrosporium gephyropagum (Drechsler) Subram. (1964) (= *Gamsylella gephyropaga*); Anamorphic Ascomycetes				4				
* ***Monochaetinula geoffroeana*** Bianchin. (1990); Anamorphic Ascomycetes						6		
Mycoleptodiscus terrestris (Gerd.) Ostaz. (1968); Anamorphic Omnidemptus, Magnaporthaceae, Sordariomycetidae								8
Myrothecium cinctum (Corda) Sacc. (1886); Anamorphic Hypocreales								8
* ***Myrothecium pulchellum*** Speg. (1886); Anamorphic Hypocreales		2						
Myrothecium lachastrae Sacc. (1882); Anamorphic Hypocreales								8
Myrothecium verrucaria (Alb. & Schwein.) Ditmar (1813); Anamorphic Hypocreales				4				
Nakataea sigmoidea (Cavara) Hara (1939) (= *Magnaporthe salvinii*); Magnaporthaceae, Sordariomycetidae							7	
Nigrospora sphaerica (Sacc.) Mason (1927) (= *Khuskia oryzae*); Trichosphaeriales								8
Oidiodendron tenuissimum (Peck) Hughes (1958); Anamorphic Byssoascus, Myxotrichaceae, Dotiriomycetidae				4				
Olpitrichum patulum (Sacc. & Berl.) Hol.-Jech. (1974); Anamorphic Ascomycetes								8
Paecilomyces lilacinus (Thom) Samson (1974); Anamorphic Byssochlamys, Trichocomaceae, Eurotiales, Eurotiomycetidae								8
Papulaspora sepedonioides Preuss (1851); Anamorphic Chaetomium, Chaetomiaceae, Sordariales, Sordariomycetidae				4				
Papulaspora viridis Matsush. (1975) (= *Pseudaegerita matsushimae*); Anamorphic Hyaloscypha, Hyaloscyphaceae, Helotiales, Leotimycetidae							7	
Penicillium anatolicum Stolk (1968); Anamorphic Eupenicillium,Trichocomaceae, Eurotiales, Eurotiomycetidae	1							
Penicillium brevicompactum Dierckx (1901); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				
Penicillium canescens Sopp (1912); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				
Penicillium chrysogenum Thom (1910) (= *Penicillium chrysogenum* var. *chrysogenum*); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales				4				8
Penicillium frequentans Westling (1912) (= *Penicillium glabrum*); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				8
Penicillium funiculosum Thom (1910); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				
Penicillium implicatum Biourge (1923); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Penicillium megasporum Orpurt & Fennell (1955); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae								8
Penicillium nigricans Bainier ex Thom (1930) (= *Penicillium janczewskii*); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				
Penicillium odoratum Chr. & Backus (1962) (= *Penicillium indonesiae*); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				
Penicillium palitans Westling (1911); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				
Penicillium purpurascens (Sopp) Biourge (1923) (= *Penicillium purpurescens*); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				
Penicillium restrictum Gilman & Abbott (1927); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae								8
Penicillium rubrum Sopp (1904); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae								8
Penicillium stipitatum Thom ex Emmons (1935) (= *Penicillium emmonsii*); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae	1							
Penicillium thomii Zalessky (1927); Anamorphic Eupenicillium, Trichocomaceae, Eurotiales, Eurotiomycetidae				4				8
Penicillium vermiculatum Dang. (1907) (= *Talaromyces flavus* var. *flavus*); Trichocomaceae	1							
Periconia byssoides Pers. (1801); Anamorphic Ascomycetes						6		8
Pestalotiopsis guepinii (Desm.) Steyaert (1949); Anamorphic Pestalosphaeria, Amphisphaeriaceae, Xylariales, Xylarimycetidae								8
Phaeostalagmus tenuissimus (Corda) Gams & Hol.-Jech. (1976); Anamorphic Ascomycetes				4				
* ***Phaeotrichoconis aquatica*** Mengasc. & Aramb. (1987); Anamorphic Ascomycetes							7	
Phaeotrichoconis minigelatinosa Roldán, Descals & Honrubia (1987); Anamorphic Ascomycetes							7	
Phaeotrichoconis foveolata (Pat.) Aramb. & Cabello (1989), Anamorphic Ascomycetes							7	
Phialophora fastigiata (Lagerb. & Melin) Conant (1937); Anamorphic Ascomycetes								8
Phoma herbarum Sacc. (1852) (= *Phoma exigua* var. *exigua*); Anamorphic Leptosphaeria, Leptosphaeriaceae, Pleosporales, Pleosporomycetidae								8
Phomopsis abdita (Sacc.) Traverso (1906); Anamorphic Diaporthe, Diaportaceae, Diaportales, Sordariomycetidae						6		
* ***Placodiplodia hilata*** Bianchin. (2001); Anamorphic Ascomycetes						6		
* ***Pleurocatena foliicola*** Aramb. & Gamundí (1981); Anamorphic Ascomycetes				4				
* ***Polyscytalum fuegianum*** (Speg.) Gamundí, Aramb. & Giaiotti (1977); Anamorphic Ascomycetes				4				
Polyschema olivaceum (Ellis & Everh.) Ellis (1976); Anamorphic Ascomycetes							7	
* ***Pseudorobillarda magna*** Bianchin. (1997); Anamorphic Ascomycetes						6		
* ***Pulvinotrichum album*** Gamundí, Aramb. & Giaiotti (1981); Anamorphic Ascomycetes				4				

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Pyriculariopsis parasitica (Sacc. & Berl.) Ellis (1971); Anamorphic Ascomycetes								8
Ramichloridium schulzeri (Sacc.) de Hoog (1977); Anamorphic Ascomycetes							7	8
Rhinocladiella mansoni (Castell.) Schol-Schwarz (1968) (= *Exophiala mansoni*); Anamorphic Capronia, Herpotrichiellaceae, Chaetothyriale				4				
* ***Rhinotrichum canescens*** (Speg.) Speg. (1886); Anamorphic Ascomycetes		2						
* ***Rosulomyces arthrosporioides*** Marchand & Cabral (1976); Anamorphic Ascomycetes				4				
Scolecobasidium dendroides Piroz. & Hodges (1973); Anamorphic Ascomycetes				4				
Scolicosporium fusarioides (Sacc.) Sutton (1975); Anamorphic Asteromassaria, Pleomssariaceae, Pleosporales, Pleosporomycetidae						6		
Scopulariopsis brevicaulis (Sacc.) Bainier (1907) (= Microascus brevicaulis); Microascaceae								8
Septoria nothofagi Jauch & Valla (1967); Anamorphic Mycosphaerella, Mycisphaereleceae, Capnodiales, Dothidiomycetidae				4				
Solosympodiella rigidientata Matsush. (1975); Anamorphic Ascomycetes								8
* ***Speiropsis aquatica*** Aramb., Cabello & Mengasc. (1987); Anamorphic Ascomycetes							7	
Spiropes harunganae (Hansf.) M.B. Ellis (1968); Anamorphic Ascomycetes								8
Sporidesmium adscendens Berk. (1840); Anamorphic Ascomycetes							7	8
* ***Sporidesmium aquaticum*** Cabello, Mengasc. & Aramb. (1989); Anamorphic Ascomycetes							7	
Sporidesmium aturbinatum (Hughes) Ellis (1958); Anamorphic Ascomycetes							7	
* ***Sporidesmium calyptratum*** Cabello, Cazau & Aramb. (1990); Anamorphic Ascomycetes							7	
* ***Sporidesmium filirostratum*** Cabello, Cazau & Aramb. (1990); Anamorphic Ascomycetes							7	
Sporidesmium hyalospermum (Corda) Hughes (1978), (= *Sporidesmiella hyalosperma* var. *hyalosperma*); Anamorphic Ascomycetes							7	
* ***Sporidesmium longisporum*** Cabello, Cazau & Aramb. (1990); Anamorphic Ascomycetes							7	
* ***Sporidesmium maxigelatinosum*** Cabello, Cazau & Aramb. (1993); Anamorphic Ascomycetes							7	
Sporidesmium minigelatinosum Matsush. (1971); Anamorphic Ascomycetes							7	
Sporidesmium pedunculatum (Peck) Ellis (1958); Anamorphic Ascomycetes							7	
* ***Sporidesmium spegazzinii*** Cabello, Cazau & Aramb. (1990); Anamorphic Ascomycetes							7	
Sporidesmium rubi Ellis (1958); Anamorphic Ascomycetes				4				
Sporocybe antarctica Speg.; (Anamorphic Ascomycetes				4				
* ***Sporotrichum peribebuyense*** Speg. (1886), (= *Beniowskia sphaeroidea*); Anamorphic Ascomycetes		2						

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
Stachybotrys chartarum (Ehrenb.) Hughes (1958); Anamorphic Ascomycetes								8
Stagonospora vitensis Unamuno (1929); Anamorphic Didymella, Pleosporales, Pleosporomycetidae						6		
Stemphylium vesicarium (Wallr.) Simmons (1969); Anamorphic Pleospora, Pleosporaceae, Pleosporales, Pleosporomycetidae								8
* ***Stilbum aurantiocinnabarinum*** (Speg.) Sacc. (1886); Chionosphaeraceae, Agaricostilbales, Agaricostilbomycetes		2	3					
Sympodiella gracilispora Matsush. (1975) (= Polyscytalum gracilisporum); Anamorphic Ascomycetes				4				
Tetracoccosporium aerium Misra & Srivast. (1976); Anamorphic Ascomycetes							7	
* ***Tetraploa abortiva*** Aramb. & Cabello (1987); Anamorphic Massarina, Massarinaceae, Pleosporales, Pleosporomycetidae							7	
Tetraploa aristata Berk. & Broome (1850); Anamorphic Massarina, Massarinaceae, Pleosporales, Pleosporomycetidae							7	
* ***Thozetella buxifolia*** Allegr., Cazau, Cabello & Aramb. (2004); Anamorphic Chaetosphaeria, Chaetospheriaceae, Chaetosphaeriales, Sordariomycetidadae								8
Tolypocladium cylindrosporum Gams (1971); Anamorphic Hypocreales				4				
Torula herbarum (Pers.) Link (1809); Anamorphic Ascomycetes				4				8
Trichocladium asperum Harz (1871); Anamorphic Ascomycetes				4				
* ***Trichocladium diversicoloratum*** Gamundí & Aramb. (1979); Anamorphic Ascomycetes				4				
Trichocladium opacum (Corda) Hughes (1952); Anamorphic Ascomycetes				4				
Trichoderma hamatum (Bonord.) Bainier (1906); Anamorphic Hypocrea, Hypocreaceae, Hypocreales, Sordariomycetidae				4				8
Trichoderma harzianum Rifai (1969); Anamorphic Hypocrea, Hypocreaceae, Hypocreales, Sordariomycetidae								8
Trichoderma koningii Oudem. (1902); Anamorphic Hypocrea, Hypocreaceae, Hypocreales, Sordariomycetidae				4				8
Trichoderma polysporum (Link) Rifai (1969); Anamorphic Hypocrea, Hypocreaceae, Hypocreales, Sordariomycetidae				4				
Trichoderma saturnisporum Hammill (1970); Anamorphic Hypocrea, Hypocreaceae, Hypocreales, Sordariomycetidae								8
Trichoderma viride Pers. (1794); Anamorphic Hypocrea, Hypocreaceae, Hypocreales, Sordariomycetidae				4				
Trichothecium roseun (Pers.) Link (1809); Anamorphic Ascomycetes				4				8
Trinacrium robustum Tzean & Chen (1989); Anamorphic Orbilia, Orbiliaceae, Orbiliales, Orbiliomycetidae						6		
Trinacrium subtile Riess (1850); Anamorphic Orbilia, Orbiliaceae, Orbiliales, Orbiliomycetidae						6		
* ***Triposporium foliicola*** Gamundí, Aramb. & Giaiotti (1978); Anamorphic Batistinula, Asterinaceae, Capnodiales, Dothideomycetidae				4				
Truncatella truncata (Lév.) Steyaert (1949); Anamorphic Broomella, Anphisphaericeae, Xylariales, Xylariomycetidae				4				

Table 1. (Continued).

Fungal species (anamorphic Ascomycota)	1	2	3	4	5	6	7	8
* ***Tubercularia antarctica*** Speg.; Anamorphic Nectria, Nectriaceae, Hypocreales, Sordariomycetidae				4				
* ***Tubercularia guaranitica*** Speg.; Anamorphic Nectria, Nectriaceae, Hypocreales, Sordariomycetidae		2						
* ***Tubercularia paraguaya*** Speg.; Anamorphic Nectria, Nectriaceae, Hypocreales, Sordariomycetidae		2						
Ulocladium atrum Preuss (1852); Anamorphic Pleosporaceae				4				8
Ulocladium botrytis Preuss (1851); Anamorphic Pleosporaceae				4				8
Verticillium albo-atrum Reinke & Berthold (1879); Anamorphic Hypomyces, Hypocreaceae, Hypocreales, Sordariomycetidae								8
Verticillium bulbillosum Gams & Malla (1971) (= *Pochonia bulbillosa*); Anamorphic Ascomycetes				4				
Verticillium cephalosporum Gams (1971) (= *Pochonia bulbillosa*); Anamorphic Ascomycetes				4				
Verticillium nigrescens Pethybr. (1919) (= *Gibellulopsis nigrescens*); Anamorphic Hypomyces, Hypocreaceae, Hypocreales, Sordariomycetidae								8
Verticillium psalliotae Treschew (1941) (= Lecanicillium psalliotae); Anamorphic Ascomycetes				4				
Volutella ciliata (Alb. & Schwein.) Fr. (1832); Anamorphic Pseudonectria, Nectriaceae, Hypocreales, Sordarimycetidae				4				8
* ***Volutella paraguayensis*** Speg.; Anamorphic Pseudonectria, Nectriaceae, Hypocreales, Sordarimycetidae		2						
Wardomyces inflatus (Marchal) Hennebert (1968); Anamorphic Microascus, Microascaceae, Microascales, Hypocreomycetidae								8
Wiesneriomyces javanicus Koord. (1907) (= *Wiesneriomyces laurinus*); Anamorphic Ascomycetes							7	
Xylohypha curta (Corda) Hughes (1960); Anamorphic Ascomycetes				4				
Xylohypha nigrescens (Pers.) Mason (1960); Anamorphic Ascomycetes				4				
Zygosporium echinosporum Bunting & Mason (1941); Anamorphic Ascomycetes								8
Zygosporium gibbum (Sacc., Rousseau & Bommer) Hughes (1958); Anamorphic Ascomycetes							7	
Zygosporium oscheoides Mont. (1842); Anamorphic Ascomycetes								8

was determined to be a new genus and species, and *Thozetella buxifolia* (Allegrucci et al., 2004) described as a new species.

CONCLUSIONS

Based on the available bibliography dealing with diversity of anamorphic Ascomycota species in different regions of native forests in Argentina, and beginning with the early collections done by Spegazzini to date, 344 fungal species have been identified, 81 of them (23,5 %) were found to be new to science.

A total of 31 families were recorded, 30 belonging to Ascomycota and only one to Basidiomycota. Trichocomaceae and Nectriaceae were the most abundant families, while the remaining recorded families were: Amphisphaeriaceae, Apiosporaceae, Asterinaceae. Bionectriaceae, Ceratostomataceae,

Chaetomiaceae, Chatosphaeriaceae, Chionosphaeraceae, Diaportaceae, Dipodascaceae, Helotiaceae, Herpotrichiellaceae, Hyaloscyphaceae, Hypocreacea, Lasiosphaeriaceae, Leptosphaeriaceae, Magnaporthaceae Massarinaceae, Microascaceae,, Montagnulaceae, Mycisphaereleceae, Mycosphaerelaceae, Myxotrichaceae, Onygenaceae, Orbilliaceae, Pleomassariceae, Pleosporaceae, Pseudoeurotiaceae, Sclerotiniaceae, and Tubeufiaceae.

Of the native forests here reported, the "Talares" in the Pampean region, followed by the Andean-Patagonian forests and fluvial forests of Paraguay, Paraná and Uruguay rivers, were the most studied areas, with the greatest record of species: 110, 107 and 71, respectively. The "Talares" exhibited the largest number of these fungal species, though only 1.8 % were identified as new ones.

The Andean-Patagonian forest has been extensively investigated from the mycological point of view, concerning not only anamorphic Ascomycota but also other taxonomical groups of fungi. In these forests newly described anamorphic Ascomycota species accounted for 25 % of the total. On the other hand, there are few records of fungal species in Chaco forest, Misiones rain forest, Tucumán-Bolivia forest (Yunga) and "Espinal". The only studies about this group of fungi in Misiones rain forest were done by Spegazzini (1898, 1908, 1919). Since then, no new collection has been carried out in spite of its being one of the richest areas in vascular plant diversity. A few records of saprotrophic micro fungi (26 species) are available, presenting a very large percentage of first described species (88%). On the other hand, no record about the occurrence of anamorphic fungi in "Monte" region is available.

The Andean Patagonean forest and the "Talares" do not have a vast diversity of vascular plant species concerning arboreal and understory components in comparison with other timberlands of Argentina such as Misiones jungle or the "Yungas". As diversity of the vascular plant community correlates to the soil microbiota (Bills et al., 2004), those highly diverse forest communities from Argentina are promising areas for mycological research, also considering the high rate of new species resultant from earlier studies done in those areas. In addition, forest communities from Argentina are very diverse not only in terms of biological composition and evolutionary origin, but also in abiotic factors, being interesting case studies for the mycological microbiota.

Rapidly developing regions like the Misiones rain forest which is one of the most valuable sites of wet subtropical ecosystems deserve immediate investigation to overcome the challenge of biodiversity loss.

ACKNOWLEDGEMENTS

This work was supported by CONICET, PIP No 5931, Argentina. A. M. Arambarri is a researcher of CONICET and M. N. Cabello is a researcher of CIC, N. Allegrucci is a recipient of a fellowship from CONICET.

BIBLIOGRAPHY

Allegrucci, N.; A. M. Arambarri, M. C. Cazau & M. N. Cabello. 2004. *Thozetella buxifolia* a new Hyphomycete from Argentina. *Mycotaxon* 90: 275-279.

Allegrucci, N.; M. C. Cazau, M. N. Cabello & A. M. Arambarri. 2005. Análisis de las Comunidades de Microhongos de la Hojarasca de *Scutia buxifolia* (Rhamnaceae) en el Este de la Provincia de Buenos Aires (Argentina). *Darwiniana* 43: 1-9.

Arambarri, A. M. 1981. Micoflora de la hojarasca de *Nothofagus oblicua* y *N. pumilio* I. *Boletín de la Sociedad Argentina de Botánica* 20: 19-30.

Arambarri, A. M. & M. N. Cabello. 1990. Estudio sistemático de los hyphomycetes del Río Santiago. IV. (Provincia de Buenos Aires, Argentina). *Boletín de la Sociedad Argentina de Botánica* 26: 143-148.

Arambarri, A. M.; M. N. Cabello & M. C. Cazau. 1991. Estudio sistemático de los hyphomycetes del Río Santiago. V. (Buenos Aires, Argentina). *Boletín de la Sociedad Argentina de Botánica* 27: 1-5.

Arambarri, A. M.; M. N. Cabello & M. C. Cazau. 1992. Hyphomycetes del Río Santiago: su presencia en un habitat con alto grado de contaminación. *Boletín de la Sociedad Argentina de Botánica* 28: 55-59.

Arambarri, A. M.; M. N. Cabello & A. Mengascini. 1987a. Estudio sistemático de los Hyphomycetes del río Santiago (Provincia de Buenos Aires Argentina). *Darviniana* 28: 293-301.

Arambarri, A. M.; M. N. Cabello & A. Mengascini. 1987b. Estudio sistemático de los Hyphomycetes del río Santiago *II Boletín de la Sociedad Argentina de Botánica* 25: 213-222.

Arambarri, A. M.; M. N. Cabello & A. Mengascini. 1987c. New hyphomycetes from Santiago river. (Buenos Aires province, Argentina). *Mycotaxon* 29: 29-35.

Arambarri, A. M.; M. N. Cabello & A. Mengascini. 1987d. New hyphomycetes from Santiago river. II: (Buenos Aires province, Argentina). *Mycotaxon* 30: 263-267.

Arambarri, A. M.; M. N. Cabello & A. Mengascini. 1989. Estudio sistemático de los Hyphomycetes del río Santiago. III. (Provincia de Buenos Aires, Argentina). *Boletín de la Sociedad Argentina de Botánica* 26: 1-6.

Arambarri, A. M. & A. M. Godeas. 1994a. *Edmundmasonia ga-*

mundiae sp. nov. A new Hyphomycete from Tierra del Fuego (Argentina). *Mycotaxon* 52: 91-94.

Arambarri, A. M.; I. J. Gamundí & A. M. Bucsinszky. 1981. Micoflora de la hojarasca de *Nothofagus dombeyi*. III. *Darwiniana* 23: 327-348.

Arambarri, A. M. & A. M. Godeas. 1994b. *Menispora fuegiana* sp. nov . A new Hyphomycete from Tierra del Fuego (Argentina). *Mycotaxon* 52: 95-98.

Arambarri, A. M. & H. Spinedi. 1984. Micoflora de la hojarasca de *Nothofagus pumilio*. III. *Darwiniana* 25: 321-330.

Bianchinotti, M. V. 1992. Contribución al conocimiento de micromicetes de la Argentina. Deuteromycotina en *Geoffroea decorticans* (Leguminosae). I. Hyphomycetes. *Boletín de la Sociedad Argentina de Botánica* 28: 7-9.

Bianchinotti, M. V. 1993. Contribución al conocimiento de micromicetes de la Argentina. Deuteromycotina en *Geoffroea decorticans* (Leguminosae). II. Celomycetes. *Boletín de la Sociedad Argentina de Botánica* 29: 3-6.

Bianchinotti, M. V. 1997. A new species of *Pseudorobillarda* from a leguminous tree species in Argentina. *Mycological. Research.* 101: 1233-1236.

Bianchinotti, M. V. 1998. Contribución al conocimiento de la micobiota Argentina. Micromicetes sobre *Geoffroea decorticans* (Leguminosae). III. *Boletín de la Sociedad Argentina de Botánica* 33: 149-155.

Bills, F. G.; M. Chistensen, M. Powell & G. Thorm. 2004. Saprobic soil fungi. In: Muller, G. M., Bills, F.G and M.S. Foster (eds) Biodiversity of Fungi: Inventory and Monitoring Methods. *Elsevier Academic press*, San Diego. Cap 13. 271-302.

Cabello, M. N. & A. M. Arambarri. 2002. Diversity in soil fungi from undisturbed and disturbed Celtis tala and *Scutia buxifolia* forests in the eastern Buenos Aires province (Argentina). *Microbiological. Research*. 157: 115-125.

Cabello, M. N.; A. M. Arambarri & M. C. Cazau. 1998. *Minimidochium parvum*, a new species of hyphomycete from Argentina. *Mycological. Research*. 102: 383-384.

Cabello, M. N.; M. C. Cazau & A. M. Arambarri. 1990. New hyphomycetes from Santiago river. III. (Buenos Aires province, Argentina). *Mycotaxon* 38: 15-19.

Cabello, M. N.; M. C. Cazau & A. M. Arambarri. 1993. Estudio sistemático de los hyphomycetes del Río Santiago. VI. (Buenos Aires, Argentina). *Boletín de la Sociedad Argentina de Botánica* 29: 11-14.

Carmaran C. C. & M. V. Novas. 2003. A review of Spegazzini taxa of Periconia and Sporocybe alter over 115 years. *Fungal Diversity* 14: 67.

Catania, M. & A. I. Romero. 2006. Micromicetes asociados con corteza y/o madera de Podocarpus parlatorei Pilg. en la Argentina III. Ascomycetes Anamórficos. *Lilloa* 43, de próxima aparición.

Cazau, M. C.; A. M. Arambarri & M. N. Cabello. 1990. New hyphomycetes from Santiago River. IV (Buenos Aires province, Argentina). *Mycotaxon* 38: 21-25.

Cazau, M. C.; A. M. Arambarri & M. N. Cabello. 1993. New hyphomycetes from Santiago River. VI (Buenos Aires province, Argentina). *Mycotaxon*. 46: 235-240.

Crous, P. W.; N. Allegrucci, A. M. Arambarri, M. C. Cazau, J. Z. Groenewald & M. J. Wingfield. 2005. *Dematiocldium celtidis* gen. sp. nov. (Nectriaceae, Hypocreales) a new genus from Celtis leaf litter in Argentina. *Mycological*. *Research*. 109: 833-840.

Elíades, L. A.; A. M. Bucsinszky & M. N. Cabello. 2004. Micobiota alcalofílica y alcalino-tolerante en suelos de bosques xéricos en una localidad de la Provincia de Buenos Aires, Argentina. *Boletín. Micológico.* 19: 41-47.

Frangi, J. L.; M. F. Arturi & J. F. Goya. 2004. Ecología y manejo de los bosques, en M. F. Arturi, J. L. Frangi (eds.) fungi: inventory and monitoring methods, pp 1-4. San Diego: Elsevier Academic Press.

Gamundí, I. J; A. M. Arambarri & A. M. Bucsinszky. 1979. Micoflora de la hojarasca de *Nothofagus dombeyi.* II. *Darwiniana* 22: 189-216.

Gamundí, I. J.; A. M. Arambarri, J. Frangi & H. Spinedi. 1983. Variación Estacional de la Micoflora en la Hojarasca de *Nothofagus dombeyi*. *Revista del Museo de La Plata* 13(74): 123-141.

Gamundí, I. J.; A. M. Arambarri & A. Giaiotti. 1977. Micoflora de la Hojarasca de *Nothofagus dombeyi*. *Darwiniana* 21: 81-114.

Gamundí, I. J.; A. M Arambarri & H. Spinedi. 1987. Sucesión fúngica en la hojarasca de *Nothofagus dombeyi*. *Revista del Museo de La Plata* 14(92): 89-116.

Gamundí, I. J.; A. M Arambarri & H. Spinedi. 1988. Comparación de la variación estacional de las micofloras de la hojarasca de *Nothofagus dombeyi* y *N, pumilio*. *Boletín de la Sociedad Argentina de Botánica* 25: 291-300.

Godeas A. M.; A. M. Arambarri, I. J. Gamundí & H. Spinedi. 1985. Descomposición de la Hojarasca en bosque de Lenga (*Nothofagus pumilio*). *Ciencia del suelo* 3(1-2): 68-77.

Godeas, A. M. & A. M. Arambarri. 1993. Flora Criptogámica de Tierra del Fuego, Orden Hyphomycetales 2, tomo XII, Fascículo 2. Buenos Aires: Fundación para la Educación, la Ciencia y la Cultura.

Godeas, A. M. & A. M. Arambarri. 1996. *Helicoon septatissimum* sp. nov., a new species from Tierra del Fuego (Argentina). *Mycotaxon* 60: 481-484.

Godeas, A. M.; S. G. Marchand. & D. Cabral. 1977. Flora Criptogámica de Tierra del Fuego, Orden Hyphomycetales, tomo X, Fascículo 1. Buenos Aires: Fundación para la Educación, la Ciencia y la Cultura.

Hawksworth, D. L. 2001. The magnitude of fungal diversity: the 1.5 million species estimate revisited. *Mycological Research* 105: 1422-1432.

Kennedy, A. C. & B. L. Gewin. 1997. Soil microbial diversity: present and future considerations. *Soil Science.* 162: 607-617.

Muller, G. M. & G. F. Bills. 2004. Introduction , in G. M. Muller, G. F. Bills, M. S. Foster (eds.), Biodiversity of fungi: inventory and monitoring methods, pp. 1-4. San Diego: Elsevier Academic Press.

Muller, G. M. & J. P. Schmit. (2007). Fungal biodiversity: What do we know? What can we predict? *Biodiversity Conservation* 16:1-5.

Romero, A. I. & C. C. Carmarán. 1997. Algunos micromicetes xilófilos de la región subtropical Argentina I. Misiones. *Boletín de la Sociedad Argentina de Botánica* 33: 59-67.

Spegazzini, C. 1898. Fungi Argentini. *Anales del Museo Nacional de Buenos Aires* 6: 80-365.

Spegazzini C. 1908. Fungi Aliquot Paulistani. *Revista del Museo de La Plata* 15 (2ª. serie, II): 7-48.

Spegazzini, C. 1919. Los hongos de Tucumán. Primera Reunión Nacional de la Sociedad Argentina de Ciencias Naturales, Tucumán, 1916: 254-274.

Turco, R. F.; A. C. Kennedy & M. D. Jawson. 1994. Microbial indicators of soil quality, in J. W. Doran (ed.), Defining soil quality for a sustainable enviroment, pp. 73-90 , special publication 35. Madison: Soil Science Society of America.