EFFECTIVENESS OF FERTILIZATION OF WINTER RAPE IN THE CONDITIONS OF WESTERN FOREST STEPPE

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High yields of rapeseed are grown on fertile soils at optimal norms of mineral fertilizers. To produce 1 ton of seeds with an appropriate mass of straw 50-60 kg N, 20-25 – P₂O₅ and 40-50 kg K₂O are taken from the soil, which is much more than other crops absorb [2].

On the soils with an average level of provision of plants with mobile forms of basic nutrients, the optimal norm of mineral fertilizers is N₈₀−₁₂₀P₆₀−₉₀K₆₀−₉₀ [1].

On the black podzolized soils of Western forest steppe when growing winter rapeseed of Trumpf hybrid after the precursor of winter barley, it is advisable to apply mineral fertilizers in the norm of N₇₀P₉₀K₁₄₀ (to pre-sowing cultivation) + N₇₀ to fertilization (in early spring on thawed and frozen soil) [3].

Researches on the study of the effect of different norms of the mineral fertilizers on the yield and quality of winter rapeseed were conducted during 2018–2019 on podzolized chernozem in the conditions of Zboriv district of Ternopil region according to the following scheme: 1) control – without fertilizers; 2) P₄₀K₆₀ + N₅₀ to fertilization (стеблування); 3) N₃₀P₅₀K₈₀ + N₃₀ to fertilization (штос); 4) N₄₀P₆₀K₁₀₀ + N₄₀ to fertilization (штос); 5) N₅₀P₇₀K₁₂₀ + N₅₀ to fertilization (штос); 6) N₅₀P₇₀K₁₂₀ + N₂₅ to fertilization (штос) + N₂₅ to fertilization (буття).

In the experiment the Fenzer hybrid was sowed with a sowing norm of 1 million similar seeds per 1 ha. The technology of winter rapeseed cultivation, in addition to research questions, has been widely accepted in the Western region of Ukraine. The predecessor is winter wheat. Field experience was laid in accordance with conventional methods.

The highest structural indicators of winter rape crop (the number of pods per plant – 97,4 pcs., the number of seeds per pod – 22,5 pcs., the number of seeds per plant – 1987,4 pcs., weight of 1000 seeds – 3,94 g, seed weight of one plant – 7,4 g) was noted in the variant of the experiment with the application of mineral fertilizers in the norm of N₅₀P₇₀K₁₂₀ + N₂₅ to fertilization (штос) + N₂₅ to fertilization (буття), which ultimately resulted in yield.

The highest yield of 37,4 centners/ha was obtained with the application of fertilizers in the norm of N₅₀P₇₀K₁₂₀ + N₂₅ to fertilization (штос) + N₂₅ to fertilization (буття). The yield increase in the specified variant was 22,5 centners/ha, or 60,2% to control (without fertilizers). In the above variant, the highest total oil yield was 16.4 t/ha.

The highest indicators of economic efficiency (net profit – 22132 UAH/ha, profitability level – 92,1% and payback of 1 UAH of costs for fertilizer application
– 2.8 UAH) were obtained in the variant of the experiment with the application of mineral fertilizers in the norm of $N_{50}P_{70}K_{120} + N_{25}$ to fertilization (shooting) + $N_{25}$ to fertilization (budding).

References:

PRODUCTIVITY OF WINTER WHEAT DEPENDING ON THE LEVEL OF MINERAL FERTILIZATION IN THE CONDITIONS OF THE WESTERN FOREST STEPPE

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Winter wheat absorbs nitrogen throughout the growing season, from the beginning of the roots functioning to the cessation of growth due to the ripening of its photosynthetic apparatus. There is no consensus on the progress of the absorption of nitrogen during spring and summer. Most researchers believe that the majority of nitrogen is used by plants in the intensive growth of vegetative mass of plants during the period from the beginning of turning into the tube to flowering [2].

Nitrogen significantly affects the formation of elements of plant productivity. Thus, at the II and III stages of organogenesis (in the tillering phase), there is a shortage or excess of nitrogen, the timing of its application can significantly affect the formation of the tillering shoots. If the lack of nitrogen is detected before the sprouting of the bud of the new shoot, then it is not forming [1].

With the application of mineral fertilizers is norm of $N_{70}P_{90}K_{90} + N_{30}$ (IV stage) + $N_{30}$ (VIII stage) to nutrition the highest yield of winter wheat of Dostatok variety of 59.0 centners/ha and the highest quality indicators were obtained: weight of 1000 grains of 46.7 g, grain nature of 787 g/l, vitreous of 84%, protein content of 13.9%, gluten content of 31.6 % [3].

Researches on the study of the effect of fertilization on the yield and quality of winter wheat of Legenda Myronivska variety were conducted during 2018-2019 on sod-podzolic soil in the conditions of the Manevitskiy district of Volyn region according to the following scheme: 1) without fertilizers; 2) $P_{100}K_{100}$; 3) $N_{120}P_{100}$; 4) $N_{120}K_{100}$; 5) $N_{120}P_{100}K_{100}$; 6) $N_{80}P_{100}K_{100} + N_{40}$ to fertilization (III stage); 7) $N_{80}P_{100}K_{100} + N_{20}$ to fertilization (III stage) + $N_{20}$ to fertilization (IV stage).