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INFLUENCE OF THE LEVEL OF MINERAL FERTILIZERS ON THE EFFICIENCY OF THE GREEK IN CONDITIONS WESTERN FOREST STEPS OF UKRAINE

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Formulation of the problem. In the conditions of modern intensive land cultivation, the need to increase agricultural output, including buckwheat as the main cereal crop, is growing. The average yield of buckwheat in Ukraine is 0,7–1,0 t/ha, 1,5–2,0 t/ha are collected in the best farms, and 2,5–3,3 t/ha in good years.

The main causes of the low yield and gross harvest of buckwheat in Ukraine is the lack of high-yielding crop varieties, not developed and adapted to the zonal soil and climatic conditions of growing technology [4; 6].

The absorption of nutrients by buckwheat is largely determined by their chemical composition and the depletion of nutrients with the harvest. The results of many researches have shown that buckwheat is much better able to absorb nutrients from the soil than other crops. It requires special living conditions, including mineral nutrition [1; 7].

It is necessary to use a large amount of fertilizer to form a high yield of buckwheat. With a yield of 20 c/ha and 60 c/ha of straw, buckwheat absorbs 90 kg of nitrogen, 60 kg of phosphorus and more than 150 kg of potassium from the soil, while wheat with the same grain yield absorbs about the same amount of nitrogen, twice less the phosphorus and three times less potassium [7].

The topicality of the theme is caused by the need to implement zoning growing technologies into manufacturing, taking into account the more effective use of the bioclimatic potential of the Western Forest-Steppe conditions.

Presenting of the main material. Receiving of high yields of agricultural crops with the corresponding of grain amount significantly depends on the soil and climatic conditions of their cultivation and also on fertilization and varietal characteristics.

According to the results of the research, it has been established that the fertilization significantly affects the formation of the buckwheat yield, the content of protein and starch (Table 1, 2).

The lowest yield of buckwheat was 9,7 c / ha in the control version without fertilization. The mineral fertilizers in the norm $N_{30}P_{30}K_{30}$ increased the yield of buckwheat to 4,2 c/ha, or 43,3%. Fertilization in the norm $N_{45}P_{45}K_{45}$ at a 1: 1: 1 ratio and increase of nitrogen, phosphorus and potassium to 15 kg/ha

acting substance led to an increase in yields to 15,0 c/ha. The increase in control variant was 5,3 c/ha, or 54,6%. The highest yield was obtained in the version with the mineral fertilization in the norm $N_{60}P_{45}K_{45}$ – 18,7 c/ha with an increase to control version of 9,0 c/ha. A little bit lower yields were obtained in the fifth and sixth variants of the experiment – 17,6 and 16,2 c/ha. According to the calculated norm $N_{87}P_{88}K_{77}$ (for the programmed productivity of 25,0 centners per hectare), the yield was 25,2 centners / hectare with the increase to the control variant of 15,5 c/ha, or 159,8%.

The mathematical processing of harvest data confirms their reliability.

Comparing the effect of nitrogen, phosphorus and potassium (option 4, 5 and 6), the best protein content and its yield were obtained in the fourth variant, with an increase in nitrogen fertilizers to N_{60} – a protein content of 16,2% and a yield of 3,03 c/ha. In the control variant, the protein content was the lowest at 12,1%, with a yield of 1,17 hundredweight per hectare.

In the version of the norm $N_{87}P_{88}K_{77}$, the highest protein content of 16,9% was obtained at the programmed yield of 25 c/ha with an increase of 4,8%. The yield of the protein in the above variant was the highest and was 4,26 c/ha, which is 3,09 c/ha higher than the control variant.

The content of starch was highest in the control version without fertilizing and was 72,1%, which is 8,4% higher than the experimental version, with the calculated norm $N_{87}P_{88}K_{77}$ for the programmed yield of 25 c/ha (Table 2). The yield of starch was 16,0 centners / hectare (the highest) in the seventh variant, which gave an increase to control of 3,09 centners per hectare.

The lowest starch content of 63,7% was obtained in the version with the norm of $N_{87}P_{88}K_{77}$ (for the programmed yield of 25,0 c/ha), but due to high yield of 25,2 c/ha in this variant, its highest yield was obtained – 16,0 c/ha. The lowest starch yield of 7,0 c/ha with the highest content of 72,1% was obtained in the control version.

Conclusions. In order to grow an intensive variety of buckwheat Sophia on the dark gray podzolized soils of the Western Forest-steppe Ukraine after winter wheat, we propose to bring mineral fertilizers in the norm of $N_{60}P_{45}K_{45}$. At this level of mineral fertilization the highest yield was obtained at 18,7 c/ha, which is 9,0 c/ha higher than the control variant. To get the programmed yield of 25 c/ha, the norm of mineral fertilizer should be increased to $N_{87}P_{88}K_{77}$.

The highest protein content of 16,9%, with an increase to control of 4,8%, was obtained in the version with the calculated norm of $N_{87}P_{88}K_{77}$ for the programmed yield of 25 c/ha. The yield of the protein in the above variant was the highest and was 4,26 c/ha, which is 3,09 c/ha higher than the control variant.

The content of starch was highest in the control version without fertilizing and amounted to 72,1%, which is 8,4% higher than in the experimental version,

with using of the calculated norm $N_{87}P_{88}K_{77}$ on the programmed yield of 25 c/ha. However, the yield of starch was highest in the seventh experiment and amounted to 16,0 c/ha, which is 9,0 c/ha higher than the control variant.

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