

### Editor's Preface

The year 2015 was declared by The United Nations as the International Year of Soils. The main reason for this decision was the fundamental role of soils in everyday life all over the world. Soils form the uppermost crust of the Earth's geological material and represent the contact zone between the atmosphere and the lithosphere. They also constitute the habitats of plants, microbes, and members of the micro-, meso-, and macro-fauna. Consequently, soils are formed by living organisms during and even after their lifetime. Soil formation is a continuous biogenic process starting from mineral compounds and particles of weathered geological materials. During their formation soils become sources of nutrients and water, forming a pool of humus materials containing sequestered carbon, while also providing a protective environment for soil-forming organisms.

Besides the general ecological significance of soils, they have a number of other functions, including nutrient cycling; water purification and soil contaminant reduction; carbon sequestration; the provision of food; climate regulation; cultural heritage, etc. The social significance of soils became obvious after the recognition of the fact that healthy food can only be produced in healthy soils.

It is also rapidly becoming clear that the soil area suitable for agricultural production is approaching its limit. Consequently, the sustainability of soil functions will require constant attention and careful management. Sustainable soil use involves all types of protective and ameliorating activities, together with rational land use and production intensity.

This volume of the *Agrochemistry and Soil Science Journal* contains reviews and research papers written by Hungarian and international authors, dealing with a variety of contemporary topics related to soils, on the occasion of "2015, the International Year of Soils". The aim of the authors was to celebrate the importance of soils by discussing past, present and future challenges and presenting specific research results. Two review papers scan the last 30–40 years in the history of establishing and mapping the main features of Hungarian soils (G. Várallyay) and the nutrient management policy of crop production in Hungary (J. Loch), while a third reviews the development of pedotransfer functions derived from databases, the methods used to generalize these functions and experience gained in their practical application (Y. Pachepsky et al.). In the future there is expected to be increasing interest in pedotransfer model applications. How to write papers on pedotransfer functions that will be accepted for publication is discussed in the paper by A. Nemes. This material is closely related to the review paper on pedotransfer functions.

The topics of the research papers are extremely varied, demonstrating the complex nature of soil-related studies. One paper discusses the role of organic matter in the micro-structure of an alluvial chernozem soil in the Danube valley in Austria (W. E. H. Blum et al.); others highlight the material flow of optimally applied phosphorus as a plant nutrient (K. D'Haene and G. Hofman), the use of alginate to increase the productivity of acid sandy soil (I. Kadar et al.) and the iodine transport in structured clay loam soil (Á. Horel et al.). Besides different types of material flow, soil biology is also the subject of a paper on indicators of the efficiency of soybean inoculation (O. Gazdag et al.). Finally, there is a paper dealing with Bronze Age remnants preserved in the soil and the history of their environment, as reconstructed from soil analysis (G. Füleky et al.). The topics in this volume give only a random cross-section of the complexity of soil science. Both the breadth and depth of soil-related research are constantly growing, enriching our knowledge on the soils themselves and on the roles they play. Perhaps even the modest spectrum of soil functions presented in this volume will help to understand why 2015 was declared as the International Year of Soils.

Budapest, 21 October 2015

Kálmán Rajkai  
Editor-in-chief