

Preface Special Section

In memoriam Reinhard Lieberei

On March 5th 2019 Professor Reinhard Lieberei, one of the leading scientists in the field of Applied Botany, passed away in Gorleben at the age of 70. His outstanding research was always characterized by the aspiration to implement results derived from basic scientific studies into practice. In this manner, he worked on a wide array of plant biological topics very successfully. Already in very early phases of his scientific career, he exhibited a deep affection towards the various ecological aspects. As a scientist trained in plant physiology and biochemistry, he always used his profound knowledge on metabolic coherences in combination with ecological requirements to elaborate novel concepts, which could be implemented into practice. This trait – in combination with his passion for the tropics – somehow predetermined his scientific work.

Accordingly, his phytopathological research did not deal with classical, mainstream studies on wheat or potatoes, but was focussed on the *South American Leaf Blight* of the rubber tree *Hevea brasiliensis* caused by the ascomycete *Microcyclus ulei* (GIESEMANN et al., 1986). In the course of this very successful research, he re-discovered the strong cyanogenicity of *H. brasiliensis* (LIEBEREI, 1988). Actually, this cognition was the basis to establish a quite novel field of research, i.e., the metabolism of cyanogenic glucosides. By employing novel and unorthodox plant physiological approaches, the various aspects of translocation of cyanogenic glucosides had been studied. As highlight of this innovative research, the linustatin pathway was elucidated (SELMAR et al., 1988; SELMAR, 1993). Furthermore, Reinhard Lieberei verified that the injury induced liberation of HCN from the host plant *Hevea* in the course of host-pathogen-interactions does hamper the plants much than the pathogens. These coherences initiated a paradigmatic change in ecological biochemistry (LIEBEREI et al., 1989; LIEBEREI et al., 1996).

The second tropical crop plant Reinhard Lieberei was devoted to is cocoa. By pursuing the research of his mentor, Böle Biehl, on the cocoa fermentation (BIEHL et al., 1985; BIEHL et al., 1990), he further elucidated the underlying physiological coherences and intrinsic metabolic processes (NIEMENAK et al., 2006; ELWERS et al., 2009; VOIGT and LIEBEREI, 2015), and became a well known and renowned specialist for cocoa fermentation. In this context, together with his former students Christina Rohsius and Silke Elwers, he published and actualized the “Kakao-Atlas”, a standard treatise for all people working within the cocoa business.

A further facet of Reinhard Lieberei’s research is related to plant tissue and organ culture. In this field, he examined the basic physiological and biochemical aspects to optimize related applications, such as mass propagation of various ornamental and medicinal plants (MEVENKAMP et al., 1994; SAARE-SURMINSKI et al., 2000; HUTTER et al., 2001).

Although most of his scientific work was mainly established in the field of Applied Botany, Reinhard Lieberei’s research exhibited very strong relations to basic science, especially to the interface between plant physiology, biochemistry and ecology. His contributions to these interdisciplinary research fields were based on his comprehensive knowledge and experience in each branch of plant biology. In this regard, Reinhard Lieberei was one of the last and rare polymaths in modern plant biology.

The broad scientific oeuvre of Reinhard Lieberei and his important achievements become obvious, when reading the various articles by his scientific scholars and companions, compiled and displayed in this special section.



Prof. Dr. Reinhard Lieberei

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