

## Studying the Effect of Feeding Rates and Seedling Thickness on the Yield of Rice Varieties

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**Abstract:** The article describes the effect of nitrogen fertilizers on the yield of rice when grown in seedlings. This study investigates the influence of feeding rates and seedling thickness on the yield performance of various rice (*Oryza sativa L.*) varieties. Conducted under controlled field conditions, the experiment utilized a factorial design with multiple rice genotypes, varying nutrient (feeding) levels, and different seedling densities. Results indicated that both feeding rate and seedling thickness significantly affected grain yield, plant height, and tillering capacity. Optimal feeding rates combined with medium seedling thickness produced the highest yields, suggesting a synergistic interaction between nutrient availability and plant spacing. Moreover, varietal responses varied, with some cultivars showing greater adaptability to dense planting and high nutrient input. The findings highlight the importance of integrated crop management strategies tailored to specific varietal characteristics to maximize productivity. These results can guide rice farmers in optimizing agronomic practices to enhance yield efficiency under diverse environmental conditions.

**Keywords:** Rice, seedlings, growth and development, yield.

**Introduction.** In the current conditions, when the population of our country is constantly increasing, and due to global climate change, temperatures are rising, and droughts are frequent, it is becoming increasingly difficult to produce abundant and high-quality rice crops. In solving this problem, one of the most priority tasks is to improve existing agricultural techniques using advanced technologies, develop and introduce new ones, taking into account the soil and climatic conditions of the Republic and the biological characteristics of varieties.

The purpose of the study: to determine the optimal rate of nitrogen mineral fertilizers that will ensure high yields of high-quality grain in accordance with the seedling thickness when growing a new rice variety Billur in the conditions of meadow swamp soils of the Tashkent region and to make recommendations for its production.

Objectives of the study:

- To study the effect of seedling thickness and nitrogen fertilizer rates on the growth, development, leaf area and dry mass formation of the Billur rice variety;

- To study the effect of seedling thickness and nitrogen fertilizer rates on the yield elements, yield and technological quality indicators of the Billur rice variety;
- To study the effect of seedling thickness and nitrogen fertilizer rates on the assimilation of nutrients in the soil by the Billur rice variety;
- To determine the correlation between the quantitative and qualitative indicators of the new variety of rice Bilur on the seedling thickness and nitrogen fertilizer rates;
- To determine the economic efficiency and recommend effective agricultural practices based on the results of the study.

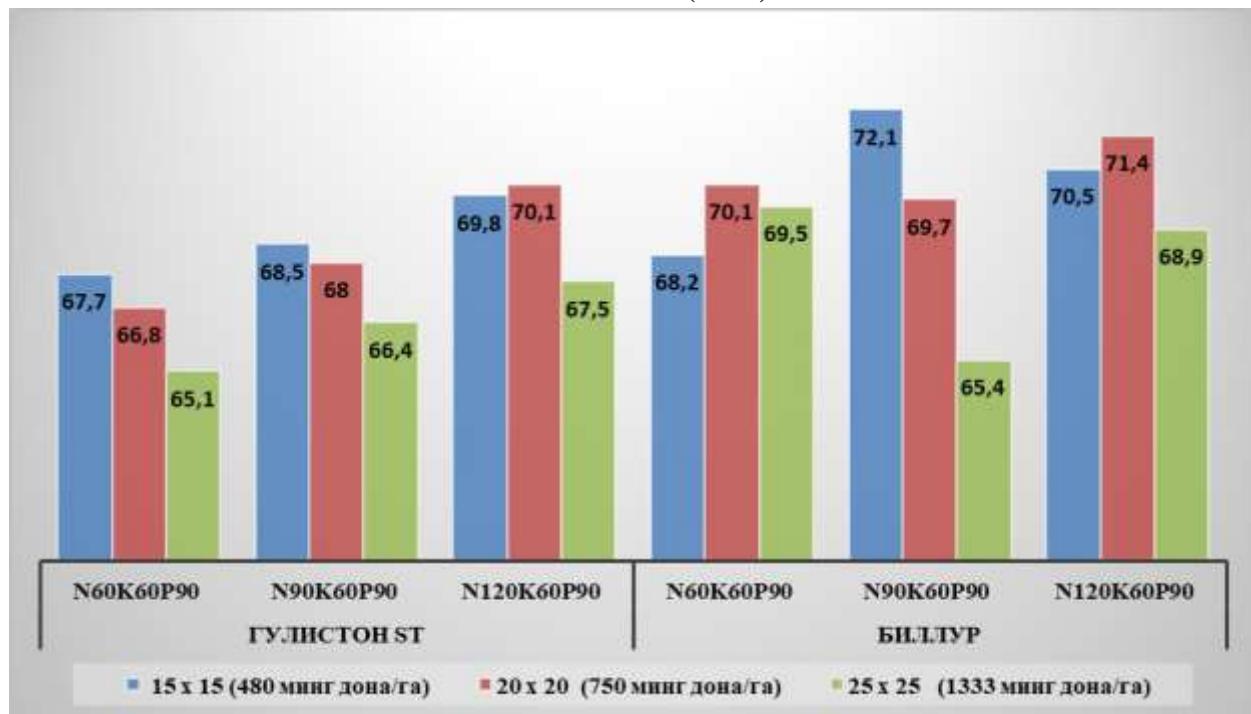
Research method. The scientific research was conducted in 2023 at the experimental field of the Rice Research Institute. Each option was 9 m long and 6 m wide, totaling 48 m<sup>2</sup>.

The experiment was conducted with nitrogen fertilizers 3 times before transplanting, during the hillling and tillering periods, in 18 options, 3 different planting schemes, and 3 repetitions. The experiment was systematically placed in the field in two layers.

Research results. The introduction of new and high-yielding varieties of rice into production requires not only determining the sowing date, but also observing the optimal sowing rate, which ensures a high and high-quality harvest.

Sowing rate and feeding rates affect the crop structure. With increasing sowing rate, the plant's set, productivity, and 1000-seed weight decrease, but productivity may increase. In this case, the crop is formed mainly at the expense of the main stem, and the grains are uniform.

**Yield of rice varieties (2024) Table 1**



In the varieties studied, when nitrogen fertilizer feeding N60 N90N120 and sowing rates were different, it was observed that the low-yielding variant Gulistan standard variety placed in the N60K60P90 25x25 planting scheme decreased by 65.1 c/ha, and the Billur variety N60K60P90 25x25 reduced the yield by 65.4 c/ha. We observed that the high-yielding variant Gulistan (St) variety N120K60P90 20x20 increased by 70.01 c/ha, and the Billur variety N90K60P90 15x15 increased by 72.1 c/ha. According to the results of the data obtained, it was observed that both varieties gave high yields of rice seedlings at 15x15 spacing.

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