Facing to real sustainability—conservation agricultural practices around the world

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Received: 29 September 2017 / Accepted: 12 December 2017 / Published online: 22 December 2017
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This special issue of Environmental Science and Pollution Research highlights selected papers presented at the International Conference on Conservation Agriculture and Sustainable Land Use (CASLU), held between 31 May and 2 June 2016 in Budapest, Hungary.

It is evident that the present development of the activities of human society is unsustainable and without radical changes, it would lead to the depletion of natural resources. As a consequence of rapid population growth, food demand also increases very fast requiring a more intensive agriculture and the use of low quality land for agricultural purposes. Conventional agricultural practices endanger the fertility of huge areas in the world. Previous research has demonstrated that Conservation Agriculture (CA) could be an effective solution to the problems caused by conventional agriculture, such as soil erosion, destruction of soil structure, reduction of permeability, greenhouse gas emissions, enormous energy consumption, contamination of surface and subsurface water resources and the decrease of biodiversity. As a result of quick knowledge transfer, CA is employed over 170 million ha today, while the estimated value in 1999 was only 45 million ha.

The greatest extension and percentage values are in North and South America, South Africa, and Australia. Nowadays, CA is a widely known practice; however, its practical details and effectiveness hardly depend on local economic and environmental circumstances. Accordingly, most of the papers presented at the conference were case studies contributing to the most up to date knowledge on CA. Bearing the idea of sustainability in mind, the meeting was organized as a “sustainable conference”, i.e., minimizing the environmental stress in every respect. From Canada to Japan and from Norway to Australia, 102 researchers of 36 countries have presented the results of their recent studies. Altogether, 43 oral and 99 poster presentations were given in the following sections: Soil science and geomorphology in Conservation Agricultural Systems; Agroecological research in Conservation Agricultural Systems; Yields and economy; Climate change and Conservation Agricultural Systems; Conservation Agricultural Systems and the carbon cycle; Sustainability assessment of land use and cover change; Precision Agriculture in Conservation Agricultural Systems; Organic farming. Keynote presentations tried to summarize the holistic question of “Where are we and what to do next?”. G. Govers emphasized the role of chemicals in his keynote talk that generated a highly exciting and relevant conversation about the necessity of pesticides and fertilizers if CA is applied under various environmental conditions. Quite a few presentations also highlighted the ambiguities and problems to face. The highest importance was dedicated to the climate change related questions that seemed to be the biggest challenge of CA and Sustainable Land Use. Participants agreed to analyze measurement data from the whole world in order to make the effect of climate change on CA predictable.

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Acknowledgements The guest editors would like to thank each author for her/his generous effort for contributing to the realization of this Special Issue and are grateful to the journal's editors who handled the submissions.

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ordinator of several research projects (EU Life, Socrates, NKFIH). He is a member of the editorial boards of Journal of Agriculture and Environment, member of the Hungarian Soil Science Society, European Society for Soil Conservation, Soil and Water Conservation Society, and author of >30 scientific papers in refereed journals.

member of research team of EU Life funded projects BORASSUS (2005–2008) and SOWAP (2003–2006). He is an expert of the International Atomic Energy Agency with three successful expert missions on ensuring the safe construction of radioactive waste disposal facilities (2012–2014). He is the author, co-author of > 50 articles in refereed journals and > 30 book chapters.

Adrienn Tóth has been a senior research fellow at the Geographical Institute of Research Centre for Astronomy and Earth Sciences, Hungarian Academy of Sciences since 2005. She earned her Ph.D. in the same year on environmental status assessment. Her scientific interest is directed on sustainable land use and, as an important part of it, on soil erosion research. She was a member of the research team of the EU-funded BORASSUS project (2005–2008). She is author, co-author of > 60 scientific publications.

Her interest on sustainable land use and the demand on conversation, changing experiences and ideas on this subject made her the main organizer of the International Conference CASLU 2017.

Gergely Jakab has been a senior research fellow at the Geographical Institute of Research Centre for Astronomy and Earth Sciences, Hungarian Academy of Sciences since 2012. He is an honorary associate professor of the Department of Environmental and Landscape Geography, Eötvös Loránd University, Budapest. He earned his Ph.D. in 2009 on gully erosion research. His scientific interest focused on soil concerned environmental questions, such as soil erosion, the role of soil in the global

carbon cycle, soil pollution, and lithological biological interactions. He was a