

## Preface

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The COST (European Cooperation in Science and Technology) organization of the EU is a flexible, fast, effective and efficient tool to network and coordinate nationally funded research activities, bringing good scientists together under light strategic guidance and letting them work out their ideas. COST is based on networks, called COST Actions, centred around research projects in fields that are of interest to at least five COST countries.

Starting in 1988, several European COST Actions (810, 821 and 838) have focused on understanding the role of arbuscular mycorrhizal fungi (AMF) in sustainable agriculture and natural ecosystems. The latest COST Action on AMF, Action 870 "From Production to Application of Arbuscular Mycorrhizal Fungi in Agricultural Systems: a Multidisciplinary Research", ran from February 2007 to February 2011 and a total of 26 European countries participated. Dr Jacqueline Baar (Netherlands) was the Chair and Dr Yoram Kapulnik (Israel) the Vice-Chair. The main objective of COST Action 870 was to take a multidisciplinary approach to increase the knowledge needed for implementation of AMF in agricultural systems, in order to reduce agricultural inputs and reduce losses to the environment. The COST Action took a multidisciplinary approach by bringing together diverse scientific areas ranging from applied mycorrhizal research, plant breeding and (low input) arable farming. The synergism that will occur by combining the scientific areas of plant breeding and mycorrhizal research was of particular importance. Plant breeding programmes have resulted in crops that have higher levels of resistance to pathogens, but they also seem to show a reduced responsiveness and colonisation of AM fungi. The Action was divided into four working groups: WG1 "Plant breeding and colonisation of AM fungi", WG2 "Quality control of AM Fungal inoculum", WG3 "Application of AM fungi in agricultural systems ranging from low- to high-input systems in Europe north of the Mediterranean regions" and WG4 "Application of AM fungal inoculum specific for Mediterranean conditions".

Between December 13 and 15, 2010, a meeting of WG2 and WG3 was organized by MTT Agrifood Research Finland and the University of Jyväskylä, Finland. The meeting was held at the University of Jyväskylä. The general themes of the meeting were "Utilization of AMF in extreme stress conditions" (WG3) and "Quality control of AM fungal inoculum" (WG2). The role of AMF in arid, saline or heavy metal contaminated sites was discussed in several papers. Also the impact of temperature on AM function and possibilities of utilizing AMF in low- and high-input agricultural systems were discussed. Papers on the role of AMF in controlling biotic stress, i.e. plant diseases, of crops were also presented. This special issue of Agricultural and Food Science contains a selection of papers presented at the COST Action 870 meeting in Jyväskylä, December 2010.