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PRODUCTIVITY OF WINTER BARLEY DEPENDING ON PRECEDING CROPS IN TRANSCARPATHIA OF UKRAINE

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Actuality. Winter barley is a valuable food, fodder and technical crop. According to the FAO, 48% of the barley grain produced goes to industrial processing, 36% - to feed and 16% - for food purposes. It is proved that the productivity of this crop depends on providing plants with all the necessary factors of life in the optimal amount and optimal ratios.

The study of the peculiarities of the formation of winter barley productivity and the degree of reproduction of soil fertility elements, depending on the optimization of elements of cultivation technology, is currently relevant and led to the choice of research algorithm.

Analysis of recent research and publications. The main task of modern agriculture is to ensure food security of the country through the production of the necessary quantity and quality of products.

When growing winter barley, an important task is: to increase grain production, increase yields, efficient use of mineral and organic fertilizers, the best precursors and conservative tillage.

The purpose of the research is to establish and develop regularities of formation of economically and energetically expedient, adequate to bioclimatic potential zone of winter barley grain yield depending on predecessors in Transcarpathia of Ukraine. To achieve this goal, the following tasks were to be solved: to establish the influence of various precursors on the content of available moisture in the soil, phytosanitary condition and productivity of winter barley. To give an economic and energy assessment of growing crops under different predecessors.

The materials and methods for investigation. Experimental studies of the impact of intermediaries on winter barley were conducted during 2018-2020 in the experimental crop rotation of Mukachevo Vocational College of the National University of Life and Environmental Sciences of Ukraine, Transcarpathia region.

The soils of the experimental field are sod-podzolic gleyed, which contain on average 2,6% of humus in the humus horizon. With depth, the amount of humus decreases very gradually and at a depth of 100-130 cm reaches another 1,0-1,7%. The formation of non-carbonate source rocks and the influence of the podzolic process of soil formation led to high actual and potential acidity of soils, the pH of the salt extract ranges from 5,0 to 6,0.

The studied soil, according to agrochemical analysis of the initial samples, contains available forms of nitrogen - 35-45 mg/kg, mobile phosphorus (according to Kirsanov) - 130-160 mg/kg, mobile potassium (according to Kirsanov) - 120-170 mg/kg. The soil is typical for the research area, on average provided with mobile forms of phosphorus, potassium and nitrogen. Qualitative assessment of the surveyed soils showed that the soil requires constant use of organic and mineral fertilizers, liming and crop rotation.

The climate of the research area is temperate with unstable humidity. The average long-term precipitation rate for the year is 618,0 mm. Over the years of research, the amount of precipitation per year is: in 2018 – 568,3 mm, in 2019 – 558,1 and in 2020 – 513,1 mm, which is 10-13% less than normal.

Research results and their discussion. Our research has shown that the initial reserves of available moisture in the soil and its accumulation in the autumn-winter and vegetation periods depend on the amount of precipitation and precursors. Thus, for the period of sowing of winter barley the largest reserves of moisture in 0-30 cm and a meter layer of soil were after winter rape, respectively 30,0 and 121,0 mm. The smallest - after corn for grain (25.0 and 109.0 mm, respectively). It depends on the morphobiological and ecological features of the culture.

In the second half of the growing season the most active root system of sunflower occurs at a depth of 60 cm and deeper. Hence, sunflower plants make intensive use of terrestrial life factors, especially moisture and nutrients. During this period, due to

rainfall, application of mineral fertilizers in the care of plants, active activity of microorganisms, etc., there is a restoration of terrestrial factors of plant life of the upper 0-40 cm layer of soil.

Therefore, sunflower during the growing season more actively uses nutrients and moisture from the lower layers than from the upper. Due to this, sunflower is not a critically negative precursor of winter barley.

Thus, the accumulation of moisture in the soil and its effective use is influenced by many factors - rainfall, crop rotations, tillage, fertilizers and more. The right strategy and tactics for managing the available soil moisture allows you to minimize unproductive costs.

An intensive indicator of the effectiveness of various predecessors in the cultivation of spring barley is its productivity. The highest, on average for three years, the yield of winter barley was after buckwheat and amounted to 5,9 t/ha, the lowest - after corn for grain and was at 4,9 t/ha, which is 0,8 t/ha lower than the control option.

Conclusions and prospects. In Transcarpathia of Ukraine, on sod-podzolic soils of winter barley, sown after buckwheat, soybean and winter rape, had the best indicators of providing available moisture throughout the growing season. The crop used it most economically and efficiently during the growing season compared to the predecessors of the late harvest - sunflower and corn for grain.