Gaponenko, V.I., Nikolaeva, G.N., Shevchuk, S.N.: **Obnovlenie Khlorofilla i Produktivnost' Rasteniï.** [Chlorophyll Turnover and Plant Productivity.] – Nauka i Tekhnika, Minsk 1996. In Russian with abstract in English, 248 pp., 40 000 Rbl.

At present, the information what is new in photosynthesis research in the states that were born by the former Soviet Union is rather scarce and mostly disseminated only by participants at some international meetings. Scientific books are published in these states in a fairly low amount of copies, even if they are written in a world language (*e.g.*, this book is written in Russian but exists in only 400 copies). This is regretful because in this way a large amount of literature published in East Europe and Asia remains almost unknown and is not cited by the so-called "western" scientists.

This fully holds for the topic studied for many years in Belorussia, *i.e.*, the relation of chlorophyll (Chl) turnover in plants and yield formation. The book written by three Belorussian scientists evaluates this basic question from all possible points of view. The text starts with an Introduction that explains history of this research, done both in Belorussia and in other countries. Nine basic results are also summarised here. The facts are analysed in detail in the following five chapters.

Chapter 1 deals with the relation of photosynthesis and Chl metabolism. Chlorophyll is being continuously synthesised and degraded in all photosynthesising cells, as shown by experiments with ^{14}C-labelled molecules. This fact is also clear from the studies made during leaf and plant development. I am pleased that this ontogenetic aspect has been carefully respected in all studies of authors of this book. They explain also Chl metabolism within one chloroplast. Chapter 2 is on the well-known characteristic called "assimilation number". History of these studies is briefly summarised, followed by the results obtained by Gaponenko and his co-workers and by researchers from the laboratory of another well-known Minsk scientist, the untimely deceased A.A. Shlyk. The statements are based mainly on experiments with barley, maize (in this plant species large leaves with zones of various developmental phases simultaneously exist), and two forms of sycamore.

Chapter 3 explains the correlation of Chl turnover and photosynthetic activity when plants are irradiated by photons of different wavelength. Plants were grown under blue, green, and red radiation and Chl *a* and *b* metabolism was analysed in detail as well as the related photosynthetic rate and assimilation numbers. Chapter 4 is dedicated to the reflection of Chl metabolism and photosynthetic activities in the yield of various cultivars and mutants of cereals (barley, rye, wheat, *Triticale*). The phase of earing is the key one in this relation. Role of the main carboxylating enzyme—ribulose-1,5-bisphosphate carboxylase—is also discussed here (based on experiments mainly with rye and maize). Grain production is the principal indicator in these studies, and first phases of plant development are the main ones studied.

Chapter 5 broadly discusses Chl turnover as a physiological process related to lipid metabolism (including the effect of lipase action) in thylakoid membranes. The important question of lability of Chl forms is also discussed, as well as the effects of ozone on Chl metabolism.

Two articles summarising the research results are supplemented in Russian and the main results are presented also in English. The conclusions include the hypothesis of Gaponenko that stresses the role of Chl turnover in plant production. The list of references contains 311 papers written in Russian and Belorussian and 141 papers written in other languages, mainly by authors outside the former Soviet Union. I regret that being written in Russian the book has found only a limited circle of readers. The hypothesis of Gaponenko deserves an attention and a broad discussion.

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