

Effect of coordination compounds of microelements of copper and cobalt on the efficiency of nitrogen fertilizers using by wormwood whitish

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Using the stable nitrogen isotope ^{15}N (with 97% enrichment), it has been established by authors that the coordination compounds of cobalt and copper increase the rate of nitrogen utilization by wormwood whitish when applying coordination compounds of copper and cobalt by 2.0-13.0%, respectively, reduces gaseous nitrogen losses with respect to inorganic salts of microelements. In this regard, we can consider that such coordination compounds of microelements, such as cobalt and copper increase the rate of nitrogen fertilizers' using by wormwood whitish and reduce unproductive losses. The using of coordination compounds of cobalt and copper by punching seeds is 0.3% in their solutions and subsequent application is 6.0-8.0 kg / ha increases the yield (biomass) of wormwood whitish in an average of 2 years up to 3,2- 2.8 centner / ha.

Key words: Stable isotope of nitrogen, complexones, cobalt, copper, fertilizers, wormwood, nitrogen, phosphorus, nitrogen balance, inorganic salts of microelements.

The purpose of the study. As a result of the systematic using of mineral fertilizers, especially high doses of such vital microelements in the soil as cobalt, copper, molybdenum, zinc, etc. is reduced, which is a limiting factor in obtaining a high yield of plants as a result of disturbance of the natural balance between the macro and microelements. In addition, experiments show a very low efficiency of inorganic salts of microelements in carbonate soils. In this regard, much attention is paid to the intracomplex compounds of microelements called chelating agents. (B.M. Isaev, 1979, Y. Kadyrov, 1977, A.A. Abzalov 1990 and others). The expediency of using coordination (complexon) compounds of microelements for agricultural and medicinal crops is determined by the fact that they are characterized by the strength of the bond between metal and chelating agents, the difficulty of replacing it with another metal, the ability to withstand microbial action, hydrolysis resistance and lack of sedimentation, and good plant uptake. The research task was to develop scientifically validated methods for increasing the productivity of wormwood whitish by applying coordination compounds of cobalt and copper in the composition of ammophos. The choice of inorganic salts and coordination compounds of microelements was carried out by the high biological activity of the preparation on wormwood whitish. 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 P_2O_5 on medium-cost, 3 g / vessel and 105 kg / ha P_2O_5 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 research. The results of the research established that coordination compounds of microelements increase the nitrogen intake of plants. Studies have established that using of coordination compounds of cobalt and copper enhances the intake of cobalt and copper. Coordination compounds help to reduce the content of nitrates in leaves, accelerate their transformation into more complex nitrogenous compounds (aminoacids, proteins, etc.) accelerate their outflow from the leaves to the fruit elements. Using the stable nitrogen isotope ^{15}N (with a 97% enrichment), the authors found that the coordination compounds of cobalt and copper increase the utilization rate of nitrogen by wormwood whitish when introducing coordination compounds of copper and cobalt, respectively, by 2.0-13.0%, reducing gaseous nitrogen losses by relation to inorganic salts of microelements. In this regard, we can consider that such coordination compounds of cobalt and copper increase the rate of nitrogen fertilizers using by wormwood whitish and reduce unproductive losses.

Conclusions. Using of coordination compounds of cobalt and copper by clamping seed in their 0.3% solutions and subsequent application of 6.0-8.0 kg / ha increases the yield in 3,2- 2,8 c/ha for 2 years.