

Photosynthetic carbon metabolism in different wheat genotypes

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In C_3 plants photosynthesis takes place simultaneously with the opposite process, named photorespiration which occurs only in the light and is associated with photosynthetic metabolism. Accordingly, the total balance of gas exchange in leaves in the light consists of two processes-photosynthesis and photorespiration. The rate of the integral process and metabolic activity changes during the leaf life cycle. Numerous winter wheat genotypes differing grain yield, phenotypic features, vegetation duration and etc. were the main targets in present study. Obtained results showed that the studied genotypes differed significantly in the level of photosynthetic carbon metabolism. In the flag leaf ontogenesis, the biosynthesis of non-sugar compounds such as alanine, malate and aspartate decreased in absolute and relative units, and the biosynthesis of sucrose, the main transport form, increased. The pattern of sucrose biosynthesis changes in the same way as the total CO_2 assimilation during ontogenesis. Unlike the above mentioned compounds, the starch biosynthesis was more constant. Value of sucrose/starch ratio was maintained at a very high level. The biosynthesis rate and the total value of glycine-serine increased during transition from the stalk emergence to the earing, then decreased at the flowering stage and then its level remained virtually constant. The rate of ^{14}C incorporation into glycolate metabolites and sucrose were higher in the high productive genotypes. Therefore, correlation between biosynthesis rates as well as the total value of glycine-serine and photosynthesis is due to the fact that photosynthesis and photorespiration change proportionally to one another during the wheat leaf ontogenesis.

Biography

From 1951 till today professor Jalal A Aliyev leads research projects at the Department of Plant Physiology and Biotechnology at Research Institute of Crop Husbandry and simultaneously, since 1971 he is the head of the Department of Fundamental Problems of Biological Productivity in the Institute of Botany, ANAS, which was founded by him. He is an editor-in-chief of the official journal of "Proceedings of ANAS" (Biological and Medicinal Sciences). 80 Ph.D. and 10 Doctor of Sciences successfully defended their thesis under his supervision. He has published more than 300 papers, 20 monographs and books published in local and international editions.

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