

Chlorophyll *a* fluorescence measurements in Croatia • the first twenty years

Edited by Hrvoje Lepeduš, Marija Viljevac Vuletić, Zvonimir Zdunić. 2023, 189 pp, ISBN 978-953-7843-11-3 (Print), ISBN 978-953-7843-12-0 (eBook)

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Chlorophyll fluorescence (ChlF) techniques are sensitive, rapid and non-invasive and provide a wide range of data on plant health. ChlF has been used for more than two decades to study photosynthesis in plants, algae and bacteria. In Croatia, the pioneering work in ChlF research began in the Department of Biology of the Josip Juraj Strossmayer University of Osijek. Since then, many scientific and agronomic laboratories and institutes in Croatia have used this technique in regular research and applied it in practise. This method has become the basis for many collaborative ventures among scientists in Croatia and abroad. Thanks to this cooperation, many young researchers were given the opportunity to learn the ChlF method and apply it in their research. This led to 14 doctoral theses, one master's thesis and numerous bachelor's theses. This monograph, published in English, is thus a tribute to twenty years of the application of ChlF methods in biology and agronomy in the Republic of Croatia.

The monograph begins with a historical overview of the use of ChlF in scientific research and continues with the application of the ChlF method in fundamental research in plant biology and agronomy. In the era of climate change, photosynthesis has proven to be a reliable marker for the degree of adaptation and tolerance of plants. The four chapters present examples of the application of the ChlF method in research and in the understanding of the responses of plants to various abiotic stress factors. The next six chapters present the practical application of the ChlF method in agronomic research, especially in elucidating the stress responses of plants under adverse environmental conditions and in screening for tolerant genotypes, which are of great importance in breeding programs for various crops. The penultimate chapter presents a case study and gives a detailed insight into the scope and effectiveness of the ChlF



method in phenotyping plant material. The last chapter deals with the recent technological advances in the ChlF method and its future perspectives. As Dr. Šimić and Assoc. Prof. Dr. Mlinarić state in the final chapter of this monograph, "...chlorophyll fluorescence remains an important tool for understanding photosynthesis and its response to environmental stress, the health of plants and ecosystems. Continued advancements in technology and analysis will further improve its usefulness. Its future prospects are

bright, with many potential applications in agriculture, urban farming, forestry, aquatic research, climate change, and bioenergy research.”

The monography was presented by the editors Dr. Marija Viljevac Vuletić, senior research scientist from the Agri-

cultural Institute Osijek, and Prof. Dr. Hrvoje Lepeduš from the Faculty of Humanities and Social Sciences, Josip Juraj Strossmayer University of Osijek, at a meeting of the Croatian Society of Plant Biologists in February 2024 in Zagreb (Fig. 1).



Fig. 1. Presentation of the monograph *CHLOROPHYLL a FLUORESCENCE MEASUREMENTS IN CROATIA • FIRST TWENTY YEARS*, ed. Dr. Marija Viljevac Vuletić and Prof. Dr. Hrvoje Lepeduš (A) at a meeting of the Croatian Society of Plant Biologists (B).

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