Mycorrhiza
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NEWSCORNER

Mycorrhiza for science and society—5th International Conference on Mycorrhiza (ICOM5)

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Welcome to Granada! It is not only an important city in Andalusia (Spain) but for many years, it has been the base of the strong and productive mycorrhizal research group at the Experimental Station of Zaidin. In July 2006, it was the venue of the International Conference on Mycorrhiza (ICOM5). For those who have ever ventured to organize an international event of any extent, it is clear that planning for such a grandiose meeting is a great challenge that requires immense effort, devotion, time, nerves and sacrifices. ICOM5 was no exception with about 700 participants representing more than 50 countries from around the world. Apart from the excellent organization and the splendid social events that have shown us the jewels of Andalusian culture, we have heard about a considerable amount of new scientific ideas and actions, research achievements and outstanding presentations.

The meeting was structured into sessions, workshops, keynote lectures and poster presentations. The 16 oral sessions covered practically the entire range of mycorrhiza research from basic research, via ecological and applied research, to commercial applications. Almost one third of the sessions was dedicated to fundamental aspects that prevalently employ recently emerging molecular methods. These sessions included the aspects of Cell Programmes, Signals and Perceptions, Genetics and Genomics, and the Evolution and Phylogeny of mycorrhizal fungi.

The largest group of sessions dealt with the ecological and agricultural aspects of mycorrhizal research, which usually employs a combination of different methods on different hierarchical levels. These ranged from molecular methods to the well established physiological, anatomical, taxonomic and field trial approaches. Here, the sessions targeted Population Biology and Biodiversity of mycorrhizal fungi, Mechanisms in Stress Resistance and Tolerance, Functional Diversity in Mycorrhiza, Biodiversity and Ecological Impacts, Anthropogenic Impacts on Mycorrhizal Diversity and Functioning, Biome-related Functional Ecology, Mycorrhizal Networking and Mycorrhizosphere Interactions and Biology. The third and smallest group of sessions addressed the applied aspects of mycorrhizal research and the technology of using mycorrhizal fungi in plant production. These sessions included Mycorrhiza in Alternative Production Systems and Improved Inoculum Technology. This cluster of sessions was supported by a specific session, organized for the first time at ICOMs, entitled Narrowing the Gap between Science and Technology where interactions of fundamental and applied research with industrial production and use of mycorrhizal fungi were discussed.

In total, 16 workshops were organized as short oral presentations to cover additional topics to those in the sessions: (1) For basic research, there were workshops on Cellular Aspects of Arbuscular Mycorrhizal Fungi or Novel Methodological Approaches, (2) for ecological and agricultural aspects, there were workshops on, for example, Ericoid, Orchid and Dark Septate Endophytes Associations, Mycorrhiza and Abiotic Stress Alleviation, and (3) for applied research and commercial applications, there were workshops on Mycorrhiza in Land Use and Crop Management.

The four keynote lectures addressed the main "hot" issues of current research on soil microbes that are useful to plant production and survival. They dealt with linking above and belowground multitrophic interactions of microbes and plants (W. van der Putten), strategies for the development

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and release of microbial inoculants (F. O'Gara), macro- and microevolution of plant–microbe systems (N.A. Provorov) and aspects of agricultural policies in terms of soil microbial resources (D. Atkinson). An important part of the meeting was the very extensive poster sessions where more than 700 posters presented some very interesting contributions.

In general, very significant progress in the development and application of new and recently developed, sophisticated methods for studying mycorrhiza was reported, and much new data and novel approaches were presented. It would be very difficult, if not impossible, to list the numerous outstanding scientific achievements presented at the conference, and it would be unfair to name only some. Indeed, there has been significant progress made towards understanding the importance and complexity of mycorrhiza fungi and their interactions with host plants and the surrounding environment. Also, on the practical side, the great potential of using molecular methods in practical applications again clearly emerged, e.g. for monitoring the survival and competitive ability of introduced strains in field applications or ecosystems. In the field of mycorrhizal applications, there is also an evident trend towards including ecologically-adapted isolates or even indigenous fungal strains into mycorrhizal bio-preparates being applied to particular field conditions. We know that Professor A.B. Frank, who was the appointed Minister of Agriculture and Forestry of the Prussian Kingdom, discovered and coined the name for mycorrhiza when researching how to culture truffles. The bad news is that more than 120 years has passed and we seem to be still far from fulfilling this task. The good news, however, is that fundamental research is driving an ever-increasing understanding of complex mycorrhiza symbioses more, and that by using scientific knowledge about the most positive outcomes of this plant–fungal association, mycorrhizal technology is reaching an industrial stage, and funding is inclining back to a greater support of applied research. This important trend, already apparent at ICOM4 in Montreal (Canada, 2003), is the one strengthening the links between science and society. It is further underlined by the exhibitions at ICOM5 of mycorrhizal inoculum producers and publishers of scientific literature, as well as a newly approved EU COST action focused on the application of mycorrhiza starting next year.

One of the most important events was indeed the launching of the International Mycorrhizal Society (IMS; http://www.ims.com) spearheaded mainly by Canadian colleagues and supported by the effort of many others, including representatives of the mycorrhizal biotechnological industry. It promises to be a new and, as most believe, a very efficient platform for interactions within the scientific community and with corporate members from the industry. A significant event was the meeting of the Editorial Board of the Mycorrhiza journal where new exciting developments of our “home” journal were discussed, including the launching of online submission, a new cover page, increasing its renown and impact on the scientific community, and consequently improving its impact factor and other scientometric parameters.

At the end of the meeting, the ICOM Student Awards found their proud holders. The Harley Medal was awarded by the IMS for the best student oral presentation. The CSPI Award (initiated at previous ICOMs by the Centre for Soil–Plant Interactions, Adelaide) was given for the best student poster, and the Biotisa and PremierTech awards for the two best applied research presentations.

With great pleasure, and on behalf of all participants, we would like to thank all local organizers chaired by Prof. Jose Miguel Barea and Prof. Conchi Azcon-Aguilar for helping to run a smooth and pleasant conference. ICOM is the biggest annual event in the mycorrhiza world, a chance to meet old friends and colleagues and to bring young students and scientists full of enthusiasm into the group (the presence of many young mycorrhizologists was a significant feature of ICOM5). Simply, it was once again a refreshing experience that has outlined new challenges in mycorrhiza research for us to face now and in the near future, and it has stirred up more new questions than we have answered. We look forward to ICOM6 and wish the organizers in Bello Horizonte, Brasil all the best for its preparation in 2009. We will again have the opportunity to update progress in the fascinating fields of both basic and applied mycorrhizal research and strengthen links between science and society.