



Peter Apel

Member of Editorial Board

1936 – 2009

On the 24th of October 2009, Dr. habil. Peter Apel died of a severe illness. Since 1986, Peter Apel has been a member of the editorial board of the journal *Biologia Plantarum*. He left behind his wife Hannelore, three daughters and eight grandchildren. They all have our deep sympathy.

Peter Apel was born on the 17th of September 1936 in Lauscha in the Thuringian Forest. In 1959, after having studied biology and chemistry for a teaching degree, he started his professional life as a teacher in a small Thuringian village. After two years, he had the chance to quit this job and to pursue his true interests: doing research in biological sciences. From 1961 to 1964 he has worked at the Botanical Institute of the Karl Marx University Leipzig as a scientific assistant of Prof. Gertrud Weichsel. During this time he has contributed to the main subject of her group, i.e. the understanding of the symbiosis of Leguminosae and Rhizobiae. He summarized this work in a doctoral thesis and he obtained his doctoral degree (the German Dr. rer. nat.) in 1965.

In 1964, Peter Apel joined the Department of Physical Physiology of the Institute for Research on Cultivated Plants in Gatersleben guided by Prof. Herta Sagromsky. In Gatersleben, his investigations focussed on photosynthetic gas exchange of higher plants. At this time, both of the authors were already members of the staff of this department. During a structural reorganization of the institute in 1969, the Department of Physical Physiology was split into two units. Following a transition period that ended in 1971, Peter Apel guided the newly formed research group for studies on the physiology of yield formation. One of us (M.P.) likes to look back on a long-lasting exciting and enjoyable scientific collaboration with him within this research group. Later, the group was extended by engaging the biochemist Hermann Bauwe, the biophysicist Reinhard Frank and other younger people.

During his scientific career in Gatersleben, Peter Apel has successfully worked in widely varying fields of plant physiology. The three most important topics were the physiology of photosynthesis of higher plants, the physiology of yield formation in cereals, and the physiology of abiotic stress in higher plants. During his initial investigations, he carried out comparative measurements of photosynthetic activity in leaves, ears and awns of various barley and wheat genotypes using material of the world collection of cultivated plants of the institute. Later, this part of Peter's research gained importance when he became more and more interested in the relationship between plant physiology and plant breeding (P. Apel: *Photosynthesis and assimilate partitioning in relation to plant breeding*. In: *Crop Breeding - a Contemporary Basis*. Ed. by P. B. Vose and S. G. Blixt, Oxford 1984, pp. 163-185). In particular, he concentrated on the question to which extent the rate of photosynthesis serves breeders as criterion to select plants with improved yield.

Other topics already considered in Peter's early publications, and again in later ones, are the importance of stomata for photosynthesis, transpiration and water use efficiency, and the influence of oxygen on photosynthesis, photorespiration and related physiological processes and parameters (P. Apel: *Kulturpflanze* 17, 191-204, 1969). The latter point led to investigations on plant species with different photosynthetic pathways, C₃, C₄ and C₃-C₄ intermediate species. He has carried out or contributed to numerous studies on the physiology and biochemistry of species of the genera *Moricandia*, *Flaveria* and *Diplotaxis* as well as on related evolutionary aspects. For describing a particular type of C₃-C₄ intermediate photosynthesis he coined the term "Moricandia syndrome". He has identified *Flaveria anomala* and *Flaveria pubescens* as C₃-C₄ intermediate species (P. Apel and I. Maass: *Biochem. Physiol. Pflanzen* 176, 396-399, 1981). Peter's studies contributed significantly to the establishment of the genus *Flaveria* as a model genus for the evolution of C₄ photosynthesis. Until today, numerous authors have occupied themselves with the photosynthetic characteristics of various species of the genus *Flaveria*.

A characteristic feature of Peter's research activities has been his permanent engagement for applying mathematical and physical methods in plant physiology. Particularly noteworthy are his interests in modelling

approaches for describing growth processes and for explaining physiological peculiarities of plants with different photosynthetic pathways (H. Bauwe, P. Apel and M. Peisker: Photosynthetica 14, 550-556, 1980).

Peter Apel has organized and encouraged scientific collaborations both inside and outside the institute in Gatersleben. For instance, studies of plant material of various origins and traits were most efficiently conducted in close cooperation with help and advice from Christian-Otto Lehmann who was responsible for the collection of cultivated plants. Also, carbon isotope discrimination by plants with different photosynthetic pathways was determined in collaboration with Ingeborg Maass from the Institute of Isotope and Radiation Research in Leipzig. Within the restraints imposed on scientists by the former GDR, Peter established international contacts. Many questions related to yield formation in cereals have been studied in collaboration with Lubomír Nátr and his coworkers from the Cereal Research Institute in Kroměříž (later at the Charles University Prague). Other international relationships resulted from the participation in the annual meetings of the working group on photosynthetic productivity of plants (headed by A.A. Nichiporovich) within the framework of the Council of Mutual Economic Aid (also known as "Comecon"). This way, long-lasting collaborations with Ingrid Tichá and Jiří Čatský from the Institute of Experimental Botany in Prague and with Olavi Keerberg from the Institute of Experimental Biology in Harku, Estonia, were established.

In 1983, Peter received the degree of Dr. sc. nat. (in the GDR the degree in scientific qualification following the Dr. rer. nat.) which was converted after German reunification into the degree of Dr. habil. (the German postdoctoral lecture qualification). In 1988 he was appointed to one of the deputy directors of the institute. However, already 1989, in the time of political change, he resigned from this post as an act of protest against the official politics at that time.

After leaving the institute, Peter Apel contributed profoundly to the documentation on the history of the rural community of Gatersleben.

Peter was a rather introverted person. Those who knew him closer, however, realized that he was a sensible and warm-hearted man with many interesting facets. He was interested in philosophical, political, historical, and general scientific questions. As a young man, he was one of the best East-German non-professional gymnasts. Later, he has guided for many years groups of children gymnasts. Like both authors of this article, for some years he has been an active member of the local chess club.

From time to time, he surprised his friends and colleagues with nice and amusing stories from his time as teacher in a small village, about experiences from his scientific career and several aspects of daily life. Also, we remember enjoying his presentations with slide-shows about his adoptive home community Gatersleben and the nature surrounding it.

We shall always remember Peter Apel as an engaged and excellent scientist, and a likeable and generous colleague.

Martin Peisker and Armin Meister, Gatersleben