



International  
Conference on  
Conservation  
Agriculture and  
Sustainable Land Use

## Book of Abstracts

Edited by Madarász, B., Tóth A.

2016

# **International Conference on Conservation Agriculture and Sustainable Land Use**

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**31 May – 2 June 2016**

**Budapest, Hungary**



Geographical Institute, Research Centre for Astronomy and Earth Sciences,  
Hungarian Academy of Sciences  
Budapest, 2016

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Supported by Ministry of Agriculture and Syngenta Kft.

**Publisher:**

SZARKA, LÁSZLÓ CSABA

Hungarian Academy of Sciences

Research Centre for Astronomy and Earth Sciences

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ISBN 978-963-9545-50-2

## **Microorganisms of agronomic importance in soils managed with sustainable practices**

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In conventional fruit growing, adopted by the majority of the farmers, frequent soil tillage strongly reduces the complexity and diversity of soil microbiota. For this reason, the conventional, non-sustainable, agronomic practices should evolve in a more sustainable management (e.g., grass cover, pruning residues recycling, organic matter inputs, etc.) addressed to ameliorate the ecological networks in which soil microorganisms are involved. A better understanding of soil microbial communities can lead to identify agricultural management practices that stimulate and select specific soil microorganisms having beneficial purposes in agriculture, such those involved in the biogeochemical cycles or with antagonistic effects against plant pathogens. The trials (approximately 20 years) were carried out in different experimental orchards (olive, peach, apricot, kiwifruit and grapevine) located in Basilicata Region (Southern Italy) and managed according to two different soil management systems: the sustainable treatment (ST) and the conventional, non-sustainable, treatment (CT). Soil microbiological quality in the two systems was continuously monitored by microscopic, cultural-dependent and molecular microbiological methods. In the sustainable orchards, soil microbiota always showed a higher complexity and metabolic diversity. The medium-term adoption of ‘innovative’, sustainable, agricultural practices caused positive effects on soil microbiota and its biodiversity, that in turn can significantly influence soil fertility and plant growth by increasing nutrients availability/turnover and contrast plant pathogens. The role of some of the identified microorganisms of agricultural relevance in the soil microbial network is discussed. The results of our studies encourage the use of sustainable agricultural practices able to enhance soil microbiological fertility. The practical goal is to convince farmers to adopt a sustainable farming system as a whole, not just as individual elements, in order to promote good-quality fruit production without negative effects on the environment.



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