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UDC: 633.16:631.51:631.55

DEPENDENCE OF THE GROWTH, DEVELOPMENT, AND YIELD OF WINTER BARLEY ON MINERAL FERTILIZER RATES.

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https://doi.org/10.5281/zenodo.22956657

Abstract: As a result of research, for the first time, the influence of mineral fertilizer application rates for the "Mushtarak" barley variety in autumn on seed field germination and winter resistance was studied in the hilly and foothill regions of the Jizzakh region.

Keywords: Barley, variety, sowing date, rate, fertilizer, field germination, winter hardiness.

Introduction. Creating a specific plant density per hectare is an important agrotechnical measure for obtaining a high and high-quality harvest of grain crops, including winter barley. When obtaining a high yield of winter barley under certain conditions, plant density is primarily influenced by seed germination, sowing rates, depth, timing, soil and climatic conditions, the type of preceding crop, soil preparation for sowing and sowing, the characteristics of the sown variety, seed preparation for sowing, and a number of other factors [; P. 16, 2; P. 51, 3; P. 72].

In most cases, the field germination of seeds is lower than laboratory germination, and it largely depends on the quality of the seeds, the agrotechnics used, soil and climatic conditions, the damage of seeds and seedlings to diseases and pests, and other factors [4; P. 6, 5; P. 49].

In scientific sources, the reasons for the decline in field germination of seeds are interpreted differently, including the incorrect selection of preceding crops, preparation of seeds for sowing, incorrect determination of the depth of sowing, low seed quality, lack of moisture in the soil and other factors. [6; P. 30, 7; P. 44].

Sowing dates and the depth of primary tillage have a strong impact on the field germination of winter barley seeds. Badurgova K.Sh. [8; According to the data [p. 24], field germination decreased from 74.8% to 67.4% with a delayed sowing date depending on the variety characteristics, and from 73.6% to 64.8% in tillage variants.

Currently, new autumn varieties of barley intended for sowing on high-yielding rainfed lands have been created and entered into the state register. However, taking into account the soil and climatic conditions of the region and the biological characteristics of their varieties, their yield in rainfed farming remains low due to the lack of developed varietal agrotechnics.

Materials and methods. Field experiments were conducted in 2021-2022 in the experimental fields of the Research Institute of Rainfed Agriculture, while laboratory analyses were conducted in the "Crop Production, Fodder Production, and Genetics" scientific laboratory of the Samarkand State University of Veterinary Medicine, Animal Husbandry, and Biotechnology.

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The soils of the experimental field are light sierozems with a medium loamy texture. The object of the experiment was the "Mushtarak" winter barley variety. The experiments were repeated in 4 stages; the area of each plot was 60 m^2, and the calculated area was 50 m^2. In the experiment, the laboratory and field germination of seeds, winter resistance of plants, and the number of sprouts were determined.

Results and their analysis. In our studies, it was established that fertilizer application rates significantly affect the field germination of winter barley seeds (Table 1).

In our experiment, the sowing date for the studied variety at all fertilizer rates was October 10, and the sowing rate was 2.5 million germinating seeds. In plots sown without fertilizers, the number of sprouts per 1 m2 was 195.3 units (78.1%), while in the control variant using $N_{30}P_{30}K_{30}$ kg/ha, it was 208.3 units (83.3%). Compared to the variant without fertilizers, the number of sprouts per 1 m^2 was 13.0 units (5.2%) higher. It was noted that the highest number of sprouts was 211.5 units (84.6%) in the variant using $N_{50}P_{50}K_{50}$ kg/ha.



Figure 1. Influence of mineral fertilizer rates on the field germination of winter barley seeds (2021-2022).

When analyzing the influence of mineral fertilizer rates on the degree of wintering of winter barley, it was established that in the control variant using $N_{30}P_{30}K_{30}$ kg/ha, the number of sprouts per 1 m2 in autumn was 210.5 units, and the number of overwintered sprouts was 175.4 units (83.3%). In the variant without fertilizers, it was 195.6 pcs and 157.2 pcs (80.4%), respectively. It was noted that in the variant with a barley wintering rate of $N_{50}P_{50}K_{50}$ kg/ha, the highest number of wintering sprouts was 176.7 units (83.8%).

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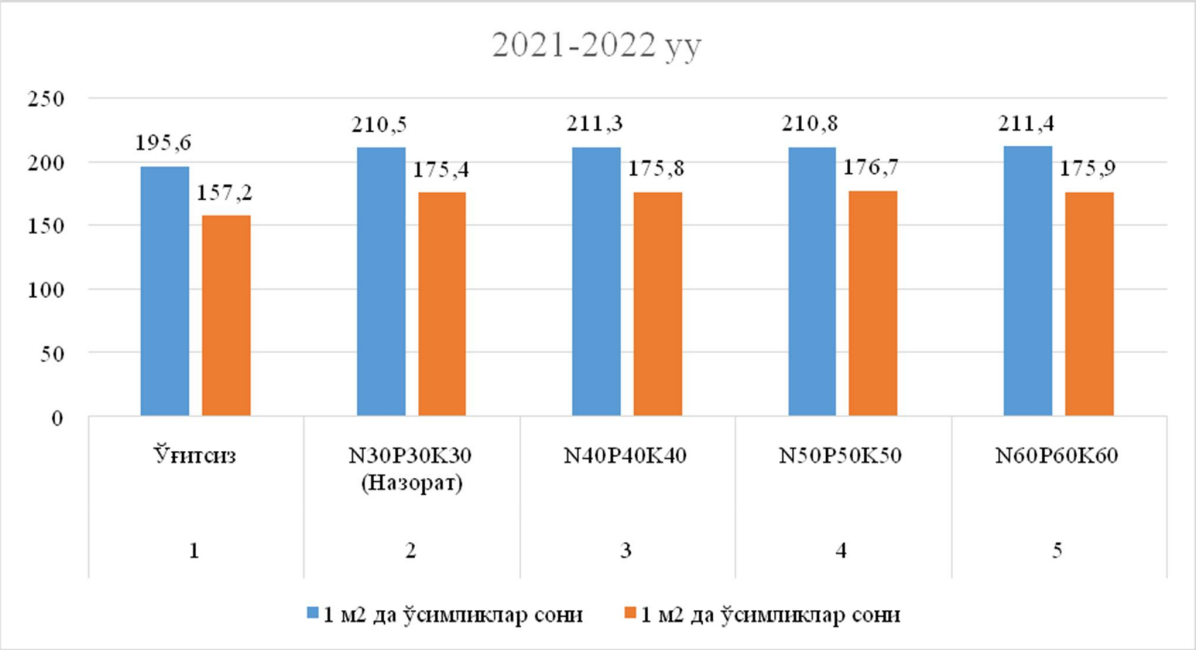


Figure 2. Influence of fertilizer rates on the overwintering rate of barley (2021-2022).

In conclusion, it can be stated that in the light sierozem soils of the rainfed areas of the Jizzakh region, the application of $N_{50}P_{50}K_{50}$ kg/ha of winter barley to the "Mushtarak" variety ensures high germination and overwintering rates of autumn sprouts.

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