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**THE INFLUENCE OF NORMS OF FERTILIZERS TO REPLACE THE
ASSIMILATION SURFACE AREA OF SPRING BARLEY IN DARK
GRAY ASHED SOILS OF WESTERN FOREST-STEPPE**

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Scientific problem. Improving the elements of technology, especially those that recognize the functioning of the crop, is an important reserve for improving the productivity of spring grain crops. Creating optimal conditions for mineral nutrition is an important factor in the formation of phytocenoses of spring barley. This task is realized by increasing the area of the leaf surface, which actively synthesizes the dry matter. Therefore, in the system of agrotechnical measures, the establishment of the optimal norm of mineral fertilizers in the specific soil-climatic conditions becomes of paramount importance.

Statement of the main results of the study. Three years of research was carried out to accomplish the task. The soil of the experimental site was characterized by the presence of alkaline hydrolyzed nitrogen at 99 mg/kg soil, mobile phosphorus compounds – 88, potassium metabolites – 103 mg/kg of soil, pH_{KCl} – 6,5. The scheme of the experiment involved the introduction of different norms of mineral fertilizers: 1) without fertilizers (control); 2) $N_{45}P_{30}K_{30}$, 3) $N_{60}P_{30}K_{30}$, 4) $N_{45}P_{45}K_{45}$, 5) $N_{60}P_{45}K_{45}$, 6) $N_{60}P_{60}K_{60}$.

The area of the leaf surface was determined by the method of cutting. The repetition of the experiment is three-fold, the calculated area is 35 m². The agricultural machinery for cultivation is generally accepted for the Western Forest-steppe zone of Ukraine.

The executed studies have shown that the size of the leaf surface of barley on a unit of area varies widely, depending on the norms of mineral fertilizers and vegetation phases.

According to the results of research, in the phase of tillering the spring barley, the area of the leaf surface was characterized as the lowest. The application of various norms of mineral fertilizers provided for its growth in various quantities. Against the background of $N_{45}P_{30}K_{30}$ and $N_{60}P_{30}K_{30}$, the area of the leaf surface for 1 m² in this phase exceeded the option without fertilizers, respectively, by 1,5 and 2,1 m². When applying the norm of mineral fertilizers $N_{45}P_{45}K_{45}$ the area of leaves was the largest and was 5,5 m² per unit area, the excess of control experiment (without fertilizers) was 2,6 m².

The systematic observations of the growth and development of plants have shown that on the background of mineral nutrition $N_{60}P_{45}K_{45}$ and $N_{60}P_{60}K_{60}$ the

rewas a compression of crops as a result of the introduction of higher norms of mineral fertilizers, in particular, nitrogen in the composition of full mineral fertilizer. That led to a slight decrease in the area of the assimilation surface in the indicated variants compared with the previous version, corresponding to 4,8 and 4,6 m² per 1 m².

Due to the growth of the vegetative mass of plants during the growth and development of the area of the leaf surface of the spring barley increased. Therefore, in the phase of the yield in the tube received its higher rates per unit area than during the period of tillering, but such trend was maintained by the variants of the experiment. The index of the area of the leaf surface varied in the range from 3,8 m² in the version without fertilizing up to 6,4 m² in the variant, where the mineral fertilizers were introduced in the normal N₄₅P₄₅K₄₅.

The research has found that the use of mineral fertilizers significantly contributed to the development of a larger area of leafy the spring barley, which is a positive result.

The formation of vegetative mass of plants to a large extent depends on the norm of nitrogen fertilizer application. Therefore, in the process of statistical processing of the results was established a close correlation between the area of the leaf surface and the norms of the nitrogen fertilizer is established. The determination coefficient (R²), which reflects the tightness of the connection, is 0,76.

Conclusions. Formation of the area of the leaf surface per unit area of spring barley plants is significantly depending on the application of mineral fertilizers. In the conditions the dark gray of the podzolized soil of the Western Forest–Steppe, the option with the introduction of the N₄₅P₄₅K₄₅ provided the highest index of leaf area, which was in the tillering period of 5,5 m² per 1 m² for the versions without the fertilizer 2,8 m², in the phase of the output in the tube in this variant received 6,4 m² for the indicator at the control of 3,8 m² per 1 m².

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