

ABSORPTION BY MEDICINAL PLANTS OF NITROGEN OF DIFFERENT NITRIC FERTILIZERS AND THEIR IMPORTANCE IN OBTAINING ENVIRONMENTALLY FRIENDLY PRODUCTS

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Use of nitrogen and different forms of nitric fertilizers by medicine crops and their importance at decreasing the pollution of environment.

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The results of research point out to definite advantage of using the Carbamide-formaldehyde fertilizer (CFF) than the urea and ammonium nitrate at decreasing the pollution of environment by remains of artichoke manure harmful for organism. It is established, that the use of slow-releasing CFF is especially important in the conditions of salty soils with close laying of ground waters, where the considerable losses of nitrogen in the result of nitrates alkalinity into the ground waters take place. It was revealed, that the great content of nitrates in the soil at carrying in nitric fertilizers like ammonium nitrate and urea causes the considerable losses of given element of feeding, which parameters have the great extent. As a result the number of problems of environmental pollution take place, as the most danger is the great accumulation of nitrates in the soil. It should be noted, that nitrates are accumulated not only in the soil-ground waters, but in feed and food products higher than permissible norm and hence they get into organism of human and animals.

Key words: Nitric fertilizers, humus, urea, ammoniac nitrogen, nitrates and amides, denitrification, artichoke, plants.

Introduction: intensive use of mineral fertilizers and chemical plant protection products for agricultural and medicinal cultures, and different tillage systems activated microbiological processes and accelerated the circulation of nutrients. This led to a reduction in the protective function of humic substances as an adsorbent of toxic compounds and entering soil mineral nutrients, which was a limiting factor in increasing the yield of medicinal plants and reducing the efficiency of mineral fertilizers, especially nitric [1,2].

One of the methods of increasing the efficiency of nitric fertilizers to the plants and reducing its unproductive losses is the use of slow-acting nitric fertilizers. A further increase in the yield of medicinal crops, including *Cynara scolymus* L., *Valeriana officinalis* L., *Artemisia leucodes* Schrenk. et al. requires increasing doses of nitric fertilizers. Experts estimate about 50-60% yield increase is obtained through the use of nitric fertilizers, but with increasing application rates of nitric fertilizers their efficiency is progressively reduced, and the increasing number of unused

nitrogen is a potential threat to the environment, turning into the hydrosphere and tropospheric pollution factor. Summarizing the above materials should be noted that the use of high rates of nitric fertilizers in excess of the needs of plants for the formation of the planned crops, accompanied by a significant accumulation of nitrogen compounds in the soil, water sources, feed foods. Also as a result of denitrification and other chemical reactions taking place in huge losses of nitrogen oxides as its parent, which penetrates in polluting the atmosphere with all the ensuing negative consequences. In this regard, development of scientific bases of nitrogen efficiency in agricultural and medicinal plants, reducing environmental pollution harmful to the body remains of the fat is of great scientific and practical importance. A promising technique improve the efficiency of nitric fertilizers is to create new forms and improvement of existing species, contributing to the stabilization of nitrogen fertilizers applied.

Aim: We set out to explore the use by prickly artichoke of urea nitrogen and carbamideformaldehyde fertilizers (CFF), its transformation in soil and their importance in reducing pollution and getting environmentally friendly products.

Research methods. In our research, we studied the efficiency of urea and carbamideformaldehyde fertilizers (CFF) in a typical non-salted grey soils of Samarkand and Tashkent regions and light middle-salted grey soils of Syrdarya region of the Republic of Uzbekistan.

Vegetation and field experiments were conducted. The area of the plot was of 600 m² on middle-salted light grey soils and 400 m² on a typical non-salted grey soils.

Results of research and their discussion. We found that nitrate and ammonia nitrogen in the soil depends on the type of nitric fertilizers applied. During all phases the content of ammonia nitrogen in the soil is more, and nitric is less when applying carbamideformaldehyde fertilizer to urea. It should be noted that the content of ammoniac and nitric nitrogen depends on the development phase. More content of these nitrogen compounds observed in the phase of budding and flowering, after which they decrease, reaching a minimum in the maturation phase of seeds of artichoke prickly.

During the period of maturation of plant seeds the amount of residual nitrogen significantly prevails when applying a urea for plant than CFF.

These data indicate that the nitrification of ammoniac nitrogen of CFF is significantly less than urea. As a result, leaching of nitrates, especially in saline soils with shallow groundwater occurs to a greater extent in applying urea than the CFF. Because of the greater content of ammoniac nitrogen in the soil when using the CFF residual nitrogen (intact plant) is reduced compared to urea, which ultimately increases the efficiency of nitrogen to plants, and reduces loss.

The total amount of residual inorganic nitrogen, composed of nitrates and ammonia, is much higher when using for studied plants urea than CFF.

From these data one can assume that the loss of nitrogen from urea by denitrification and leaching occurs to a greater extent by using for studied plants urea than CFF. This points to an advantage of application CFF than urea in reducing environmental pollution with harmful to the body remains of fertilizers.

Similar data on the content in the soil of ammonia and nitrate nitrogen were obtained in conditions of field experiments laid on a typical non-saline sierozems.

As shown by the above data, the content of ammonia and nitrate nitrogen is greater during reproductive development (budding, flowering - fruit formation) of the studied plants, and then it is reduced, due to the plant increased consumption of nitrogen on the one hand, and on the other unproductive its losses in these phases of development by the above-mentioned plants. The results of our study indicate that nitrate content in the soil in all terms of their formation is significantly reduced when applied to the soil of CFF than urea.

Therefore, the use of carbamideformaldehyde fertilizer is especially important in saline soils with shallow groundwater, where it is possible to expect a significant loss of nitrogen through leaching of nitrates into groundwater. Also, a higher content of nitrates in the soil when applying the standard fertilizers leads to significant losses of nitrogen, sizes of those reach significant values. As a result, there are a number of issues environmental pollution as the most dangerous are increasingly finding nitrates in the soil. At the same time nitrates are accumulated not only in the soil, ground water, but above the permissible norms accumulated in the food and feed and, therefore, enter the body of humans and animals.

In this respect, the use for studied plants of CFF in conditions of saline bright grey sierozems with shallow groundwater is particularly acceptable ecologically than standard fertilizers.

Conclusion

1. The use in the cultivation of the artichoke prickly CFF helps reduce pollution by nitrates than applying of standard forms of nitric fertilizers.
2. Carbamideformaldehyde nitric fertilizers increase the ratio of nitrogen efficiency of the plants and reduce unproductive losses of nitrogen from the soil.
3. Application of carbamideformaldehyde fertilizers helps to ensure a clean production and pollution reduction.

References

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