

3. Vlasenko, N. E. Potato Fertilizing. Moscow: Agropromizdat, 1987, 217 p. (in Russian)
4. Myalkovsky, R. A. (2018). Biochemical indicators of potato tubers for the use of micronutrients. *Bulletin of the Kharkiv National Agrarian University*, 1, 23–32.
5. Gamajunova, V. V., Khonenko, L. G., Grlja, L. M et al. (2020). Using micronutrient in climate change. *Innovative Solutions in Modern Science*, 6(42), 124–148.

ROLE OF NITROGEN FERTILIZERS IN MODERN AGRICULTURE OF UKRAINE

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The population not only in Ukraine, but also at a global scale is currently growing rapidly that increases the need for ensuring basic food products and encourages excessive demand for applying mineral fertilizers. To solve the food and other problems in the national agrarian sphere, it is expedient to take measures, including, but not limited to increasing investment in the agro-industrial sector and intensifying agricultural production. One of the high-priority objectives is the application of fertilizers. The proper use of mineral fertilizers in agriculture will directly affect the yield, having a positive effect. It is worth noting that even the most fertile soil is depleted over the years, if it is constantly used for growing crops, and such nutrient depletion adversely affects soil quality, boosting crop yields, therefore, creating a threat to the Ukrainian sustainable agricultural development for food security and nutrition. Agricultural enterprises are able to replenish the soil reserves by special top dressing. It will increase productivity even in small areas, improve the taste and appearance of agricultural products [1].

The issue of the expediency of applying mineral fertilizers for agrarian sphere was raised at the end of the nineteenth century, when, due to the rapidly increasing population, increase in food production based on improving agricultural productivity was urgently needed. The use of fertilizers, along with the implementation of other agro-engineering measures, such as proper land treatment and cultural operations, is one of the key factors in properly managing the development and growth of crops, and should feature prominently in obtaining high and sustained yields. The role of nitrogen fertilizers in crop production, soil science and agriculture has become increasingly important in recent years.

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The main sources of food for plants are considered to be minerals dissolved in water and soil. The introduction and subsequent application of mineral fertilizers have revolutionized the agrarian sector, as a result of which agriculture has become an industry aimed at producing the highest yields per unit area.

Initially, the yields of crops have increased by the application of organic matter such as compost and manure. These means have been effective for a while, but not enough to meet the growing demand for agricultural products. In order to solve the above issue scientists have developed chemical compositions that can saturate the soil with the necessary components. Without the essential amount of mineral fertilizers, it is extremely difficult to achieve high yields. There is a limit that cannot be exceeded by means of manure, peat, or humus. In addition, the required amount of natural fertilizers and the complexity of their application to the soil on large areas make it unprofitable to grow any crop.

The most popular mineral fertilizers in agriculture are nitrogen fertilizers. They are made as a result of the synthesis of ammonia from oxygen with hydrogen (practically from air). Hydrogen is produced from oil, natural gas, and coke. Nitrogen fertilizers may successfully solve the problem of increasing the yield of all crops. Manufacturers produce phosphorous, potash, nitrogen and complex fertilizers that contain a number of nutritional compounds. Depending on the type of soil and crops, farmers should apply micro fertilizers as well [2].

It should be mentioned that the application of mineral fertilizers may dramatically boost the yield of any crop, but the decision to use them should be scientifically justified. The wrong fertilizer can lead to the opposite effect, reduce the yield and make the soil unsuitable for several years. Moreover, the cost of nitrogen fertilizers is high due to energy costs.

To sum up and in consideration of the foregoing, the active application of fertilizers in agriculture will lead to a change in the naturally formed process of soil formation and result in the formation of anthropogenic soil, which differs significantly from the usual one in many indicators that is physical and chemical, microbiological, etc.

In consideration of the foregoing, it is expedient to use the above mentioned fertilizers, along with the other means successfully implemented in Ukraine.

References:

1. Five important facts about fertilizer. Available at: <https://www.yara.com/knowledge-grows/five-important-facts-about-fertilizers> (accessed November 10, 2020).
2. Sergey Mezhak. Gramotnoe ispolzovanie himicheskikh udobreniy v selskom hozyaystve. Available at: <https://www.fertilizerdaily.ru/20191001-gramotnoe-ispolzovanie-ximicheskix-udobrenij-v-selskom-xozyajstve/> (November 12, 2020).