

THE IMPROVING FERTILIZER RATES FOR TWO-ROW BARLEY VARIETIES IN ARID LANDS

Khudaiberdieva Shahlo

a doctoral student

Ismailov Vokhid

(PhD).

Samarkand Institute of Veterinary Medicine, Animal Husbandry and Biotechnology

Abstract. *This article presents data obtained as a result of the influence of mineral fertilizers on the growth, development, and yield of the autumn varieties of two-row barley Lalmikor and a bi-season variety Mushtarak in the conditions of light gray soils of the arid lands of the Jizzakh region.*

Key words: *barley, variety, Lalmikor, Mushtarak, autumn varieties, bi-season, mineral fertilizer, grain, harvest, light colored soil.*

Introduction. Barley is a drought-resistant crop. Some ecotypes are able to produce crops even in conditions of limited heat, and easily adapt to different soil conditions with sudden changes in weather conditions.

The semi-arid regions of Kashkadarya, Jizzakh, Samarkand, Surkhandarya, and Tashkent regions of our republic are the main areas for growing barley.

Grain growers in our country are doing a lot of work to increase the gross weight of grain. Conducted scientific research and the experience of advanced farms show that there are opportunities to increase yields on irrigated fields by 50-60 t/ha, and in dry areas by 25-30 t/ha or more. However, in subsequent years it was found that the average barley yield on most irrigated lands does not exceed 30-35 t/ha per hectare, and in dry areas - 10-15 t/ha.

Many scientific studies have been carried out abroad on the effect of mineral fertilizers on barley grain yield and its quality. In particular, at the Agricultural Research Station of the National University of Bioresources and Environmental Management of Ukraine in 2012-2014, studied the effect of mineral fertilizer rates on the spring barley varieties Vodogray, Gladis, Kangu, Komandor, Concert, and Svyatogor. t/ha, and the lowest yield for all varieties was observed in control variants without fertilizers [2].

At the experimental site of the Lvov National Agrarian University in 2010-2012, when analyzing the effect of mineral fertilizers on spring barley varieties, an



increase in the yield of spring barley was noted with an increase in the rate of mineral fertilizers. The average grain yield when applying $N_{30}P_{30}K_{30}$ kg/ha to the Helios variety was 44.4 t/ha, and increasing the rate of mineral fertilizers to $N_{75+75}P_{70}K_{90}$ kg/ha resulted in an average grain yield of 64.8 t/ha. An increase in the rate of mineral fertilizers for the Vodograi variety led to a decrease in yield, the lowest yield was 40.9 t/ha when applying $N_{30}P_{30}K_{30}$ kg/ha, and the highest yield was 56.5 t/ha when $N_{60+60}P_{60}K_{80}$ kg/ha., $N_{75+75}P_{70}K_{90}$ kg/ha. It was noted that the increase was 56.0 t/ha [3].

In studies conducted at the National Academy of Sciences of Podolia, the Institute of Feed and Agriculture, when applying mineral fertilizers $N_{90}P_{45}K_{45}$ kg/ha to spring barley without growth substances, the highest yield was 5.38 t/ha for the Vinnitsky 28 variety and 5.66 t/ha in the Nabat variety. variety, 5.68 t/ha, and 6.05 t/ha when treated with the preparation "Binom" and $N_{90}P_{45}K_{45}$ kg/ha, respectively, and 5 when treated with the preparation "Terpal" and mineral fertilizer $N_{90}P_{45}K_{45}$ kg/ha. /ha and 6.39 t/ha [4].

In our republic, until now, scientific researches have been carried out on the irrigated lands of barley. In particular, according to S. Abdurakhmanov and others, the seeds of the "Ikhtiyar" variety of autumn barley are worth 3.0 million per hectare on October 1. when analyzing the 1st option planted by the number of viable seeds, the average length of one spike is 9.9 cm. , the number of grains in one spike is 31.2, the weight of grains in one spike is 1.04 g. and the weight of 1000 grains is 33.2 g. 4.0-5.0 million per hectare during this period. when analyzing 2-3 options planted on the basis of one germinating seed, the average length of one spike is 9.7-9.5 cm. ni, the number of grains in one spike is 30.6-29.9 grains, the weight of grains in one spike is 1.0-0.96 g. ni, 1000 grains weight 32.7-32.2 g. was observed to be [1,6,7].

In the studies carried out in the conditions of irrigated pale gray soils of Kashkadarya region, when the optimal planting period was October 15, the productivity of both varieties of barley increased compared to other planting periods. Yields increased in all planting periods with increased fertilization rates. In the 15.XI planting period, when applying background+ N_{120} and background+ N_{180} kg/ha in the Bolgali variety, respectively, 46.4 and 49.1 t/ha, and in the fall Mavlona variety, these indicators corresponded to 48.7 and 52.7 t/ha. , 17.2 according to varieties and variants with additional harvest; 15.4 and 20.8 and 24.8 ts/ha [5]

Based on the above, we aimed to develop mineral fertilizing standards for two-row barley varieties under conditions of dry regions of Jizzakh region.





Materials and methods. Field experiments were conducted at the central experimental farm of the Lalmikor agricultural scientific-research institute. The experimental object was applied to the autumn Lalmikor and a bi-season variety Mushtarak varieties of barley to the non-fertilized control variant with mineral fertilizer rates of N_{-30, 40, 50}, P_{-30, 40, 50}, K_{-30, 40, 50}, kg. supported options were compared. The planting rate is 2.5 million units/ha. In the experiment, ammonium nitrate - NH₄NO₃ (N₋₃₄%), ammophos-NH₄H₂PO₄ (N₋₁₁₋₁₂%, P₂O₅₋₄₄₋₄₆%) and potassium chloride - KCl (K₂O-60%) were used in the experiment.

All observations in the research were conducted based on the analysis of soil and plant samples and the notebooks "Methods for Conducting Field Experiments" (2014) [6].

Research results and their analysis. According to the results of the conducted research, the number of grasses that germinated before wintering per 1 m² was 224.3 pieces in the version of the Lalmikor variety without control fertilizer, 229.5 pieces in the version using N₃₀P₃₀K₃₀ kg/ha, 235.4 pieces in the version using N₄₀P₄₀K₄₀ kg/ha, and when N₅₀P₅₀K₅₀ kg of mineral fertilizer was used per hectare. It was noted that it was 237.6. It was observed that increasing the rate of mineral fertilizers increases the number of lawns before the wintering of the plant. The same principle was repeated in the common variety.

In both varieties of barley, increasing the rate of mineral fertilizers led to an increase in the number of overwintered plants and a decrease in the number of dead plants. In the Lalmikor variety, the highest number of wintered plants was 194.2 (83.0%) plants, and the number of dead plants was 40.5 (17.0%). The lowest indicator was recorded in control options without fertilizers.

The number of overwintered plants in the Mushtarak variety was less than that of the Lalmikor variety. In the control fertilizer-free version of the Mushtarak variety, the number of overwintered plants per 1 m² was 161.0 (73.0%) units, and this figure was found to be 6.6 (1.7%) less than the Lalmikor variety. In the option where the norm of mineral fertilizers N₅₀P₅₀K₅₀ kg/ha was used, the number of wintering plants in the Mushtarak variety was 5.2 (1.1%) less than in the Lalmikor variety.

Productivity is the sum of the yield of plants in a given unit. The highest and highest quality grain can be grown when the cultivation technology is used in accordance with the biological characteristics of winter barley varieties. The cultivation technology is required to optimally satisfy its demand for vital factors in the stages of organogenesis of autumn barley. Fertilization rates can be included in the important technological methods that significantly affect the yield and grain quality of winter barley.





According to the results of the experiment, the lowest grain yield in both studied varieties was determined in the control variant without fertilizer, in which the average of the varieties was 16.6 and 15.3 t/ha, respectively. Mineral fertilizers were the highest in the variant using $N_{40}P_{40}K_{40}$ kg, and in the Lalmikor variety compared to the control variant without fertilizer, the grain yield in the $N_{40}P_{40}K_{40}$ kg/ha variant was on average 7.1 t/ha, and in the Mushtarak variety, this indicator was 6.6 t/ha. Increasing the rate of mineral fertilizers $N_{50}P_{50}K_{50}$ kg/ha led to a decrease in grain yield. At this rate of fertilization, all the nutrients were spent on the leaves and stems of the plant, the spike was short, the number of grains in the spike was low, and the mass of 1000 grains was light.

The above regularity was preserved in the Mushtarak variety, in which the average grain yield was 15.3 t/ha in the control option without fertilizer, and the highest grain yield was 21.9 t/ha in the option using $N_{40}P_{40}K_{40}$ kg/ha. In this option, it was noted that the grain yield was 6.6 (30.0%) higher than the control option.

Table 1

Effect of mineral fertilizers on grain yield of winter barley varieties.

№	Varieties	Mineral fertilizers kg/ha	yield t/ha		Average	additional compared to control (no fertilizer) option
			2022	2023		
1	Lalmikor	control (no fertilizer)	15,0	18,2	16,6	-
2		$N_{30}P_{30}K_{30}$	20,5	24,7	22,6	6,0
3		$N_{40}P_{40}K_{40}$	21,8	25,6	23,7	7,1
4		$N_{50}P_{50}K_{50}$	20,7	24,9	22,8	6,2
5	Mushtarak	control (no fertilizer)	13,9	16,7	15,3	-
6		$N_{30}P_{30}K_{30}$	18,2	21,2	19,7	4,4
7		$N_{40}P_{40}K_{40}$	20,7	23,0	21,9	6,6
8		$N_{50}P_{50}K_{50}$	19,9	22,6	21,3	6

In conclusion, he said that in the conditions of dry gray soils of Jizzakh region, two-row barley varieties in autumn and winter, if $N_{40}P_{40}K_{40}$ kg of mineral fertilizers per hectare are used in the optimal planting period and norms, the highest and quality grain yield will be obtained.



REFERENCES

1. Abdurakhmanov S. Effect of seeding dates and rates on biometric parameters of winter barley ear. I.Abdullaev, B.Akhmadjonov // AGRO ILM 5 (75)-issue 2021, pages 35-37).
2. Kalenska S.M. The infusion of mineral goodness and retardant protection on the yield of malting barley. S.M.Kalenska, R.M.Kholodchenko, B.Yu. Tokar // Agrobiology. 2015. No. 1 (117). pp. 56-59.)
3. Potoplyak O.I. Formation of crop varieties of late-spring barley from fertilization in the soils of the forest-steppe / O.I. Potoplyak // Bulletin of the Sumy National Agrarian University. 2013. No. 3. P. 104-107.)
4. Romanyuk V.I. An equal assessment of the competitiveness of technologies for growing early barley for grain in the right bank forest-steppe./ V.I. Romanyuk // Sciences of the NUBP of Ukraine. 2019. No. 2 (78). P. 16.)
5. Yarkulova Z, Khalilov N. Influence of Seeding Norms and Mineral Fertilizer Rate on the yield of Winter Barley. // International Journal of Recent Technology and Engineering (IJRTE). Volume-8, Issue-3S, October 2019.
6. Ismailov V., Tursunov S. INFLUENCE OF PLANTING PERIODS AND MINERAL FERTILIZERS ON CERTAIN ELEMENTS OF YIELD STRUCTURE OF RYE VARIETIES //Science and innovation. - 2022. - T. 1. – no. D5. - S. 88-93.
7. Muminova, Z. K., & Ismailov, V. I. (2024). THE EFFECT OF RESOURCE-CONSERVING AGROTECHNOLOGIES ON FERTILITY OF EROSIONABLE GRAY SOILS AND INCREASING THE PRODUCTIVITY OF AUTUMN STEAM DEEDS. SCHOLAR, 2(5), 89-94.

