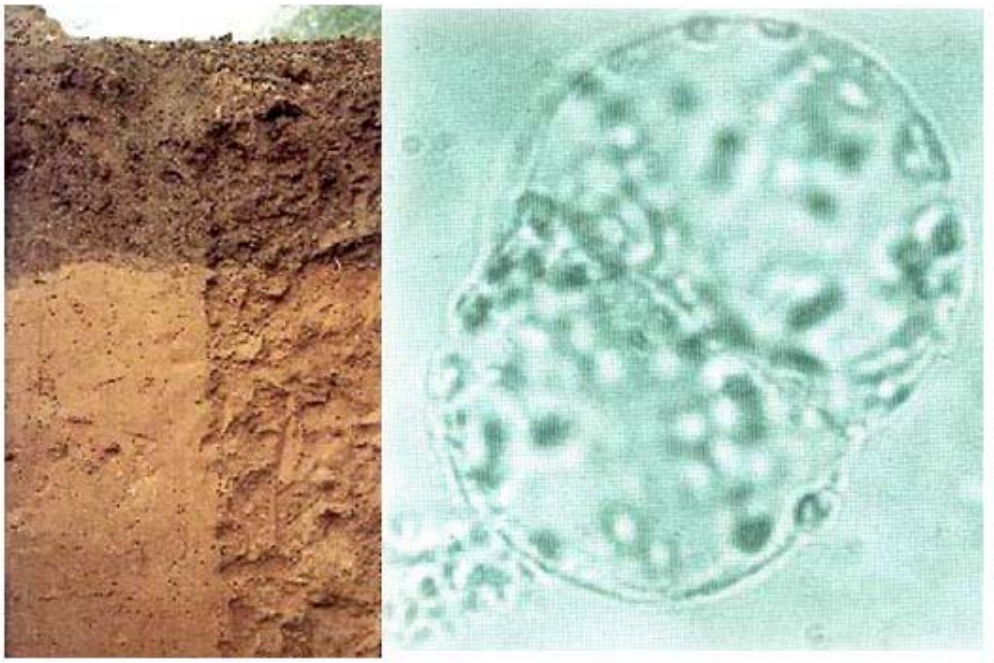
From soil to cell – a broad approach to plant life



Edited by L. Bender and A. Kumar

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Dedicated to

Prof. Dr. Karl-Hermann Neumann

at the occassion of his retirement

Editors:

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Preface

In the early 70th Professor Neumann had established a plant cell and tissue culture laboratory at the Institute of Plant Nutrition of the Justus Liebig-University Giessen, Germany and brought forward the idea to study plant developmental and nutritional phenomena involved in growth and yield formation by employing cell and tissue culture techniques, which was a novel approach for research in plant nutritional at that time.

Professor Neumann's thinking was certainly inspired by his academic mentors H. Linser from Giessen who pursued the concept of System and Product Growth in plant development and yield formation, and F. C. Steward, Cornell University, Ithaca, NY, who was among the first to employ plant cell and tissue culture techniques for studying hormonal and metabolic regulation of cell differentiation and plant development.

Consequently, over the next few decades, Professor Neumann and his team have been working on plant cell differentiation and growth regulation at the molecular, genomic, cytological and morphological levels. In vitro and in vivo studies were carried out on the effect of hormonal, nutritional and physical factors influencing the formation of organs and somatic embryos, DNA amplification and gene expression. The development of chloroplasts and the function of the photosynthetic system in cultured cells as well as the production of secondary metabolites by fermenter grown cell cultures were also some of the aspects he and his team examined. Above all there was the ever intriguing question as to how development and yield formation in higher plants is brought about. In recent years he could witness some of his early ideas of employing molecular methodologies in studies on plant nutrition coming to fruition [see Arnholdt-Schmitt (1996): Basic Strategies of Molecular Biological Research in Plant Nutrition - a Review. J. Plant Nutrition and Soil Sciences 159, 317-326] .
Besides the work related to cell biology, soil oriented studies were the other major topic for Professor Neumann and some of his team. For at least two decades, he was involved in research on soil physics and chemistry as influenced by irrigation and salinity conducted in Germany (the so called "Ried Project"), Egypt and India. It is certainly for that reason that the present volume honoring his scientific work is entiteled "From Soil to Cell - a Broad Approach to Plant Life", and that it covers topics ranging from soil-plant interrelations through plant cell and tissue culture techniques to biochemical and molecular genetic aspects.

Furthermore, what made working with Karl-Hermann Neumann and in his team a most rewarding and memorable experience for his students and collaborators was not only his scientific focus and insight, but also his personality - hard working at the research and fund acquisition front to keep us all going, yet always friendly and fair with more than one open ear for academic or personal matters at any time. We are all deeply indebted to him.

Osnabrück, Summer 2001 Ludwig Bender Ashwani Kumar

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