

Contribution to the Checklist of Soil-inhabiting Fungi in Korea

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A total of 82 genera and 271 species of soil-inhabiting fungi including saprobic, nematode-trapping, and arbuscular mycorrhizal but plant pathogenic fungi published hitherto in South Korea are listed with the information on geographic location, habitat, vegetation when available, and relevant literatures.

KEYWORDS: Arbuscular mycorrhizae, Biodiversity, Microfungi, Nematode-trapping fungi

Fungi are the major component of the soil microflora regardless of their smaller population compared to those of bacteria or actinomycetes, and act key roles in decomposition, recycling organic residues and soil fertility. Fungi isolated from soil or soil components are variously called such as soil-borne, soil-inhabiting, or simply soil fungi which comprise saprophytes, mycorrhizal symbionts and parasites of all major categories of fungal species.

From early 1940 to 1970's numerous works had been carried out worldwide on soil-inhabiting fungi. Various studies on soil mycoflora associated with crop fields or specific vegetation have also been taken place in Korea, and much information about the nature of soil fungal communities, especially those related with crops have been produced. Interest concerning "Biodiversity" has been amplified in various fields of biological science after the Convention of Biological Diversity held in Rio de Janeiro in 1992 drawn by the United Nations Conference on Environment and Development (UNEP, 1992). The field of mycology, in fact, was already conscious of the issue (Hawksworth, 1991) and some strategies and methodology on fungal diversity study have been proposed. Although they are very much biased on tropics (Hyde, 1997), they agreed the species inventory to be the basic tool for the natural science and be the footstep or basic requirement for further biodiversity studies in terms of ecosystems and populations. Therefore, extensive literature review has been initiated to gather records up to now on Korean soil mycoflora to provide the basic inventory for further studies in the area of soil fungi and to encourage more studies in fungal diversity.

Materials and Methods

All the major scientific journals published in Korea up to

the year of 2001 have been extensively investigated. Fungi on soil surfaces or from soil cores, mycorrhizal fungi, and nematode-tapping fungi were counted in the present paper but plant pathogenic fungi were excluded. The taxonomic status is followed by CABI Bioscience database (CABI Bioscience, 2002), and the authorities of taxa as suggested by Kirk and Ansell (1992). None of the specimens were re-examined to confirm their identity, and are thus

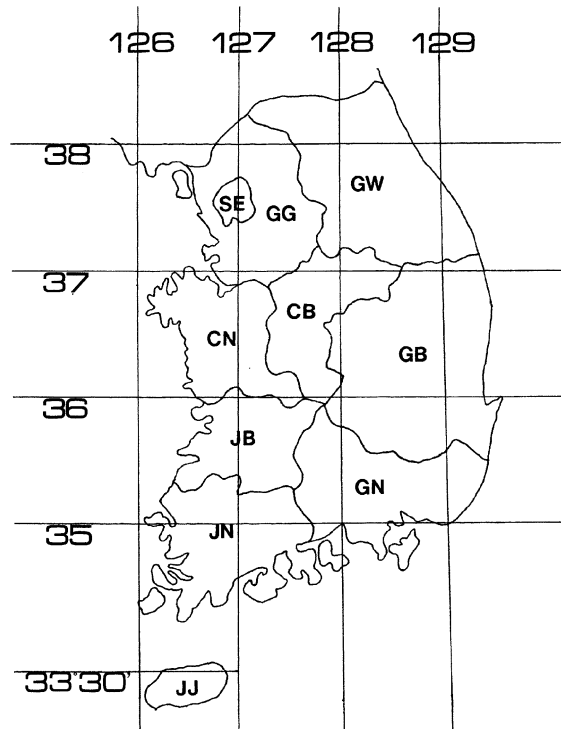


Fig. 1. Geographic information about Provinces in South Korea: CB for Chungcheongbuk-do, CN for Chungcheongnam-do, GG for Gyeonggi-do, GB for Gyeongsangbuk-do, GN for Gyeongsangnam-do, GW for Gangwon-do, JB for Jeollabuk-do, JN for Jeollanam-do, JJ for Jeju-do, and SE for Seoul.

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given as originally recorded. Fungi identified as species in the original paper are treated as a species. Geographic information was derived by provincial areas (Fig. 1). LocU indicates where the locality is unspecified in the original paper. Habitats are mostly followed by original description except for agricultural fields. Rice-growing field was described as paddy field, other vegetable-growing field as upland with the name of crops when available, and greenhouse. HabU is used when there was no habitat information available.

Checklist. The fungi are divided in major groups as mitosporic fungi, Ascomycota, Zygomycota. Species are alphabetically listed followed by the information on locality, habitats, vegetation if available, and related literatures.

Mitosporic fungi

- Acremonium* sp. - SE, paddy field (Min *et al.*, 1987) - CB, upland (Lee *et al.*, 1987a) - GW, forest (Hong and Min, 1982) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Alternaria* sp. - GG, upland (Lee *et al.*, 1987b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990).
- Alternaria alternata* (Fr.) Keissl. - GB, SE, HabU (Min *et al.*, 1980b) - JB, sea soil (Hong and Min, 1981) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Alternaria cheiranthi* (Lib.) P. C. Bolle - GG, HabU (Min, 1985).
- Alternaria chlamydospora* Mouch. - GG, HabU (Min, 1985).
- Arthrobotrys* sp. - GG, upland, *Panax ginseng* (Yoo *et al.*, 1981).
- Arthrobotrys arthrobotryoides* (Berl.) Lindau - GN, HabU, nematode trapping (Jeong, 1987) - CN, HabU, nematode trapping (Kim *et al.*, 1997) - GN, GB, greenhouse, nematode trapping (Kim *et al.*, 2001).
- Arthrobotrys brochopaga* (Drechsler) N.C. Schenck, W.B. Kendr. & Pramer - LocU, HabU, nematode trapping (Han *et al.*, 1990).
- Arthrobotrys conoides* Drechsler - LocU, upland, *Panax ginseng* (Park and Park, 1984) - GN, HabU, nematode trapping (Jeong, 1987) - GB, HabU, nematode trapping (Kim *et al.*, 1997) - GN, GB, mountain, upland, greenhouse, nematode trapping (Kim *et al.*, 2001).
- Arthrobotrys dactyloides* Drechsler - LocU, HabU, nematode trapping (Han *et al.*, 1990) - CB, HabU, nematode trapping (Kim *et al.*, 1997) - GN, GB, mountain, greenhouse, nematode trapping (Kim *et al.*, 2001).
- Arthrobotrys oligospora* Fresen. - GN, HabU, nematode trapping (Jeong, 1987) - CB, HabU, nematode trapping (Kim *et al.*, 1997) - GN, GB, mountain, paddy field, upland, greenhouse, nematode trapping (Kim *et al.*, 2001).
- Arthrobotrys superba* Corda - GN, GB, greenhouse, nematode trapping (Kim *et al.*, 2001).
- Arthrobotrys vermicola* (R. C. Cooke & Satchuth.) Rifai - CN, HabU, nematode trapping (Kim *et al.*, 1997).
- Aspergillus clavatus* Desm. - CN, paddy field (Cho and Cheon, 1962) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Aspergillus fischeri* Wehmer - CN, paddy field (Cho and Cheon, 1962).
- Aspergillus flavus* Link - GG, SE, paddy field (Min *et al.*, 1987) - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GW, forest, *Pinus densiflora* (Song and Min, 1991) - CB, GB, HabU (Min *et al.*, 1980b).
- Aspergillus flavus* var. *columnaris* Raper & Fennell - CB, SE, HabU (Min *et al.*, 1980b) - JB, sea soil (Hong and Min, 1981) - SE, paddy field (Min *et al.*, 1982b).
- Aspergillus fumigatus* Fresen. - CN, paddy field (Cho and Cheon, 1962) - CN, forest, *Phyllostachys reticulata* (Kim, 1979) - CB, GB, SE, HabU; GG, forest; JJ, forest (Min *et al.*, 1980b) - GG, SE, paddy field (Min *et al.*, 1987) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Aspergillus giganteus* Wehmer - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Aspergillus japonicus* Saito - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Aspergillus japonicus* var. *japonicus* Saito - GB, SE, HabU (Min *et al.*, 1980b) - JB, upland (Hong and Min, 1981).
- Aspergillus niger* Tiegh. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GW, forest, *Pinus densiflora* (Song and Min, 1991) - CB, GB, SE, HabU (Min *et al.*, 1980b) - JB, sea soil (Hong and Min, 1981) - SE, paddy field (Min *et al.*, 1982b) - GN, greenhouse (Lee *et al.*, 2000).
- Aspergillus ochraceus* G. Wilh. - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Aspergillus oryzae* (Ahlb.) E. Cohn - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GG, forest; CB, GB, HabU (Min *et al.*, 1980b) - SE, paddy field (Min *et al.*, 1982b).
- Aspergillus repens* (Corda) Sacc. - SE, paddy field (Min *et al.*, 1987).
- Aspergillus* sp. - LocU, upland (Lee *et al.*, 1987a) - GG, upland (Lee *et al.*, 1987b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - GN, greenhouse (Lee *et al.*, 2000).
- Aspergillus sydowii* (Bainier & Sartory) Thom & Church - GN, SE, HabU (Min *et al.*, 1980b).
- Aspergillus terreus* Thom - CN, paddy field (Cho and Cheon, 1962) - GG, SE, paddy field (Min *et al.*, 1987) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Aspergillus versicolor* (Vuill.) Tirab. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GN, SE, HabU (Min *et al.*, 1980b) - GG, SE, paddy field

- (Min *et al.*, 1987) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Aureobasidium* sp. - CB, upland (Lee *et al.*, 1987a).
- Botryotrichum* sp. - CB, upland (Lee *et al.*, 1987a).
- Botrytis* sp. - LocU, upland (Lee *et al.*, 1990).
- Cephalosporium* sp. - LocU, upland (Lee *et al.*, 1990).
- Chryosporium pannorum* (Link) S. Hughes - SE, HabU (Min *et al.*, 1980b).
- Chryosporium* sp. - LocU, upland (Lee *et al.*, 1990).
- Cladosporium cladosporioides* (Fresen.) G. A. de Vries - SE, paddy field (Min *et al.*, 1982b) - SE, paddy field (Min *et al.*, 1987).
- Cladosporium colocasiae* Sawada - GG, HabU (Min, 1985).
- Cladosporium herbarum* (Pers.) Link - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GG, greenhouse, *Arachis hypogaea* (Kim *et al.*, 1992).
- Cladosporium* sp. - GG, paddy field (Min *et al.*, 1987) - GG, upland (Lee *et al.*, 1987b) - LocU, upland (Lee *et al.*, 1990) - GN, greenhouse (Lee *et al.*, 2000).
- Cladosporium sphaerospermum* Penz. - GG, paddy field (Min *et al.*, 1987) - GG, HabU (Min, 1985).
- Curvularia lunata* (Wakker) Boedijn - GN, greenhouse (Lee *et al.*, 2000).
- Curvularia geniculata* (Tracy & Earle) Boedijn - CN, paddy field (Cho and Cheon, 1962).
- Cylindrocarpon* sp. - GN, upland (Lee *et al.*, 1987a).
- Dactylella lobata* Dudd. - GN, HabU, nematode trapping (Jeong, 1987).
- Doratomyces microsporus* (Sacc.) F. J. Morton & G. Sm. - GN, HabU (Min *et al.*, 1980b) - GN, greenhouse (Lee, 2001).
- Epicoccum* sp. - LocU, upland (Lee *et al.*, 1990).
- Epicoccum purpurascens* Ehrenb. - JN, upland (Lee *et al.*, 1987a).
- Fusarium oxysporium* Schltld. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - SE, paddy field (Min *et al.*, 1982b) - GN, nematode trapping (Jeong, 1987).
- Fusarium solani* (Mart.) Sacc. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Fusarium* sp. - JB, sea, upland, forest (Hong and Min, 1981). - GW, forest (Hong and Min, 1982) LocU, upland (Lee *et al.*, 1987a) - GG, upland (Lee *et al.*, 1987b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990).
- Geotrichum candidum* Link - GN, upland (Lee *et al.*, 1987a).
- Gliocladium roseum* Bainier - JB, forest, sea soil (Hong and Min, 1981).
- Gliocladium* sp. - LocU, upland (Lee *et al.*, 1990).
- Gliocladium solani* (Harting) Petch - GG, forest (Lee, 2001).
- Gliocladium viride* Matr. - GN, upland (Lee *et al.*, 1987a).
- Gonyotrichum macrocladum* (Sacc.) S. Hughes - GN, upland (Lee and Go, 2000).
- Harposporium* sp. - GG, upland, *Panax ginseng* (Yoo *et al.*, 1981) - GN, GB, upland, greenhouse (Kim *et al.*, 2001).
- Harposporium anguillulae* Lohde - GN, HabU, nematode trapping (Jeong, 1987).
- Helminthosporium nodulosum* Berk. & M. A. Curtis - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Hormodendrum pallidum* Oudem. - JN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Humicola* sp. - LocU, upland (Lee *et al.*, 1987a) - GG, upland (Lee *et al.*, 1987b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990).
- Humicola veronae* De Bert. - GN, greenhouse (Lee, 2001).
- Malbranchea pulchella* var. *sulfurea* (Miehe) Cooney & R. Emers. - SE, paddy field (Min *et al.*, 1987).
- Monacrosporium cionopagum* (Drechsler) Subram. - CN, upland, *Capsicum annuum* (Kim *et al.*, 1992).
- Monacrosporium ellipsosporum* (Grove) R.C. Cooke & C.H. Dickinson. - GN, HabU, nematode trapping (Jeong, 1987) - GN, GB, upland, greenhouse, nematode trapping (Kim *et al.*, 2001).
- Monacrosporium gephyrophagum* (Drechsler) Subram. - GG, upland, *Brassica campestris* (Kim *et al.*, 1992).
- Monacrosporium* sp. - GN, GB, mountain, greenhouse (Kim *et al.*, 2001).
- Monacrosporium thaumasium* (Drechsler) de Hoog & Oorschot. - LocU, HabU, nematode trapping (Park *et al.*, 1993) - GN, GB, upland, greenhouse, nematode trapping (Kim *et al.*, 2001).
- Monilia sitophila* (Mont.) Sacc. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Mycogone* sp. - LocU, upland (Lee *et al.*, 1990).
- Papulaspora* sp. - LocU, upland (Lee *et al.*, 1990).
- Paecilomyces lilacinus* (Thom) Samson - JB, HabU (Hong and Min, 1981).
- Paecilomyces variotii* Bainier - SE, paddy field (Min *et al.*, 1982b).
- Penicillium aurantiocanadidum* Dierckx & Biourge - GG, HabU (Lee, 1992).
- Penicillium bifforme* Thom - CN, paddy field (Cho and Cheon, 1962).
- Penicillium brefeldianum* B. O. Doidge - CN, paddy field (Cho and Cheon, 1962) - SE, paddy field (Min *et al.*, 1982b).
- Penicillium brevicompactum* Dierckx - SE, HabU (Min *et al.*, 1980a).
- Penicillium charlesii* G. Sm. - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Penicillium charlesii* var. *rapidum* S. Abe. - SE, HabU (Min *et al.*, 1980a).
- Penicillium chrysogenum* Thom - GB, HabU (Min *et al.*,

- 1980a) - CN, forest, *Phyllostachys reticulata* (Kim and Lee, 1980).
- Penicillium citrinum* Thom. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GB, HabU (Min *et al.*, 1980a).
- Penicillium commune* Thom - CN, paddy field (Cho and Cheon, 1962) - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium corylophilum* Dierckx - CN, paddy field (Cho and Cheon, 1962) - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium chrysogenum* Thom - JB, forest (Hong and Min, 1981).
- Penicillium cyclopium* Westling - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GB, HabU (Min *et al.*, 1980a) - SE, paddy field (Min *et al.*, 1987) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Penicillium decumbens* Thom - GB, HabU (Min *et al.*, 1980a) - SE, paddy field (Min *et al.*, 1982b).
- Penicillium echinulatum* Fassat. - GW, forest, *Pinus densiflora* (Song and Min, 1991) - GG, HabU (Lee, 1992).
- Penicillium frequentans* Westling - CN, JN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - SE, HabU (Min *et al.*, 1980a) - JB, sea (Hong and Min, 1981) - SE, paddy field (Min *et al.*, 1982b) - GG, SE, paddy field (Min *et al.*, 1987) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Penicillium funiculosum* Thom - JN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - JB, upland (Hong and Min, 1981) - SE, paddy field (Min *et al.*, 1982b) - SE, paddy field (Min *et al.*, 1987) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Penicillium granulatum* Bainier - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Penicillium griseofulvum* Dierckx - GG, HabU (Lee, 1992).
- Penicillium implicatum* Biourge - SE, HabU (Min *et al.*, 1980a) - JB, HabU (Hong and Min, 1981) - SE, paddy field (Min *et al.*, 1982b).
- Penicillium janthinellum* Biourge - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - CB, GB, GG, HabU (Min *et al.*, 1980a) - SE, paddy field (Min *et al.*, 1982b) - JB, forest (Hong and Min, 1981) - GW, forest (Hong and Min, 1982) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Penicillium javanicum* J. F. H. Beyma - CN, paddy field (Cho and Cheon, 1962).
- Penicillium lilacinum* Thom - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Penicillium miczynskii* Zalewski - CN, paddy field (Cho and Cheon, 1962).
- Penicillium nigricans* Bainier ex Thom - CN, JN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Penicillium notatum* Westling - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GB, SE, HabU (Min *et al.*, 1980a).
- Penicillium ochrysogenum* (epithet not exist) - CN, forest, *Phyllostachys reticulata* (Kim, 1979).
- Penicillium oxalicum* Currie & Thom - SE, paddy field (Min *et al.*, 1982b) - GW, forest, *Pinus densiflora* (Song and Min, 1991) - GB, SE, HabU (Min *et al.*, 1980a).
- Penicillium pallidum* G. Sm. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium piceum* Rapper & Fennell - SE, paddy field (Min *et al.*, 1982b) - GG, SE, paddy field (Min *et al.*, 1987).
- Penicillium pseudocasei* S. Abe ex G. Sm. - CB, HabU (Min *et al.*, 1980a).
- Penicillium puberulum* Bainier - GW, forest, *Pinus densiflora* (Song and Min, 1991) - JJ, forest (Lee, 1992).
- Penicillium purpurogenum* var. *rubri-sclerotium* Thom - SE, HabU (Min *et al.*, 1980a).
- Penicillium purpurascens* (Sopp) Biourge - SE, HabU (Min *et al.*, 1980a).
- Penicillium raistrickii* G. Sm. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium restrictum* J. C. Gilman & E. V. Abbott - CN, paddy field (Cho and Cheon, 1962) - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium roqueforti* Thom - SE, paddy field (Min *et al.*, 1982b).
- Penicillium rubrum* Sopp - GW, forest, *Pinus densiflora* (Song and Min, 1991) - GG, HabU (Lee, 1992).
- Penicillium rugulosum* Thom - JJ, forest (Lee, 1992).
- Penicillium sclerotiorum* Beyma - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium* sp. - LocU, upland (Lee *et al.*, 1987a) - GG, upland (Lee *et al.*, 1987b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - LocU, upland, greenhouse (Kim *et al.*, 1992).
- Penicillium spiculisorum* Lehman - CN, paddy field (Cho and Cheon, 1962).
- Penicillium spinulosum* Thom - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - GG, HabU (Lee, 1992).
- Penicillium steckii* Zalewski - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium stipitatum* Thom ex C. W. Emmons - CN, paddy field (Cho and Cheon, 1962).
- Penicillium stoloniferum* Thom - SE, HabU (Min *et al.*, 1980a).
- Penicillium tardum* Thom - CN, paddy field (Cho and Cheon, 1962).
- Penicillium thomi* Maire - JN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium variabile* Sopp - GW, forest, *Pinus densiflora* (Song and Min, 1991) - JJ, forest (Lee, 1992).

- Penicillium velutinum* J. F. H. Beyma - CN, paddy field (Cho and Cheon, 1962) - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Penicillium verrucosum* Dierckx - SE, paddy field (Min *et al.*, 1982b) - GG, SE, paddy field (Min *et al.*, 1987).
- Penicillium verruculosum* Peyronel - CN, paddy field (Cho and Cheon, 1962).
- Penicillium viridicatum* Westling - GW, forest, *Pinus densiflora* (Song and Min, 1991) - JJ, forest (Lee, 1992).
- Penicillium waksmanii* Zalewski - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Phoma* sp. - GG, upland (Lee *et al.*, 1987b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - LocU, upland (Lee *et al.*, 1987a).
- Phytophthora* sp. - GG, upland (Lee *et al.*, 1987b) - LocU, upland (Lee *et al.*, 1990).
- Pythium* sp. - SE, paddy field (Min *et al.*, 1982b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990).
- Rhizoctonia* sp. - LocU, upland (Lee *et al.*, 1990).
- Rhodotorula rubra* (Schimon) F. C. Harrison - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Sclerotinia* sp. - LocU, upland (Lee *et al.*, 1990).
- Scopulariopsis* sp. - GG, upland (Lee *et al.*, 1987b) - LocU, upland (Lee *et al.*, 1990).
- Sporotrichum thermophile* Apinis - GG, paddy field (Min *et al.*, 1987).
- Stachybotrys* sp. - LocU, upland (Lee *et al.*, 1990) - LocU, upland (Lee *et al.*, 1987a).
- Stemphylium* sp. - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990).
- Spicaria elegans* (Corda) Harz - CN, paddy field (Cho and Cheon, 1962).
- Thermomyces* sp. - LocU, upland (Lee *et al.*, 1990).
- Torula* sp. - LocU, upland (Lee *et al.*, 1990).
- Torulomyces* sp. - LocU, upland (Lee *et al.*, 1990).
- Trichoderma aureoviride* Rifai - SE, HabU (Lee and Lee, 1980) - SE, paddy field (Min *et al.*, 1982b).
- Trichoderma hamatum* (Bonord.) Bainier - SE, HabU (Lee and Lee, 1980) - CN, GG, upland, *Panax ginseng* (Lee and Lee, 1980) - CN, forest (Rhee and Hong, 1982, 1984).
- Trichoderma harzianum* Rifai - SE, HabU (Lee and Lee, 1980) - CN, GG, upland, *Panax ginseng* (Lee and Lee, 1980) - JB, sea, upland, forest (Hong and Min, 1981) - CN, forest (Rhee and Hong, 1982) - SE, paddy field (Min *et al.*, 1982b).
- Trichoderma koningii* Oudem. - CN, paddy field (Cho and Cheon, 1962) - SE, HabU (Lee and Lee, 1980) - GG, forest; - SE, HabU (Min *et al.*, 1980b) - JB, Forest (Hong and Min, 1981). - SE, paddy field (Min *et al.*, 1982b) - CN, forest (Rhee and Hong, 1982, 1984).
- Trichoderma lignorum* (Tode) Harz - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Trichoderma* sp. - GG, upland (Lee *et al.*, 1987b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - LocU, upland (Kim *et al.*, 1992) - CN, CB, GB, upland, *Panax ginseng* (Shin and Lee, 1986) - LocU, upland (Lee *et al.*, 1987a) - GN, greenhouse (Lee *et al.*, 2000).
- Trichoderma polysporum* (Link) Rifai - CN, forest (Rhee and Hong, 1982, 1984).
- Trichoderma pseudokoningii* Rifai - CN, upland, *Panax ginseng* (Lee and Lee, 1980).
- Trichoderma viride* Pers. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - CN, GG, upland, *Panax ginseng* (Lee and Lee, 1980) - GB, HabU (Min *et al.*, 1980b) - CN, forest (Rhee and Hong, 1982, 1984).
- Trichothecium* sp. - LocU, upland (Lee *et al.*, 1990).
- Verticillium chlamydosporium* Goddard - GN, greenhouse (Lee, 2001).
- Verticillium albo-atrum* Reinke & Berthold - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
- Verticillium* sp. - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - LocU, upland (Lee *et al.*, 1987a).
- Volutella* sp. - LocU, upland (Lee *et al.*, 1990).
- Wardomyces* sp. - LocU, upland (Lee *et al.*, 1990).
- Ascomycota**
- Eurotiales**
- Trichocomaceae**
- Emericella nidulans* (Eidam) Vuill. - GG, forest; CB, CN, HabU (Min *et al.*, 1980b) - JB, sea soil (Hong and Min, 1981).
- Emericella nidulans* var. *nidulans* (Eidam) Vuill. - GG, paddy field (Min *et al.*, 1987).
- Eupenicillium javanicum* (J. F. H. Beyma) Stolk & D. B. Scott - GB, SE, HabU (Min *et al.*, 1980a) - JB, HabU (Hong and Min, 1981) - SE, paddy field (Min *et al.*, 1982b) - GG, upland (Min *et al.*, 1987).
- Eupenicillium* sp. - GG, SE, paddy field (Min *et al.*, 1987) - GN, upland (Lee *et al.*, 1987) - LocU, upland (Lee *et al.*, 1990).
- Eurotium repens* de Bary - CN, forest, *Phyllostachys reticulata* (Kim, 1979) - GG, HabU (Min, 1986)
- Neosartorya fischeri* var. *fischeri* (Wehmer) Malloch & Cain - SE, paddy field (Min *et al.*, 1987).
- Talaromyces emersonii* Stolk - GW, forest, *Pinus densiflora* (Song and Min, 1991).
- Talaromyces flavus* var. *flavus* (Klöcker) Stolk & Samson - SE, paddy field (Min *et al.*, 1982b) - GG, paddy field (Min *et al.*, 1982a) - SE, upland (Min *et al.*, 1987).
- Talaromyces helicus* var. *major* Stolk & Samson - GG, paddy field (Min *et al.*, 1987).
- Talaromyces panasenkoi* Pitt - GG, paddy field (Min *et al.*, 1982a).

Talaromyces sp. - GG, SE, paddy field (Min *et al.*, 1981).
Talaromyces stipitatus (Thom) C. R. Benj. - SE, paddy field (Min *et al.*, 1982b) - SE, GG, paddy field (Min *et al.*, 1982a) - GG, SE, paddy field (Min *et al.*, 1987) - GW, forest, *Pinus densiflora* (Song and Min, 1991).
Talaromyces trachyspermus (Samson & Abdel-Fattah) Yaguchi & Udagawa - SE, paddy field (Min *et al.*, 1982b) SE, paddy field (Min *et al.*, 1982a) - GN, greenhouse (Lee, 2001).
Talaromyces ucrainicus (Panas.) Udagawa - SE, paddy field (Min *et al.*, 1982b) - SE, paddy field (Min *et al.*, 1987).
Talaromyces vermiculatus (P. A. Dang.) C. R. Benj. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).
Thermoascus aurantiacus Miehe - GW, forest, *Pinus densiflora* (Song and Min, 1991).

Hypocreales

Hypocreaceae

Hypomyces chrysospermus Tul. & C. Tul. - JN, upland (Lee *et al.*, 1987a).

Nectriaceae

Calonectria sp. - LocU, upland (Lee *et al.*, 1990).

Nectria sp. - CB, upland (Lee *et al.*, 1987).

Incertae sedis

Emericellopsis mirabilis (Malan) Stolk - GN, Greenhouse (Lee, 2001).

Emericellopsis terricola J.F.H. Beyma - SE, paddy field (Min *et al.*, 1982b).

Microascales

Microascaceae

Petriella sordida (Zukal) G. L. Barron & J. C. Gilman - GN, greenhouse (Lee *et al.*, 1998).

Onygenales

Arthrodermataceae

Arthroderma sp. - CB, upland (Lee *et al.*, 1987a).

Nannizzia grubya Georg, Ajello, Friedman & S. A. Brinkm. - JN, upland (Lee *et al.*, 1987a).

Onygenaceae

Emmonsia capsulata Kwon-Chung - CB, upland (Lee *et al.*, 1987a).

Pleosporales

Sporormiaceae

Westerdykella multispora (Saito & Minoura) Cejp & Milko - SE, paddy field (Min *et al.*, 1982b) - SE, GG, GW, paddy field (Min *et al.*, 1982a) - GW, forest, *Pinus densiflora* (Song and Min, 1991).

Sordariales

Chaetomiaceae

Corynascus sepedonium (C. W. Emmons) Arx - GN,

greenhouse (Lee *et al.*, 1998).

Chaetomium brasiliense Bat. & Pontual - GN, greenhouse (Lee *et al.*, 1998).

Chaetomium funicola Cooke - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Chaetomium globosum Kunze - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - SE, paddy field (Min *et al.*, 1982b) - SE, GG, paddy field (Min *et al.*, 1982a) - GN, greenhouse (Lee *et al.*, 2000; Lee, 2001).

Chaetomium indicum Corda - GN, greenhouse (Lee *et al.*, 1998).

Chaetomium sp. - JB, HabU (Hong and Min, 1981) SE, paddy field (Min *et al.*, 1987) - CB, upland (Lee *et al.*, 1987a).

Chaetomium subspirale Chivers - GG, paddy field (Min *et al.*, 1987).

Thielavia fragilis (Natarajan) Arx - GN, greenhouse (Lee *et al.*, 1998).

Sordariaceae

Neurospora sitophila Shear & B. O. Doidge - GW, forest, *Pinus densiflora* (Song and Min, 1991).

Zygomycota

Entomophthorales

Meristacraceae

Meristacrum sp. - GN, GB, upland, greenhouse (Kim *et al.*, 2001).

Glomales

Acaulosporaceae

Acaulospora appendicula Spain, Sieverd. & N.C. Schenck - JN, greenhouse (Sohn and Kim, 1991).

Acaulospora bireticulata Rothwell & Trapper - CN, near coast, *Phragmites communis*; GB, near coast, *Digitaria sanguinalis* (Eom and Lee, 1989) - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990) - JN, greenhouse (Sohn and Kim, 1991).

Acaulospora denticulata Sieverd. & S. Toro - JN, greenhouse (Sohn and Kim, 1991).

Acaulospora elegans Trappe & Gerd. - JN, greenhouse (Sohn and Kim, 1991) - CB, around open field, leguminous plants; GG, around roadway, leguminous plants (Ahn *et al.*, 1992).

Acaulospora foveata Trappe & Janos - JN, greenhouse (Sohn and Kim, 1991).

Acaulospora laevis Gerd. & Trappe - GB, CB, GG, around roadway, open field; JB, around valley, leguminous plants (Ahn *et al.*, 1992).

Acaulospora longula Spain & N. C. Schenck - GB, mountain (Lee *et al.*, 1993).

Acaulospora morrowiae Spain & N. C. Schenck - CB, mountain (Lee *et al.*, 1993).

Acaulospora myriocarpa Spain, Sieverd. & N. C. Schenck -

- CB, HabU, *Cassia mimosoides* var. *nomame* (Lee *et al.*, 1991).
- Acaulospora rehmi* Sieverd. & S. Toro - JN, greenhouse (Sohn and Kim, 1991).
- Acaulospora rugosa* J. B. Morton - CB, GN, mountain (Lee *et al.*, 1993).
- Acaulospora scrobiculata* Trappe - GG, reclaimed land, *Calamagrostis epigeios*, *Artemisia scoparia* (Koh and Lee, 1984) - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990) - CN, SubU, *Cassia mimosoides* var. *nomame* (Ka *et al.*, 1990a) - GB, CB, GG, around roadway, open field, leguminous plants (Ahn *et al.*, 1992).
- Acaulospora* sp. - GN, Greenhouse (Park *et al.*, 1999) - GB, around roadway, leguminous plants (Ahn *et al.*, 1992).
- Acaulospora spinosa* C. Walker & Trappe - GN, greenhouse (Park *et al.*, 1999) - CB, pot soil, *Chrysanthemum morifolium*, *Impatiens balsamina*, *Lycopersicon esculentum* (Lee *et al.*, 1991) - GB, CB, GG, around roadway, open field, leguminous plants (Ahn *et al.*, 1992).
- Acaulospora undulata* Sieverd. - JB, around valley, leguminous plants (Ahn *et al.*, 1992).
- Glomaceae**
- Glomus albidum* C. Walker & L.H. Rhodes. - GG, reclaimed land, *Calamagrostis epigeios*, *Lotus corniculatus*, *Artemisia scoparia*, *Imperata cylindrical* (Koh and Lee, 1984) - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990) - CB, GG, around roadway; JB, around valley, leguminous plants (Ahn *et al.*, 1992).
- Glomus aggregatum* N.C. Schenck & G.S. Sm. - CN, SubU, *Cassia mimosoidea* var. *nomame* (Ka *et al.*, 1990a).
- Glomus ambisporum* G.S. Sm. & N.C. Schenck - CN, SubU, *Cassia mimosoidea* var. *nomame* (Ka *et al.*, 1990a) - JN, greenhouse (Sohn and Kim, 1991).
- Glomus caledonium* (T.H. Nicolson & Gerd.) Trappe & Gerd. - GG, reclaimed land, *Calamagrostis epigeios*, *Artemisia scoparia* (Koh and Lee, 1984) - JN, greenhouse (Sohn and Kim, 1991) - CB, HabU, *Petasites japonicus* (Lee *et al.*, 1991) - GB, CB, around roadway, open field, leguminous plants (Ahn *et al.*, 1992).
- Glomus clarum* T.H. Nicolson & N.C. Schenck - JB, regional park, *Cryptomeria japonica* (Eom and Lee, 1989) - GN, HabU (Lee *et al.*, 1993).
- Glomus clavisorum* (Trappe) R.T. Almeida & N.C. Schenck - GB, SubU; CB, SubU; CN, SubU (Eom *et al.*, 1992) - CB, forest, *Thuja orientalis*; GN, forest, *Cryptomeria japonica*; JJ, near crater, *Miscanthus* sp. (Koo *et al.*, 1992).
- Glomus constrictum* Trappe - GG, reclaimed land, *Calamagrostis epigeios* (Koh and Lee, 1984).
- Glomus diserticola* Trappe, Bloss & J. A. Menge - GN, HabU (Lee *et al.*, 1993).
- Glomus dimorphicum* Boyetchko & J.P. Tewari - CN, regional park, *Cassia mimosoides* var. *nomame* (Ka *et al.*, 1990b).
- Glomus etinucatum* Becker & Gerd. - CB, pot soil, *Sinningia speciosa* (Lee *et al.*, 1991).
- Glomus fecundisporum* N. C. Schenck & G. S. Sm - GB, mountain (Lee *et al.*, 1993).
- Glomus glomerulatum* Sieverd. - CB, HabU, *Zoysia japonica* (Lee *et al.*, 1991) - CB, around gas station, leguminous plants (Ahn *et al.*, 1992).
- Glomus geosporum* (T.H. Nicolson & Gerd.) C. Walker - CN, SubU, *Cassia mimosoides* var. *nomame* (Ka *et al.*, 1990a).
- Glomus heterosporum* G.S. Sm. & N.C. Schenck - JJ, near crater, *Miscanthus* sp. (Koo *et al.*, 1992).
- Glomus hoi* S.M. Berch & Trappe - JN, greenhouse (Sohn and Kim, 1991).
- Glomus intraradices* N.C. Schenck & G.S. Sm. - JB, regional park, *Cryptomeria japonica* (Eom and Lee, 1989).
- Glomus liquidambaris* (C.G. Wu & Z.C. Chen) R.T. Almeida & N.C. Schenck - GB, SubU; JN, SubU (Eom *et al.*, 1992) - GB, coal mine, *Lespedeza bicolor* (Koo *et al.*, 1992).
- Glomus occultum* C. Walker - JB, regional park, *Cryptomeria japonica* (Eom and Lee, 1989).
- Glomus manihotis* R.H. Howeler, Sieverd. & N.C. Schenck - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990).
- Glomus microcarpum* Tul. & C. Tul. - GB, HabU, *Poncirus trifoliata* (Lee *et al.*, 1991).
- Glomus mosseae* (Nicolaj & Gerd.) Gerd. & Trappe - CN, SubU, *Cassia mimosoidea* var. *nomame* (Ka *et al.*, 1990a).
- Glomus pulvinatum* (Henn.) Trappe & Gerd. - GG, reclaimed land, *Calamagrostis epigeios*, *Lotus corniculatus*, *Artemisia scoparia*, *Imperata cylindrical* (Koh and Lee, 1984) - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990) - CB, around gas station, leguminous plants (Ahn *et al.*, 1992).
- Glomus rubiforma* (Gerd. & Trappe) R.T. Almeida & N.C. Schenck - CB, SubU (Eom *et al.*, 1992) - JJ, SubU, *Rosa multiflora* (Koo *et al.*, 1992) - GB, GG, around roadway, open field; CB, around gas station, leguminous plants (Ahn *et al.*, 1992).
- Glomus scintillans* S. L. Rose & Trappe - GB, CB, around roadway, leguminous plants (Ahn *et al.*, 1992).
- Glomus sinuosum* (Gerd. & B.K. Bakshi) R.T. Almeida & N.C. Schenck - GB, SubU (Eom *et al.*, 1992) - JN, SubU, *Celtis sinensis*; JJ, SubU, *Rosa multiflora* (Koo *et al.*, 1992).
- Glomus* sp. - GG, reclaimed land, *Calamagrostis epigeios*, *Lotus corniculatus*, *Artemisia scoparia*, *Imperata cylindrical* (Koh and Lee, 1984) - GN, Greenhouse (Park *et al.*, 1999) - JB, around valley, leguminous plants (Ahn *et al.*, 1992).
- Glomus taiwanense* (C.G. Wu & Z.C. Chen) R.T. Almeida & N.C. Schenck - CB, SubU (Eom *et al.*, 1992) - GN, forest, *Cryptomeria japonica*; JJ, SubU, *Rosa multiflora*;

JJ, near crater, *Miscanthus* sp. (Koo *et al.*, 1992).
Glomus tortuosum N. C. Schenck & G. S. Sm. - CB, pot soil, *Monstera deliciosa*, *Nandina domestica* (Lee *et al.*, 1991) - GB, around roadway, leguminous plants (Ahn *et al.*, 1992).

Sclerocystis pachycaulis C.G. Wu & Z.C. Chen - JN, greenhouse (Sohn and Kim, 1991).

Gigasporaceae

Gigaspora decipiens I.R. Hall & L.K. Abbott - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990) - JN, greenhouse (Sohn and Kim, 1991) - CB, HabU, *Morus alba* (Lee *et al.*, 1991).

Gigaspora gigantea (T.H. Nicolson & Gerd.) Gerd. & Trappe - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990) - JN, greenhouse (Sohn and Kim, 1991).

Gigaspora margarita W. N. Becker and I. R. Hall - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990) - CN, SubU, *Cassia mimosoides* var. *nomame* (Ka *et al.*, 1990a) - KN, greenhouse (Park *et al.*, 1999).

Scutellospora aurigloba (I.R. Hall) C. Walker & F.E. Sanders - JB, regional park, *Cryptomeria japonica* (Eom and Lee, 1989) - JN, greenhouse (Sohn and Kim, 1991).

Scutellospora calospora (T.H. Nicolson & Gerd.) C. Walker & F.E. - JN, greenhouse (Sohn and Kim, 1991) - CB, HabU, *Cassia mimosoides* var. *nomame* (Lee *et al.*, 1991) - CB, around temple, around gas station; JB, around valley, leguminous plants (Ahn *et al.*, 1992).

Scutellospora coralloidea (Trappe, Gerd. & H.H. Ho) C. Walker & F.E. Sanders - CN, SubU, *Cassia mimosoides* var. *nomame* (Ka *et al.*, 1990a) - JN, greenhouse (Sohn and Kim, 1991).

Scutellospora erythropha (Koske & C. Walker) C. Walker & F.E. Sanders - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990).

Scutellospora gilmorei (Trappe & Gerd.) C. Walker & F.E. Sanders - GB, near coast, *Digitaria sanguinalis* (Eom and Lee, 1989).

Scutellospora gregaria (B. Schenk & T.H. Nicolson) C. Walker & F.E. Sanders - CB, near stream, *Persicaria thunbergii* (Eom and Lee, 1990).

Scutellospora heterogama (T.H. Nicolson & Gerd.) C. Walker & F.E. Sanders - CN, SubU, *Cassia mimosoides* var. *nomame* (Ka *et al.*, 1990a) - CB, around temple; GB, around roadway, open field (Ahn *et al.*, 1992).

Scutellospora pellucida (T.H. Nicolson & B. Schenk) C. Walker & F.E. Sanders - CN, regional park, *Cassia mimosoides* var. *nomame* (Ka *et al.*, 1990b).

Scutellospora sp. - CB, around temple, gas station, roadway; GB, around roadway; JB, around valley, leguminous plants (Ahn *et al.*, 1992).

Scutellospora verrucosa (Koske & C. Walker) C. Walker & F. E. Sanders - GB, GG, around road way, open field; CB, around temple, leguminous plants (Ahn *et al.*, 1992).

Mucorales

Cunninghamellaceae

Cunninghamella elegans Lendn. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - JB, HabU (Hong and Min, 1981) - JN, upland (Lee *et al.*, 1987a).

Cunninghamella sp. LocU, upland (Lee *et al.*, 1990) - LocU, upland, *Capsicum annuum*, *Arachis hypogaea* (Kim *et al.*, 1992).

Mortierellaceae

Mortierella alpina Peyronel - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Mortierella elongata Linnem - JN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Mortierella isabellina Oudem. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Mortierella ramanniana var. *angulispora* (Naumov) Linnem. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Mortierella sp. - GW, forest (Hong and Min, 1982) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - GN, upland (Lee *et al.*, 1987a).

Mucoraceae

Absidia cylindrospora Hagem - LocU, upland, *Capsicum annuum*, *Citrullus lanatus* (Kim *et al.*, 1992).

Absidia sp. - LocU, upland (Lee *et al.*, 1990) - GN, greenhouse; LocU, upland (Kim *et al.*, 1992).

Mucor circinelloides Tiegh. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Mucor fragilis Bainier - CN, JN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Mucor hiemalis Wehmer - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Mucor racemosus Bull. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Mucor sp. - JB, sea, forest, upland (Hong and Min, 1981) GW, forest (Hong and Min, 1982) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - GW, forest, *Pinus densiflora* (Song and Min, 1991).

Rhizopus arrhizus A. Fisch. - GG, upland (Min *et al.*, 1987).

Rhizopus nigricans Ehrenb. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980).

Rhizopus oryzae G. Winter - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - CB, upland (Lee *et al.*, 1987a).

Rhizopus sp. GG, upland (Lee *et al.*, 1987b) - JJ, upland (Lee *et al.*, 1988) - LocU, upland (Lee *et al.*, 1990) - GG, paddy field (Min *et al.*, 1987) - LocU, upland, *Capsicum annuum*, *Arachis hypogaea* (Kim *et al.*, 1992).

Zygorhynchus heterogamus (Vuill.) Vuill. - CN, forest, *Phyllostachys reticulata* (Kim, 1979).

Zygorhynchus moelleri Vuill. - CN, forest, *Phyllostachys reticulata* (Kim, 1979; Kim and Lee, 1980) - JB, forest

(Hong and Min, 1981) - SE, paddy field (Min *et al.*, 1982b) - GG, paddy field (Min *et al.*, 1987) - GN, upland (Lee *et al.*, 1987a).

Zygorhynchus sp. - GW, forest (Hong and Min, 1982) LocU, upland (Lee *et al.*, 1990).

Phycomycetaceae

Phycomyces sp. - GG, upland (Lee *et al.*, 1987b).

Incertae sedis

Complexipes moniliformis C. Walker - CN, park, *Cassia mimosoides* var. *nomame* (Ka *et al.*, 1990b).

Zoopagales

Zoopagaceae

Cystopage lateralis Drechsler - GN, GB, upland, greenhouse (Kim *et al.*, 2001).

Discussion

A total of 82 genera and 271 species were reported, in which unidentified species were counted as one species. When taking soil-borne pathogenic fungi into consideration, the total number would become more. However, the totality of recorded species still seems to be far lesser from the reality of soil-inhabiting species in Korea. Especially compared with macrofungi (mushrooms) of which about 1000 species are known and are most thoroughly studied group of fungi in Korea (Lee, 1994). Majority of information about soil-inhabiting fungi drawn in the current paper was by-products of soil microorganism oriented researches and only a few studies were carried for the exploration of fungal diversity.

Ehrlich and Wilson (1991) once predicted that a quarter of the living organisms on the earth would be lost within 50 years. Korea is not exempted in the case, which has accomplished rapid industrialization and urbanization causing the destruction of many natural habitats for living microorganisms. Being aware of the preservation of natural resources or possible genetic sources for future use, the inventory of mycoflora is necessary to provide the basic information about indigenous fungal population.

Most of habitats of soil-inhabiting fungi studied were very much biased to agricultural fields such as uplands, paddy fields or greenhouses, in which the mycoflora does not reflect its natural composition because of the application of fertilizer, fungicide, and human labor: hence further studies in Korean soil mycoflora need to be varied in natural niches or habitats. Many of the fungi listed in this contribution were isolated using artificial media, which means they are culturable. References were, however, found only in the literature not in the culture collection. Since many of living microorganisms are currently considered as genetic resources for food and medicinal use, it is indeed important to maintain them *ex situ* in culture collections for future application, especially under the cir-

cumstance of rapid destruction of natural habitation. Although the preservation of unique habitats as a whole, together with their assemblages of diverse microorganisms and substrates obviously most recommendable (Rossman, 1997).

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