

Balance and transformation of various forms of nitrogen fertilizers in soil

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The results of the experiments showed that the amount of nitrogen fertilizers used by plants is greater and the losses are less when urea and ammonium sulfate are added. The difference in the amount of immobilized (organic) nitrogen fertilizers with the introduction of different forms of nitrogen fertilizers is insignificant, but there is a tendency to increase the immobilized nitrogen fertilizers of urea and ammonium sulfate in comparison with the introduction of ammonium nitrate. With increasing availability of soil with mobile phosphorus from low to medium, nitrogen utilization rates of various forms of fertilizers increase and its losses from soil decrease. The wormwood whitish plants studied by us most of all use nitrogen from soil resources, especially with an average supply of soil with mobile phosphorus. Additional mobilization of soil resources nitrogen during the introduction of amide and ammonium forms of nitrogen decreases compared with the application of nitrate and ammonia-nitrate forms of nitrogen.

Keywords. Nitrogen, phosphorus, potassium, immobilization, fertilizers, nitrogen mobilization, soil resources, calcium nitrate, urea, ammonium sulfate.

Purpose of the study. Development of cultivation technologies *Artemisia leucodes* Schrenk producing biologically active terpenoids, used in medical practice. **Methods of research.** For this purpose, both vegetative and field experiments in the Farish region of the Jizzakh region of the Republic of Uzbekistan were carried out at low (24 mg/kg) and medium-level (42 mg/kg) soil with mobile phosphorus. Annually, phosphorus fertilizers were applied in vegetation and field crops, respectively, 4 g / vessel and 140 kg / ha P₂O₅ on medium-cost, 3 g / vessel and 105 kg / ha P₂O₅ on low-phosphorus soil. In the vegetation experiments, the annual norm of nitrogen and potassium fertilizers was 5.0, respectively; 3.0 and 1.5 g / vessel respectively, 100; 75; 50 kg / ha in field experiments. Ammonium sulfate, urea, ammonium nitrate, superphosphate and potassium chloride were used in the experiments. Vegetational and field experiments were carried out according to the methods of the Scientific Research Institute of cotton growing (M.A.Belousov, 1977).

Results of the study. Our investigations have established that the true value of the using of nitrogen fertilizer by the plant on the phosphorus-poor soil (typical gray soil) ranges from 30.4 to 43.7% of the applied amount of nitrogen fertilizer. Wormwood whitish most of all use nitrogen from ammonium sulfate, urea and less from nitrate-ammonium form, especially nitrate. In the soil, from 19.0 to 23.4% of nitrogen fertilizer remains; nitrogen occurs to a greater extent from amide and ammonium forms. When used under wormwood whitish other forms of nitrogen, the amount of immobilized nitrogen is at low level in phosphorus-rich soil. With an average supply of typical gray soil with phosphorus, unproductive nitrogen losses from the soil are reduced, especially when amide and ammonium forms of nitrogen are introduced. On the medium-rich phosphorus soil, the introduction of amide

forms of nitrogen increases the coefficient of its used by plants reduces nitrogen losses from fertilizers, than the introduction of ammonia-nitrate forms of nitrogen. Consequently, amide and especially ammonia forms of nitrogen fertilizer increase the coefficient of its useful effect on plants, increase the immobilization of nitrogen and reduce unproductive losses. In the vegetation experiments carried out by us on low-phosphorus soils, it was shown that a large part of the nitrogen in the total removal of it by the plants is soil nitrogen (53.5-68.8%) and a lower nitrogen fertilizer (31.2-46.5%). When amide and ammonium nitrogen fertilizer forms are introduced, using of nitrogen fertilizer is increased by nitrogen fertilizers and its using of nitrogen from soil sources is lower than that of nitrate and ammonium nitrate forms of nitrogen fertilizers. Additional mobilization of nitrogen from soil sources is less when nitrate forms are introduced, more when using ammonium nitrate and ammonium nitrogen fertilizer forms; intermediate position is occupied

by the amide form of nitrogen. As can be seen from given data, the nitrogen content of fertilizers in its overall removal is lower with an average provision of soil with phosphorus than with low availability, and the amount of soil nitrogen is greater.

Conclusions. The using of urea and ammonium sulphate at the studied plants contribute increasing in the using of nitrogen from soil sources than the introduction of calcium nitrate and ammonium nitrate. This is important in preserving the potential fertility of the soil.