

POTASSIUM NUTRITION OF MAIZE FOR VARIOUS SYSTEMS OF FERTILIZERS APPLICATION

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Introduction. Proved that potash fertilizer increases the flow of potassium in maize plants. Currently, it is important to establish a manifestation of different standards and different combinations of fertilizers on soil. In particular, the soils with high natural fertility exert their buffering and can "no hurry" to reveal the effect of fertilizers. Researchers observed that for potassium content in the soil of 10-15 mg / 100 g of ground corn poorly react to make phosphorus-potassium fertilizers. The high cost of fertilizers, on the one hand, and a high need for power modern varieties of corn - on the other, enhance the relevance of such research.

Analysis of recent research and publications. The role of potassium in the formation of grain crops extensively studied domestic and foreign scientists. This element plays its irreplaceable role for maize in particular will intensify photosynthetic activity puff device, outflow and storage products of photosynthesis, accelerating the assimilation of nitrogen, protein synthesis, catalyzed functioning of enzymes and enzyme systems, optimize the acid-base balance, increases the synthesis of cellulose and pectin, which contributes to thickening of the cell walls and tissue strength, reduces the intensity of transpiration and improves the water-holding capacity leaves.

Purpose. The aim of our research was to determine the relationship between the system applying fertilizers, potash plant nutrition, yield and quality of corn for growing on meadow chernozem calcareous soil.

Objects, materials and methods of research. The study included: field research, analytical analyzes related observations. A field experiment was conducted at the long-term field experiment of the agricultural chemistry and

quality of crop production department of NULES of Ukraine. Field and laboratory studies conducted by the accepted agricultural chemistry techniques and methods. In studies using hybrid corn Yarynyn F1.

Soil of field research was chernozem meadow, which characterized by positive physical and chemical properties, the average level of phosphorus and potassium content. The reaction of soil solution is favorable for the growth and development of corn. However, to get a high yield of such intensive culture as corn, must pay attention to the effective soil fertility. Samples of soil and plants selected according to the phases of growth and development.

Results. Long-term studies have shown that fixed regardless of sort types, corn positively responds to the complex fertilizer and increasing the rate of fertilizer. Adding potassium increases power plant, increasing its content in all organs of plants in all phases of growth and development. Plants grown in versions using the recommended norm of fertilizers $N_{90}P_{90}K_{135}$ and increased rate $N_{135}R_{135}K_{202}$, there were highest in potassium in all phases of maize plants.

The acquisition potassium by plants starts from period of the stairs and in the early stages impact on corn productivity. In 4-5 leaves phase potassium content in plants differs significantly compared with the control, in the version of the phosphorus-potassium fertilizer. Adding nitrogen fertilizer and increasing to 1.5 times the recommended standards, in turn, contributed to a significant increase in potassium content in plants. The results showed the importance of balanced provident power plants.

Potash fertilizers in the initial period of plant growth regulating the rate of flow batteries to root hairs and their absorption. The soil of our research fields have low potassium, which entitles you to predict the high efficiency of potash. The findings suggest that potassium absorbed by corn plants particularly intense at the beginning of the growing season and during the laying of the generative organs. At the end of the growing season this element is almost absorbed.

The highest content of exchangeable potassium was observed in the phase of 4-5 leaves, in the version $N_{135}R_{135}K_{202}$ it was 8.7 mg / 100 g, the content in the

control 6.3. Note that with a balanced fertilizer value of this indicator was increased, for example, a phase 4-5 leaves in version $N_{90}P_{90}K_{135}$ exchangeable potassium content was 8.1 mg / kg soil, the indicators in ways $R_{90}K_{135}$ and P_{90} - 7.8 and 7.2 mg / 100 g, respectively. By the end of the growing season, this figure decreased in all variants. This is due to the intense absorption of this element by plants.

Because of low natural content of soil potassium can act as a factor limiting productivity. Potassium Mobility describes the ability of soil to react quickly to the needs of plants, and therefore is an objective measure of the effectiveness of the fertilizer. According to the results, the mobility of potassium in the phase of 9-10 leaves differed as for years, and with the options. Substantial improvements are observed for phosphorus-potassium fertilizer, due to increased potash background soil by making soluble mineral salts of this element, which is a fertilizer. The level of potassium in the mobility of these options and the use of complete fertilizer recommended rates were close and higher than the control (without fertilizer) three times.

A significant increase in standards was an increase of fertilizers, which proves the close relationship of mobility rules of potassium fertilizers. This figure is alkali-carbonate black earth soils are closely correlated with yield ($r = 0.87$), the regression equation - $Y = 3 * 74.4 - 49.5 + X$, where Y – yield, t / ha, X - mobility potassium mg / l.

Conclusions. Studies have shown that the use of fertilizers in normal $N_{135}R_{135}K_{202}$ is an effective factor in optimizing potassium nutrition of maize plants, improving yield and grain quality, improved fund potassium carbonate chernozem meadow soil.

Keywords: *maize, yield, quality of the crop, potassium nutrition, fertilizer.*