

Annotation

Rarok A. V., Bilonozhko V. Y., Poltoretskyi S. P.

Theoretical bases of forming highly productive crops of buckwheat

An important characteristic of an agrobiocenosis is the productional process. The basis of it is the ability of plants to absorb water and mineral substances from the soil, absorb carbon dioxide from the air and to synthesize organic substances through the energy of sunlight. At the same time, the theory of the productional process allows extending general biological understanding of vital functions of systems of different levels and simultaneously solving practical problems. The main provisions of this theory point out that carbon, hydrogen and oxygen constitute 95% of the plant biomass. They are absorbed by a plant during photosynthesis with their storing in organic products, as well as transformed energy of solar radiation. Photosynthesis as a basic process in a plant metabolism provides energy substrate harvest formation, combined with the processes of assimilation of nitrogen and elements of mineral nutrition. It is controlled in a complex hierarchy of genetic programs of the development that determine the sequence of ontogenesis processes. Photosynthetic function is controlled by ontogenesis processes and yield formation is determined, above all, by the epigenetic pressure from organs consuming photosynthates.

The development of the theory of the productional process has a significant impact on the development of two areas: practical selection and simulation, forecasting and programming yields. Thus, as a result of restructuring of plant habitus during selection there are buckwheat varieties with increased yield and presence of features such as large size of grain, limited branching, determinativeness and efficient allocation of photosynthates between vegetative and generative organs. The use of such varieties ensures the grain yield of this crop not lower than 20-25 kg/ ha which brings it to the level of other cereal crops.

Key words: *theory of the productional process, photosynthesis, synthetic selection, yield, buckwheat.*