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The Effect of Sowing Norms on Number of Plant Bushes of Prospective “Kizilkurgon” Variety of Barley

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Abstract: This article presents data on the effect of sowing norm on the winter frost resistance of barley varieties and the number of stalks. Barley cultivars were observed to have a high level of winter frost resistance. So, based on the analysis of the obtained data, in our scientific research conducted in the soil and climate conditions of the Tashkent region, it was observed that the amount of plants in barley varieties died in an average amount of 8.5-11.7%. When the thickness of seedlings at the end of vegetation is determined, the control is 265-351-412 m^2 / unit according to sowing norm in the "Ixtiyor" variety, and 284-368-437 m^2 /unit in the "Kizilkurgon" variety it was noted that the seedlings were preserved.

Keywords: Wheat, experiment, design, replication, statistics, flowering, maturity, seed weight, yield, quality of seeds.

Introduction

Wheat is grown on more land area than any other food crop (220,4 million hectares, 2014) [2]. World trade in wheat is greater than for all other crops combined [3]. In 2017, world production of wheat was 772 million tonnes, with a forecast of 2019 production at 766 million tonnes, [4] making it the second most-produced cereal after maize [4][5].

The Republic of Uzbekistan gained grain independence in 2003 and produced 5 million tons of grain. More than 1 mln. tons of grain were grown. This was achieved due to the expansion of irrigated areas from 24,0 thousand to 1356,1 thousand hectares over the years. By 2020, productivity will be even higher, at 6 million tons and the average grain yield in the Republic was 55 c / ha.

Agro-climatic zoning of agricultural crops is an urgent problem in Uzbekistan. In particular, in order to ensure sustainable grain independence, our grain growers face important and responsible tasks, such as the selection and introduction into production of varieties that are adapted to each climate and have a high yield[1].

Purpose and functions of scientific work. The purpose of the research is to determine the optimal standards of mineral fertilizers that will ensure the production of high quality grain from soft wheat varieties in the conditions of typical irrigated sierozem soils of Tashkent region.

To achieve this purpose, the following tasks are set:

- germination, wintering rate and number of stem accumulation of wheat varieties;
- development periods and biometric indicators of wheat varieties;
- agrophysical, agrochemical properties of typical sierozem soil of the studied factors in the cultivation of winter wheat;
- the effect of wheat varieties on the leaf surface;
- to determine the effect of mineral fertilizers on the yield and quality of wheat varieties, as well as the optimal feeding rate.

Materials And Methods

Field studies were carried out at the experimental station of Tashkent State Agrarian University. The experimental station is located near Tashkent, in the upper part of the Chirchik river, Kibray district of the Tashkent region, at an altitude of 481 m above sea level, $41^0 11^{II}$ northern latitude and $38^0 31^{II}$ east longitude.

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The terrain of the site is uneven, slightly wavy, with a general slope to the Salar canal. Irrigation water was pumped from the Bozsu channel.

The soil of the experimental site is long-irrigated sierozem, non-saline, with a low content of humus 0,9-0,7%, nitrogen 0,082-0,066%, phosphorus 0,153-0,139%, potassium 1,33-1,30%.

Table 1

The soil characteristics of the experimental area

№	Depth (sm)	Gross content, %				Mobile forms, mg/kg		
		humus	nitrogen	phosphorus	potassium	$N\text{-}NO_3$	P_2O_5	K_2O
1	0-30	0,925	0,083	0,152	1,33	4,8	47,1	180,7
2	30-50	0,715	0,070	0,134	1,30	3,2	40,3	162,0

Field and laboratory methods of research, developed by the Uzbek Research Institute of Plant Production, were used. Phonological observations were conducted according to the Methodology of the State Variety Testing of Agricultural Crops. Statistical processing of data was carried out according to B.Dospekhov. Application of organic and mineral fertilizers and necessary agro technics on these soils, enable to obtain the high yields of field crops.

Climatic Condations

The climate of Tashkent region, as well as of Uzbekistan in general, has a sharply continental character. Spring comes early: at the beginning of March, the air temperature rises noticeably, although sometimes a sharp cooling occurs. During this period a significant part of the annual precipitation falls. Summer is long, hot and dry.

Sometimes precipitation falls in the month of June in the form of rains, but then comes hot and dry weather, usually continuing until late autumn. The maximum air temperature reaches 43 °C in July, sometimes in August.

The following phenological observations, calculations, laboratory analyzes were carried out in the experiment:

1.The degree of germination of grain. 2.The number of grasses, seedling thickness per 1 m^2 was determined at 3 points of all options. 3.Phenological observations were made on the stages of development. 4. The height of the stem of winter wheat according to the options (during the periods of booting and full ripening); spike length (during full ripening); the number of grains per spike; grain weight per grain; Weight of 1000 grains. 5.At the time of harvesting, 1 m^2 of wheat was harvested from 3 points of repetition of all variants in the experiment, the grains in it were milled and the yield of grain and straw was calculated by weighing.

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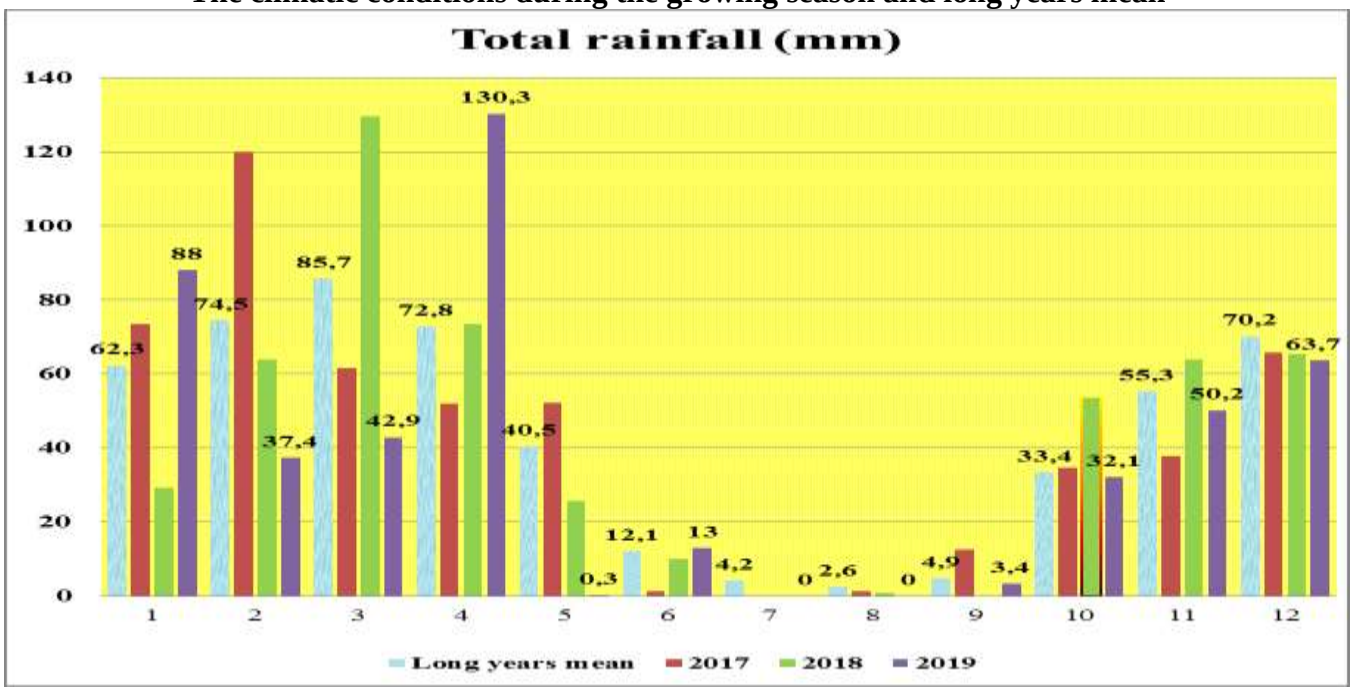
Table 2
The climatic conditions during the growing season and long years mean



6.Technological quality indicators of grain (samples were delivered to a special laboratory) were determined. 7.In the mathematical analysis of the yield of winter wheat grain and straw, B.A.Dospekhov's (1985) multiple factory field experiments used the method of variance analysis based on randomized returns.

Results And Discussion

As it is noted in scientific sources, the basis of high-quality and abundant harvest from grain crops is determined by the thickness of seedlings of field crops. In particular, to obtain a high and quality harvest of winter barley varieties, the correct determination of the seed rate ensures that there will be a sufficient number of bushes by the end of the operating period. For this reason, many scientific-research works have been carried out in the conditions of field experiments to determine the norms of planting agricultural crops, especially winter barley, in different soil and climate conditions.

Depending on the natural conditions, 15-20% of the seeds of autumn grain crops die during the winter, and 20% die during the spring vegetation period, it is noted in scientific sources.

According to the data, reducing the rate of planting has a negative effect on the degree of winter resistance of the crop. The reason for this is that when the plant is planted thickly, less water accumulates in its tissues, and as a result, the tissues do not freeze as a result of water freezing in winter. This prevents the plants from dying.

At the beginning of the first ten days of November, counting works were carried out after the germination of barley varieties in our scientific research work. When the seedling thickness is calculated in terms of the number of stems - m ^{2} /piece, in our scientific research conducted in the field conditions of the typical gray soil-climate conditions of Tashkent region, barley varieties went into the winter with a full stem after germination observed. However, it was found that a certain amount of plant tpp will decrease in unfavorable winter weather conditions. The data obtained when the number of dead plants in early spring was determined by the counting method in 1 square meter area, in three repetitions, are presented in Table 3 below.

At the beginning of the vegetation, the thickness of the seedlings was 3.5 mln. units/ha, and the planting rate was 3.5 million units/ha. In the "Ixtiyor" variety, which was selected as a control variety 294 units m^2 were studied. and in the "Kizilurgon" variety, it was noted that in the 2nd option it was equal to 312 units m^2.

The number of dead plant stems (m^2 /unit) was determined in the early spring season, when the planting rate was 3.5 million units/ha in the 1st option, when it was determined in the "Ixtiyor" variety, which was selected as a control variety, 28 units m^2, compared to the control variet, it was noted that it was equal to 22 m^2 in the "Kizilkurgon" variety in the 2nd option.

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Table 3
Barley varieties are calculated on the basis of seedling thickness , m^2 /piece, 2021-2022.

№	Varieties name	Seedling thickness at the beginning of vegetation number of stems, m^2 /pc	The number of dead plant stems, m^2 /pc	The number of dead bushes, %	Seedling thickness at the end of vegetation number of stems, m^2 /pc
3.5 million units/ha					
1	Ixtiyor	293	25	7.5 _	261
2	Kizilkurgon	309	19	6.2 _	280
4.5 million pieces/ha					
3	Ixtiyor	398	39	9.3 _	347
4	Kizilkurgon	411	36	8.5 _	364
5,5 million units/ha					
5	Ixtiyor	470	5 2	10.7 _ _	408
6	Kizilkurgon	492	49	9.5 _	433

When the number of dead bushes (%) was determined as a percentage, the planting rate was 3.5 million units/ha in the 1st option, and 8.5% in the "Ixtiyor" variety, which was selected as a control variety, compared to the control variety, "Kizilkurgon" 7.2% in the 2nd option in the "Kizilkurgon" variety was noted to be equal to

of the seedling at the end of the vegetable patch (m^2 / piece) was determined in the ripening phase, the planting rate was 3.5 million pieces/ha in the 1st option, when it was determined in the "Ixtiyor" variety, which was selected as a control variety, 265 pieces m^2, compared to the control variety, "Kizilkurgon" variety, and in the 2nd variant , it was noted that it was equal to 284 units m^2.

At the beginning of the growing season, in the third option, when the standard of planting the number of bushes was 4.5 million units/ha, the "Ixtiyor" variety was selected as the control variety, and 401 units m^2 were studied in comparison with the control variety "Kizilkurgon", it was noted that in the 4th option it was equal to 414 m^2.

The number of dead plant stems (m^2 /piece) was determined in the early spring season when the planting rate was 4.5 million pieces/ha in the 3rd option, when it was determined in the "Ixtiyor" variety, which was selected as a control variety, 41 pieces m^2, compared to the control variety, it was noted that it was equal to 39 m^2 in the "Kizilkurgon" variety in the 4th option .

When the number of dead bushes (%) was determined as a percentage, the planting rate was 4.5 million units/ha in the 3rd option, and it was 10.3% in the "Ixtiyor" variety, which was selected as a control variety, compared to the control variety, "Kizilkurgon" 9.5% in the 4th variant in the "Kizilkurgon" variety was noted to be equal to

Table 4
Barley varieties seedling thickness , m^2 /piece - on account , 2022-2023

№	Varieties name	Seedling thickness at the beginning of vegetation number of stems, m^2 /pc	The number of dead plant stems, m^2 /pc	The number of dead bushes, %	Seedling thickness at the end of vegetation number of stems, m^2 /pc
3.5 million units/ha					
1	Ixtiyor	297	29	9.5 _	269
2	Kizilkurgon	315	25	8.2 _	288

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4.5 million pieces/ha					
3	Ixtiyor	404	44	11.3	355
4	Kizilkurgon	417	42	10.5 _	372
5.5 million units/ha					
5	Ixtiyor	476	57	10.7 _ _	415
6	Kizilkurgon	498	54	11,5 _	441

seedling thickness (m ^{2} /piece) at the end of the vegetable patch was determined in the ripening phase, the planting rate was 4.5 million pieces/ha in the 3rd option, when it was determined in the "Ixtiyor" variety, which was selected as a control variety, 351 pieces m ^{2}, compared to the control variety, "Kizilkurgon" variety, and in the 4th variant , it was noted that it was equal to 368 pieces m ^{2}.

At the beginning of the vegetation, the thickness of the seedling and the number of bushes was determined in the 5th option, when the standard of planting was 5.5 million units/ha. In the "Ixtiyor" variety, which was selected as a control variety, 473 units m^2 were studied in comparison with the control variety "Kizilkurgon" variety, in the 6th variant, it was noted that it was equal to 495 m^2.

When the number of dead plants (m ^{2} /piece) was determined in the early spring season, the standard of planting was 5.5 million pieces/ha, when it was determined in the 5th option, 55 pieces m ^{2} of the "Ixtiyor" variety, which was selected as a control variety compared to the control variety, it was noted that it was equal to 52 m ^{2} in the "Kizilkurgon" variety in the 6th option.

When the number of dead bushes (%) was determined as a percentage, the planting rate was 5.5 million units/ha, and when determined in the 5th option, it was 11.7% in the "Ixtiyor" variety, which was selected as a control variety, compared to the control variety, "Kizilkurgon" was studied. 10.5% in the 6th variant in the "Kizilkurgon" variety was noted to be equal to

Table 5
Barley varieties in terms of seedling thickness, m ^{2} /piece
Average 2 year data analysis

№	Varieties name	Seedling thickness at the beginning of vegetation number of stems, m^2/pc	The number of dead plant stems, m^2/pc	The number of dead bushes, %	Seedling thickness at the end of vegetation number of stems, m^2 /pc
3.5 million units/ha					
1	Ixtiyor	294	28	8.5	265
2	Kizilkurgon	312	22	7.2	284
4.5 million pieces/ha					
3	Ixtiyor	401	41	10.3	351
4	Kizilkurgon	414	39	9.5	368
5,5 million units/ha					
5	Ixtiyor	473	55	11.7	412
6	Kizilkurgon	495	52	10.5	437

When the thickness of the seedling at the end of the vegetable patch (m ^{2} / piece) was determined in the ripening phase, the planting rate was 5.5 million pieces/ha compared to the control variety, "Kizilkurgon" variety, and in the 6th variant, it was noted that it was equal to 437 pieces m^2.

Conclusion

In conclusion to this section, it was observed that barley varieties have a high level of resistance to winter cold. So, based on the analysis of the obtained data, in our scientific research conducted in the soil and climate conditions of the Tashkent region, it was observed that the amount of plants in barley varieties died in an average amount of 8.5-11.7%. When the thickness of seedlings at the end of vegetation is determined,

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the control is 265-351-412 m^2 /unit according to planting standards in the "Ixtiyor" variety, and 284-368-437 m^2 /unit in the "Kizilkurgon" variety it was noted that the seedlings were preserved.

References

1. Atabayeva Kh.N., Khudaykulov J.B. Plant Science. Manual.Tashkent, 2018. P.135-157.
2. "Crops/World Total/Wheat/Area Harvested/2014 (pick list)". United Nations, Food and Agriculture Organization, Statistics Division (FAOSTAT). 2014. Archived from the original on 6 September 2015. Retrieved 8 December 2016.
3. Curtis; Rajaraman; MacPherson (2002). "Bread Wheat". Food and Agriculture Organization of the United Nations.
4. "World food situation: FAO cereal supply and demand brief". Rome, Italy: United Nations, Food and Agriculture Organization. 10 March 2019. Retrieved 14 December 2016.
5. "Crops/World Total/Wheat/Production Quantity/2014 (pick list)". United Nations, Food and Agriculture Organization, Statistics Division (FAOSTAT). 2014. Archived from the original on 6 September 2015. Retrieved 8 December 2016.