



"INFLUENCE OF ORGANIC FERTILIZERS ON SOIL FERTILITY AND MUNG BEAN YIELD IN THE CONDITIONS OF KARAKALPAKSTAN."

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Abstract: The article examines the influence of organic fertilizers (manure and biotrophs) on plant growth, development, and soil fertility in the cultivation of the "Durдона" mung bean variety under the conditions of meadow-alluvial soils of the Republic of Karakalpakstan. The study analyzed the possibilities of accelerating the activity of nodule bacteria in the roots of mung bean and increasing nitrogen fixation by 30-60%.

Keywords: mung bean, biotroph, organic fertilizer, soil fertility, nodule bacteria, yield, Karakalpakstan.

Introduction: One of the main problems of modern agriculture is the decline in soil fertility resulting from the irregular application of chemical fertilizers. In the conditions of Karakalpakstan, microbiological fertilizers such as biotroph are of great importance in restoring soil fertility and obtaining high yields from the mung bean crop. These fertilizers not only improve plant nutrition but also intensify the activity of tubers in mung bean roots, increasing the level of atmospheric nitrogen uptake to 60%. Therefore, the development of scientific foundations for the application of organic fertilizers in the conditions of meadow-alluvial soils is considered relevant.

Relevance and necessity of the topic: The excessive use of chemical fertilizers in modern agriculture is causing soil structure degradation and environmental problems. Therefore, the use of organic and microbiological fertilizers, such as biotroph, in the cultivation of leguminous crops, such as mung beans, is becoming an urgent issue. Biotroph increases the microbiological activity of the soil and helps convert elements difficult for plants to assimilate (especially phosphorus) into a soluble state. It accelerates the formation of tuber bacteria in the root of mung bean, which can increase the plant's ability to absorb (fix) atmospheric nitrogen by up to 30–60%. Synergistic effect (Co-effect): The scientific foundations for improving the agrophysical and agrochemical properties of the soil are being established through the application of biotroph in mung bean cultivation. This method not only reduces the consumption of chemical fertilizers but also ensures the production of environmentally friendly products and soil fertility.



The aim of the study is to determine the influence of optimal organic fertilizer rates on the growth, development, yield, and soil fertility of mungbean in the conditions of Karakalpakstan.

Research objectives: Based on the goal of the topic, the scientific work includes the following tasks.

- Determination of optimal rates of organic fertilizers;
- Determination of the influence of organic fertilizers on soil fertility and its agrochemical properties.
- To determine the influence of organic fertilizers on soil fertility and its agrophysical properties;
- Determination of the impact of organic fertilizers on mung bean yield and its quality,
- Determining the impact on economic efficiency:

The research work is conducted based on the following methodologies:

The research was carried out in the field, including "Methodology of State Variety Testing of Agricultural Crops" (1964, M.: Kolos), "Methods of agrochemical analysis of soils and plants" (1973, Tashkent), "Methods of agrophysical research." (1973, Tashkent), "Methods for Conducting Field Experiments" (UzPITI, Tashkent 2007).

Soil. The soil composition, type, degree of salinity, groundwater level, biological cycle, and humus layer of the experimental field are determined:

- a) agrophysical properties: soil density in the plow layer; total porosity; field moisture capacity;
- b) agrochemical: determination of humus, total nitrogen, mobile phosphorus, and exchangeable potassium content;

Climate. The climate of the area where field experiments were conducted, air temperature, humidity, wind strength, and daily and annual air temperature variability were studied. According to long-term data, the onset of early autumn frosts is considered the end of spring frosts.

Phenological observations and biometric measurements of the growth and development of mung beans during the growing season are conducted according to the methodology (PITI Uz, 1964, 1973, and 2007).

Expected results: As a result of the research, a scientifically grounded technology for feeding mung beans in the harsh climatic conditions of Karakalpakstan will be developed. The use of biothoroph is expected to increase soil microbiological activity and improve the level of atmospheric nitrogen uptake by 30–60%. This, in turn, allows for the long-term preservation of soil fertility and the harvesting of high-quality mung beans.



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