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**EFFECT OF MINERAL FERTILIZERS ON THE YIELD AND
QUALITY OF OATS SEEDS OF THE AVGOL BACON IN THE
WESTERN FOREST-STEPPE OF UKRAINE**

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Mineral fertilizers are one of the most powerful factors contributing to the increase in yield and quality of oats. In the conditions of the western forest-steppe of Ukraine, the influence of mineral fertilizers on the yield and quality of grain of oat variety of the Avgol is not sufficiently studied.

The task statement – the formulation of research objectives. The objectives of the study include the study of the impact of different standards of mineral fertilizers on yields and quality seed rates.

Description of the main material During 2016–2017 in PP "Agro-Express-Service" of the Mlynivskiy district of the Rivne region a field experiment to study the effect of mineral fertilizers on the productivity of oats was conducted. The object of research was the vulgar Avgol variety, which is recommended for growing in the forest-steppe zone of the Western region of Ukraine. The soil of the experimental area is dark gray podzolized. The predecessor of the experimental site was soy. In autumn, after harvesting, the predecessor was planted at a depth of 25 cm MTZ-82 + 3–35. Under the plowing of the soil of the experimental site, phosphorus (Ammophos $\text{NH}_4\text{H}_2\text{PO}_4$ + $(\text{NH}_4)_2\text{HPO}_4$) and potassium (Potassium chloride KCl) fertilizers were introduced.

In the spring, nitrogen fertilizers (ammonia nitrate) and pre-sowing cultivation of KPS-4 were sown. On April, 2 they sow at a depth of 3–4 cm with intermediate rows of 15 cm in triple repetition with a seed rate of 4,5 million / ha. During the care, Granstar herbicide (25 g/ha) was used, along with a Trend adherent (200 g / ha) that was introduced in the buccal phase. Nitrogen fertilizers were also included in the batching phase on separate experimental variants ($\text{N}_{45+45} \text{P}_{30} \text{K}_{60}$; $\text{N}_{40+40+40} \text{P}_{40} \text{K}_{80}$). In the phase of the output of the tube, nitrogen was introduced according to the experimental scheme ($\text{N}_{40+40+40} \text{P}_{40} \text{K}_{80}$).

Research method is a field method for determining the influence of elements of cultivation technology. Soil cultivation and crop maintenance were carried out in accordance with accepted recommendations for the Western Forest-steppe of Ukraine.

During research (2016–2017 years) there was a straightforward dependence of the level of yield on the background of mineral fertilizers. The results of the studies indicate an increase in the productivity of the oats of the grade Avgol with

an increase in the doses of mineral fertilizers, namely $N_{30} P_{10} K_{20}$; $N_{60} P_{20} K_{40}$; $N_{90} P_{30} K_{60}$; $N_{45+45} P_{30} K_{60}$; $N_{120} P_{40} K_{80}$; $N_{40+40+40} P_{40} K_{80}$; compared to control (no fertilizer).

The highest values of the average yield for 2 years (4,84 t/ha) and the increase in the yield of the grade of oatmeal Avgol (2,77 tons / ha) compared with the control were observed in the experiment with the introduction of $N_{40+40+40} P_{40} K_{80}$.

On the variant of experiment $N_{120} P_{40} K_{80}$ with the same amount of fertilizers, the yields obtained are also high, but lower than $N_{40+40+40} P_{40} K_{80}$ by 0,42 t/ha, where fertilizers were introduced in stages, which contributed to a better fertilization of the fertilizer.

The lowest values of the productivity increase of the grade of oatmeal Avgol (0,79 t/ha) compared with the control were observed on the variant of the experiment with the lowest fertilizer dose $N_{30} P_{10} K_{20}$. The dose $N_{60} P_{20} K_{40}$ provided yields at 3,48 t/ha.

On average, over the years of research in mineral fertilizers at a dose of $N_{90} P_{30} K_{60}$, the yield of Avogol variety was 3,96 t/ha. On the background of $N_{45+45} P_{30} K_{60}$, the yield was at a level of 4,3 t/ha, due to the fact that during vegetation the absorption of the power supplies is uneven. Oats are characterized by a long absorption period.

In its biochemical composition oats differs from other grains due to the favorable combination of nutrients. Oyster proteins have the highest biological value, the share of digestible oat proteins reaches 90–95% of its total content. The application of mineral fertilizers, along with the increase in yield, increased the protein content of oats.

The smallest protein content in the grade Avgol was obtained for $N_{30} P_{10} K_{20}$ – 14,13%, but greater than control by 0,25%.

In variant $N_{40+40+40} P_{40} K_{80}$ the protein content is the highest – 14,43%, at 0,55% compared with the control. Nitrogen is one of the most important factors by which it is possible to regulate growth and development of plants during vegetation in the direction of productivity growth. In increasing the yield of grain and the content of protein in it, the greatest effect is provided by the retail use of fertilizers, when the pre-sowing application is combined with the feeding in the required period of vegetation.

Conclusions: Thus, in the conditions of the Western Forest-steppe of Ukraine on dark gray podzolized soils, the maximum productivity level of the studied grade Avgol was obtained for $N_{40+40+40} P_{40} K_{80}$ and amounted to 4,84 t/ha. Mineral fertilizers also affect the protein content, on the background of fertilizers $N_{40+40+40} P_{40} K_{80}$ its content was 14,43%, which is 0,55% more than the control $N_0 P_0 K_0$ (13,88%).

Bibliographic list

1. Andrianov S. N. The role of fertilizers in the formation of yield and quality of oats grain on soddy podzolic soils. *Grain crops*. 2000. № 3. P. 23–24.
2. Batalova G. A., Lisitsyn E. M., Rusakova I. I. Biology and genetics of oats: [text] / Kirov: Zonal SRIA of the North-East, 2008. 456 p.
3. Gamzikov G. P. Aftereffects of nitrogen fertilizers: bulletin / *Siberian scientific research Institute of Agriculture*, 1978. Extract 37. P. 20–24.
4. Hasanova I. The basis of success– sorts predecessors and fertilizers. *Agribusiness today*. 2016. No. 18. P. 48–49.
5. Dyatkovskaya L. I., Limantova V. M. Effect of fertilizers on yield and grain quality. Minsk: Harvest. 1987. 12 p.
6. Kyyak G. S. Spring cereals (for the western regions of Ukraine) State Publishing House of Agricultural Literature of the Ukrainian SSR. Kiev. 1946. success–sorts predecessors and fertilizers. *Agribusiness today*. 2016. No. 18. P. 21–30.
7. Likhochvor V. V., Petrichenko V. F., Ivashchuk. P.V. Grain production. Lviv: Ukrainian Technologies, 2008. 624. 340 p.
8. Rogov M. S., Popov N. I. Efficiency of fertilizers of grain-growing crops. *Chemicalization of agriculture*, 1991. No. 9. P. 72–77.
9. Yudin F. A. Methodology of agrochemical research. Moscow: Kolos, 1980. 2nd ed. 366 pp.
10. Yagodina B.A. Agrochemistry. Moscow: *Agropromizdat*, 1989. P. 50–160.