

## Foreword

Scientists in plant ecology have for many years emphasized the aboveground plant structures but ignored the hidden belowground plant parts. However, intensive root research is a prerequisite for a comprehensive view of the plant and of ecosystems. During recent decades, six symposia organized by the *International Society of Root Research (ISRR)* have stressed the importance of the plant roots hidden in the soil. The 7<sup>th</sup> Symposium of the ISRR "*Root research and applications*" is now to take place in honour of our dear colleague Prof. Dr. Lore Kutschera, who organized the 1<sup>st</sup> Symposium in Austria in 1982. The 7<sup>th</sup> symposium on root research was still initiated by Lore Kutschera and is organised by the University of Applied Life Sciences and Natural Resources, Vienna (BOKU) in collaboration with the ISRR. Since Lore Kutschera is no longer with us it became the desire of the people involved to devote the symposium to her memory, and thus to pay respect to the long-lasting scientific service she has provided to ISRR and the research community. Just in time before the conference the 7<sup>th</sup> atlas on roots (*Wurzelatlas der Kulturpflanzen gemäßiger Gebiete mit Arten des Feldgemüsebaues*) has been published. The two occurrences of the number "7<sup>th</sup>" is more than a simple coincidence: it shows that Lore Kutschera was present throughout the years in the IRRS and the respective symposia. This last root atlas marks perhaps the end of an era, but the spirit in which it was produced needs to be preserved and is an example and motivation for young researchers.

The 7<sup>th</sup> symposium brings together many disciplines and serves also to explore ways forward in root research. The aims of our symposium are to address the complexity of root research by bringing together multidisciplinary root research workers, and to support the transfer of new findings into practice, from the plant scale up to ecosystems level. For example, the belowground carbon inputs are comparatively poorly represented in models of soil carbon dynamics and large-scale biogeochemical models. Death and decomposition of roots in terrestrial ecosystems could be even more important than above-ground plant parts, as a source of organic matter supply. Indeed, the most scientifically challenging phases of carbon and nutrient cycles occur belowground. Root responses to environmental stresses such as water and nutrient deficiencies, climatic fluctuations and anthropogenic effects, ranging from plant to ecosystems level, are all important issues to be addressed.

The papers to be presented at our symposium have been selected by a pre-reviewing process organized by the symposium organizers and including root scientists from different disciplines and nationalities. The treated topics include areas of root research from cellular level to ecosystems scale. Many new possibilities and new technologies are emerging to continue the work done so far. As in other science there have been many achievements, but there is still much hidden below ground. However, looking below ground only is not enough. This was very much seen by

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Lore Kutschera. In the 7<sup>th</sup> root atlas she stated "I do not want to have and to do only a half in my life. We all don't want to be seen as half only. Therefore we need as botanists to take care of the whole" (translated from German).

In this spirit it is hoped that the 7<sup>th</sup> symposium on root research serves science and opens many new ways for research, and will strengthen the research community.

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