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**ECOLOGICAL AND MORPHOPHYSIOLOGICAL BASICS
OF CROP FORMATION DEPENDING
ON THE GROWING DOSES AND METHODS
OF FERTILIZERS APPLICATION**

Abstract. Highly productive barley agroecosystem is formed when plants are preserved before harvesting 240-260 pcs/m², formation of productive stems 640-680 pcs/m², with bushiness of 2.70-2.85 pcs/plant, the proportion of lateral shoots in crop formation was 62.4-64.8%. This contributed to an increase in grain yield to 33.1-36.7 centner/hectare, the yield increase was 17.7-21.3 centner/ viable seeds are sown and N90P90 kg/ha is added prior to sowing and additional fertilizing with nitrogen fertilizer N30 kg/ha in the beginning of tillering period, irrigation mode 70-75-70% of the total field moisture-holding capacity (MHC) and in the course of other agronomic techniques of due quality in due time.

Key words: barley, dosages and ways of fertilization, growth of internodes, main stalk leaves and lateral shoots area.

Introduction. Results of photosynthetic plants activity is realized in the crop through a complex chain of vital processes depending of the plants' properties and the degree of agroecological factors availability in the environment. Dosages and methods of fertilizer treatment are the efficient and controlled factors having both direct and indirect effect on growth and photosynthetic productivity of plants [1,2,3]. Different organs of cereal crops play different parts in the process of crops photosynthesis and bulking. Thus, 70 to 80% of the whole crop fall at heads, top internodes, top leaves and their sheaths [1,2,4]. Therefore, knowledge of particular features of leaves and internodes formation depending on the growing dosages and techniques of fertilizer treatment contributes to development and improvement of barley cultivation.

Research method. Tests were conducted over the period of 2010-2017 at the experimental base of the Kazakh Rice Cultivation Research Institute named after I. Zhakhayev (Karaul-Tyube experimental farm; Kazakhstan, Kyzylorda). Research item – Rosava and Asem barley varieties. The experimental plot soil is old-irrigated, carbonate, meadow-swamp and hydromorphic. Rice was the predecessor; the plot area is 100 m²; the experiment was repeated four times. Ammonium sulfate was used as nitrogen fertilizer; granular superphosphate was used as phosphate fertilizer. Fertilizers were introduced before sowing and in the form of top dressing at the phase of tillering and heading beginning. Morphophysiological features of barley phytomer were determined in accordance with [5,6] and leaf area was determined in accordance with [7]. The generally accepted methods were used in the field experiments [8,9].

Results and discussions. Based on the results of research and generalization of experimental materials on the morphogenesis of cereals, T.I. Serebryakova [5], N.A. Laman and others [6] substantiated the concept of cereal phytomers as a growth unit. Phytomers or growth units are leaf primordia periodically isolated on the cone of cereal growth instead of corresponding to its axis, due to the independent growth of which, subsequently, there is a tiered growth of the stem and shoots of the cereal. The development of the phytomeres is carried out as a result of the successive growth of the leaf plate, leaf sheath, stem internodes, which are singled out by the tab of the tongue [6]. Therefore, improvement of the