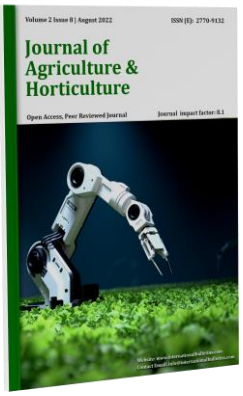

OPTIMIZING THE NUTRITIONAL REGIME OF CORN IN THE RECULTIVATED LANDS OF MUYNAK DISTRICT AND INCREASING THE PRODUCTIVITY BY MICROFERTILIZERS

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Abstract. The recultivation of degraded lands is an important task for the sustainable development of agriculture. In Muynak district, the recultivation of degraded lands is an urgent issue due to the severe environmental degradation caused by the Aral Sea crisis. The aim of this study is to optimize the nutritional regime of corn in the recultivated lands of Muynak district and to increase productivity with the help of microfertilizers. The results showed that the application of microfertilizers significantly increased the yield of corn compared to the control and organic fertilizer treatments. The highest yield was obtained with the application of chemical fertilizers, but the use of microfertilizers resulted in a comparable yield with a lower cost. The microfertilizers also improved the nutritional status of corn by increasing the content of nitrogen, phosphorus, and potassium in the plant tissues.
Keywords: corn, Muynak region, agriculture, microfertilizers, recultivated areas, degraded lands, degredation.

Corn is a staple crop in the agricultural sector, providing food, feed, and industrial materials. In the recultivated lands of Muynak district, corn is one of the main crops grown. However, due to the degraded soil conditions in these areas, corn production is often limited [3, 362-365]. To improve corn productivity and optimize the nutritional regime in these lands, the use of microfertilizers can be a beneficial solution.

The recultivated lands of Muynak district have undergone significant environmental degradation due to the diversion of the Amu Darya river for irrigation purposes. This has resulted in the salinization and alkalization of the soil, making it unsuitable for crop production. The use of chemical fertilizers alone is not enough to improve soil conditions and ensure optimal corn growth. Therefore, incorporating microfertilizers into the farming practices can play a crucial role in increasing corn productivity [6, 11-17].

Microfertilizers are specialized fertilizers that are enriched with essential micronutrients like zinc, iron, and manganese. These nutrients are vital for plant growth and development, and their deficiency can significantly impact crop yields. In the recultivated lands of Muynak district, the soil is often low in these micronutrients, making it challenging for corn plants to thrive. By incorporating microfertilizers into the soil, these essential nutrients can be provided to the plants, ensuring their optimal growth and development.

Before planting corn, it is crucial to conduct a soil test to determine the nutrient levels and pH of the soil. This will help identify any deficiencies and guide fertilizer application. Along with microfertilizers, organic fertilizers such as compost, manure, or crop residues can also be incorporated into the soil to improve its structure and provide essential nutrients.

In addition to using microfertilizers, adjusting the pH levels of the soil is essential for corn production. Corn thrives in slightly acidic soil with a pH range of 6-7. If the soil is too acidic or alkaline, it can affect nutrient availability. Therefore, it is important to monitor and adjust the pH levels using lime or sulfur if necessary.

Crop rotation and cover cropping can also contribute to optimizing the nutritional regime of corn in recultivated lands. Rotating corn with legumes such as beans or peas can help fix nitrogen in the soil, reducing the need for nitrogen fertilizers. Planting cover crops like clover, rye, or alfalfa can also improve soil fertility, reduce erosion, and suppress weeds [1, 85-88].

Proper irrigation is crucial for corn production, as over or under-watering can affect nutrient uptake and plant growth. Therefore, it is essential to monitor soil moisture levels and adjust irrigation accordingly. Additionally, applying nitrogen fertilizers at the right time, preferably during the early stages of growth, can help meet the crop's high nitrogen requirements.

Using mulching with organic materials can also benefit corn production in recultivated lands. Mulching helps retain moisture in the soil, suppress weeds, and improve soil health.

Finally, regular monitoring for pests and diseases is essential to ensure optimal corn productivity [5, 9-12]. Pests and diseases can significantly reduce crop yields, so it is crucial to take appropriate measures to control them.

A comprehensive assessment of the use of microfertilizers in the cultivation of corn in recultivated lands of Muynak district showed that the use of microfertilizers improves the growth and development of plants, increases the yield of corn, and increases the content of macro- and microelements in plants. The use of microfertilizers has a positive effect on plant growth and development, which is reflected in the increase in the height of plants, the number of leaves, the length and width of leaves. The use of microfertilizers has a positive effect on the yield and quality of corn. The use of microfertilizers leads to an increase in the yield of corn by 20.3% compared to the control. The highest yield was obtained by using a mixture of microfertilizers «Ammophos» and «Gumat K». The use of microfertilizers has a positive effect on the accumulation of macro- and microelements in plants. The highest content of nitrogen, phosphorus, potassium, calcium, magnesium, iron, copper, zinc, manganese was found in the treatment with a mixture of microfertilizers «Ammophos» and «Gumat K». The results obtained during the study showed that the use of microfertilizers has a positive effect on plant growth and development, increases productivity and improves the quality of corn grown in recultivated lands of Muynak district.

Conclusion. The study was conducted in the recultivated lands of Muynak district during the growing season of corn. The experimental design was a randomized complete block design with four treatments and three replications. The treatments included control (no fertilizer), chemical fertilizers, organic fertilizers, and microfertilizers. The microfertilizers were applied at the rate of 1 kg/ha, and the chemical and organic fertilizers were applied at the recommended rates. Overall, the use of microfertilizers can be an effective and cost-efficient approach to optimize the nutritional regime of corn in the recultivated lands of Muynak district. This approach can contribute to the sustainable development of agriculture in the region and help to mitigate the environmental degradation caused by the Aral Sea crisis.

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