



BIOAZOT- N BIOPRAPARATE IN AGRICULTURE

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ABSTRACT

In the sowing of winter wheat uses microbiological fertilizer "BIOAZOT". The plant thrives at the expense of air nitrogen and phosphorus, which are insoluble in the soil; a number of bio-ecological properties of the soil are restored. Most importantly, the consumption of mineral fertilizers is reduced (300–450 kg NPK instead of 1–1.5 t). Costs are reduced by 3/2. Entering an associative symbiosis with plants growing in saline soils helps plants overcome saline stress and increase their productivity.

Keywords: bioazot, exopolisaccharide, EPS, saline stress, symbiosis, biopreparation, strain, suspension

Introduction

One of the most important problems of agriculture in Uzbekistan is soil salinization. According to the latest statistics, about 80% of the irrigated land in the country is saline. Salinization negatively affects not only the growth, development and productivity of plants, but also the fertility of the soil. However, it should be noted that in saline soils, mineral nitrogen is very difficult for plants to assimilate. In such conditions, the role of diazotrophic rhizobacteria is very important, forming an associative symbiosis with plants present in the soil [1-7]. The action of the biological product BIOAZOT-N is due to its following properties:

- 1) Provides the plant with biological nitrogen, assimilating atmospheric nitrogen at high activity.
- 2) The plant has the ability to synthesize phytohormones, including auxins (indole-3-acetic acid), gibberellins and cytokinins.



3) The *Azobacter chroococcum* N1 strain has synthesized a biopolymer - exopolysaccharide (EPS), which allows plants to overcome stress factors in adverse environmental conditions (salinity and drought).

This strain can live and develop at relatively high salt concentrations. Entering into an associative symbiosis with plants growing on saline soils helps plants overcome salt stress and increase their productivity [8-12]. The biological product BIOAZOT-N can also be used with non-traditional fertilizers through plant leaves. When using suspensions, the consumption of mineral fertilizers is reduced by an average of 50%. It should be noted that the biological product BIOAZOT-N can be applied to all types of agricultural crops. BIOAZOT-N consumption of biological products:

- Suspension biological product 5 l / ha is used with a cell titer of at least 10^9 h / m;
- With non-traditional top dressing through leaves, the amount of suspension can be increased to 10-15 l / ha.
- When using a suspension, up to 25% of mineral nitrogen (including urea) dissolved in the suspension can also be used, depending on the normal amount of nitrogen.
- For use on saline soils, the strain grown under special growing conditions (intense aeration and vibration) should be 15-20 l / ha with an EPS content of at least 5.5 l / ha. In saline soils, the biological product was used before sowing seeds, and under these conditions, salts in the soil are immobilized under the influence of EPS. Soil-containing salts form a water-insoluble complex compound with the biological product EPS.
- A biological product based on a strain suspension can be used during the entire growing season of the plant.

In the next experiment, we studied the germination periods of different varieties of wheat seeds by planting them in an environment saturated with bio-nitrogen and in a controlled normal environment (Fig. 1.).



Figure 1. Experiment with biological product BIOAZOT-N.

When observing them after planting, we see cases after 1 day and 4 days. We see that the germination period of seeds sown by the advanced varieties Bardash, E'zoz, Gairayoch and Pakhlavon accelerated, and all the seeds sown germinated.

At this stage, it is advisable to get an idea of soil fertility. The ability of the soil to provide essential nutrients, moisture and air for the normal growth and development of plants are the main factors that determine soil fertility. The most important factors for plant growth and development are nitrogen (N), nitrogen (P), potassium (K), and mineral fertilizers are usually applied depending on the amount of these elements. Trace elements such as iron (Fe), alcohol (Zn), molybdenum (Mo), calcium (Ca), magnesium (Mg), barium (B) also play an important role in plant development.

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