

Nitrogen balance of carbamide-formaldehyde fertilizers in automorphous and hydromorphic soils in Uzbekistan

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The results of the investigations revealed that the detrital gray soil on the nitrogen balance differs sharply from the typical gray soil. In the soil, in the first and second year of the experiments, wormwood whitish more used nitrogen CFF than urea. So, over two years the use of urea nitrogen by the plant was 33.5%, and the CFF (70% of the annual norm) together with urea (30%) this value reached 49.1 - 52.4%. It means that when CFF is used together with urea, the amount of nitrogen used by the plant was 18.9% higher than when only urea was added to the soil alone. In the second year of the experiments, the amount of nitrogen remaining in the soil, regardless of soil differences, almost did not change. In connection with this, the intensity of the nitrification process was slow when the CFF was introduced into the soil, the amount of nitrogen used by this fertilizer was higher by the plant than with urea.

Keywords. Nitrogen, phosphorus, potassium, soil, fertilizers, urea, gravelly sierozem, typical gray soil, nitrification, carbamide-formaldehyde fertilizers, nitrates, wormwood, the environment.

The purpose of the study. Nitrogen fertilizers (urea and ammonium nitrate) currently used for medicinal and agricultural plants on a large scale have a number of shortcomings. For example, both ammonium and ammonia fertilizers after a while (for 5-7 days) after introduction into the soil are converted into nitrate forms. In order to prevent environmental contamination by nitrogen fertilizers and increase the effectiveness of nitrogen fertilizers, the efficacy of applying whitish slow-acting carbamide-formaldehyde fertilizer (CFF) under wormwood was tested.

Methods of research. The experiments were conducted in vegetation vessels and in the field. Vegetation vessels were filled with typical gray soil and gravelly gray soil. Soils for packing lysimeters and vegetation vessels are taken from those sites, taking into account the genetic layers where field experiments were conducted and the content of various nitrogen compounds (NH_3 , NO_3) in them was determined. In addition, the nitrogen content and the amount of gaseous waste that was left in the soil and used by the plant were determined. In experiments under wormwood, whitish nitrogen fertilizers were introduced into the soil at a rate of 100 kg per hectare.

Results of the research. The results of the investigations established that conditions of typical gray soil, when applying various forms of nitrogen fertilizers, the amount of nitrogen used by the plant was 28-41% (in% relative to the applied to the soil). When urea was used, the value of this indicator was 40.5%, and the use of CFCs was 28-31%. In the second year of the experiments, the amount of urea nitrogen used by the plant was 9%, and when using CFF or CFF with urea was 20-22%. For two years, the using of urea nitrogen by the plant was 49%, and the use of CFC and CFF together with urea is 48.0-53.3%. Consequently, the amount of nitrogen used for both urea and CFF by the plant was almost the same. It should be noted that with

the use of CFCs, the residual nitrogen content in the soil was 2 times that of urea. In the second year of the experiments, the amount of nitrogen used by the CFF was greater than when urea was introduced.

Conclusions. In general, the loss of nitrogen when introducing CFF into the soil was less than when using urea.