

**THE INFLUENCE OF DIFFERENT SOWING DATES ON THE BIOMETRIC INDICATORS OF DURUM WHEAT VARIETIES**J.B.Khudaykulov¹,I.Buriev²¹Tashkent State Agrarian University, University Street, 2, Tashkent Province, 100140, Uzbekistan, professor (DSc).²Karshi Engineering Economic Institute, Mustakillik Road, 225, Karshi, 180100, Uzbekistan, professor (DSc).**ABSTRACT:**

This article presents data on the effect of sowing dates on biometric parameters of wheat varieties. According to the results of the above analysis, the longest spike length in the first planting period was 9.27 cm in the "Javakhir" variety, and the number of grains in one spike was 42 grains, and the average weight of 1000 grains was 38.7 grams.

Keywords: Sowing date, durum wheat, cultivars, spike length, grain number, grain weight, thousand grain weight.

Introduction

Relevance and necessity of the topic . It is known that two varieties of wheat are grown in Uzbekistan. Soft wheat (*Triticum aestivum* L.) and hard wheat (*Triticum durum* L.) are cultivated in the main part of wheat fields. In our country, durum wheat varieties included in the State Register are mainly spring wheat and durum wheat. Considering this feature and the high quality of the grain, the purchase price is 30-50% more expensive than that of soft wheat, they fully meet the needs of the ever-developing macaroni-confectionery industry. Durum wheat grain is the main raw material used in the preparation of pasta and pasta products and in the confectionery industry. In this case, high technological quality of durum wheat grain is required. In the next two ears, the purchase price of durum and soft wheat grain in the world increased significantly. For this reason, expansion of durum wheat cultivation areas in different soil and climate conditions, improvement of agrotechnology of cultivation, obtaining high and high-quality grain harvest are urgent issues of our republic.

LITERATURE REVIEW

Today, many changes and developments are being achieved in the field of agriculture in our Republic. At the same time, the land area under irrigated agriculture is shortening, and due to climate change, water shortage, increased soil salinity, unfavorable weather, it is difficult to grow grain crops and obtain high-quality crops.

It is known that it is important to create varieties of cereal crops that are resistant to various external factors, resistant to diseases and insects even in any soil and climate conditions, to



develop a special agrotechnology for their cultivation, and to obtain a fabulous, high-quality harvest.

Wheat plays a leading role in world agriculture, taking the first place in terms of cultivated area and gross yield of grain and 216,220 mln planted on a hectare of land. Wheat is the oldest crop on earth. Irak, Egypt, China, Northern Mesopotamia are among the regions where wheat has been planted since ancient times. In Central Asia, wheat has been cultivated since the 7th millennium BC [2; pp. 35-45].

Although the general evolution of the genus *Triticum* L. belongs to Pre-Asia, in Central Asia, all three centers correspond to the origin, formation of forms, and diversity of the above two types of wheat [1; p. 407].

The origin of wheat also has its own history. The homeland of wheat is Pre-Asia. It is known from archeological excavations that wheat was cultivated in the territory of Turkmenistan in the V-IV centuries BC, and in Ukraine in the IV-III centuries. Currently, wheat is the most cultivated crop among cereal crops [3; p. 380].

Wheat is an ancient plant. In ancient Khorezm, at the end of the 2nd millennium BC, in the lower part of the Amudarya, highly developed irrigated agriculture, i.e. irrigation canals, existed [1; p. 407].

According to the FAO, the total grain production in the world is about 2 billion 450 thousand tons, so 2 billion 194 tons of grain crops (wheat, rye, barley, oats, rye, rice, corn, sorghum, millet, sorghum) are produced. 256 million tons is the grain of leguminous crops [11].

Thus, the annual turnover of durum wheat is 8-9 million tons. Italy imports 20 percent of durum wheat consumption, half of which comes from Canada and the United States. The import of durum wheat to Italy is related to the lack of local production, the need for high-quality durum wheat (*T. Durum*) [6; pp. 448-455].

The total harvest in wheat-growing countries in the world is 544.2 mln.tons, of which China 102.67 million tons, USA 62.63 million tons, India 59.78 million tons, Russia 35.26 million tons, France 30.23 million tons, Canada 25.26 million tons, Germany 16.69 million tons, Argentina 9.87 million tons, Kazakhstan 9.22 million tons and Uzbekistan 7.2 million tons. Uzbekistan took the 44th place among the wheat-growing countries in terms of average gross yield [4; p. 180].

The period of last planting of winter wheat in Uzbekistan corresponds to the period when the sum of the active temperature of 5⁰C is 250-300⁰C.

Winter wheat is planted in Uzbekistan from September to November, depending on the soil and climate conditions of the regions. [3; p. 380]. Planting biological winter wheat varieties early (at the end of September), duvarak varieties at the beginning of October in the northern part of Karakapagistan, Khorezm, Bukhara, in the middle of October in Surkhandarya, Kashkadarya regions. The rapid establishment of water-filled sprouts ensures abundant and high-quality seed production. The wheat yield can be increased by 30 seconds due to the planting period (Y.Uzokov, G'.Kurbanov, 2000).

G.K.Kurbanov emphasizes that sowing of autumn, duvarak wheat, oat, rye in the most optimal periods in the Republic of Uzbekistan ensures a high yield. It shows that the optimal planting period in South-Surkhandarya, Kashkadarya regions lasts approximately from



October 20 to November 15-20. In other northern regions, the optimal planting period is the second half of September. Barley is usually planted 10-15 days later than winter wheat.

The caloric content of 100 g of durum wheat grain is 339 kcal [6, 7]. In addition to proteins, carbohydrates, fats, ash elements, grain contains enzymes and vitamins. Amount of vitamins in durum wheat grain (per 100 g): vitamin PP (nicotinic acid) - 6.7 mg, vitamin B₁ (thiamine) - 0.419 mg; B₂ (riboflavin) - 0.121 mg; B₅ (pantothenic acid) - 0.935 mg; B₆ (pyridoxine) - 0.419 mg; B₉ (folic acid) - 43 µg.

100 g of durum wheat contains up to 0.5 mg of carotenoid pigments, which are almost absent in soft wheat, and in very small amounts (less than 0.2 mg) in soft wheat. Carotenoids are provitamin (β-carotene is a precursor of vitamin A) and has antioxidant properties [8] and gives an attractive amber color to cereals and pasta [9].

In 2020, the cultivated area of durum wheat in Kazakhstan was 378 thousand hectares, and the production was estimated at 472 thousand tons [10]. The main areas of durum wheat production (80%) are grown in Karaganda and Aktobe regions of North Kazakhstan - Kostanay, Akmola and North Kazakhstan regions, in accordance with suitable natural and climatic conditions . The main producers are agroholdings with an average area of 10-20 thousand hectares of durum wheat and agricultural enterprises with 2-4 thousand hectares of cultivated area.

METHODS AND MATERIALS

Scientific research work was carried out in 2020-2021 at the agricultural scientific research and educational experimental farm of Tashkent State Agrarian University.

The experimental farm is located in the upper reaches of the Chirchik River, at an altitude of 481 m above sea level, at 41°11' north latitude and 38°31' east distance, in Kibray district of Tashkent region. The experimental farm is 1500 meters away from the university yard, it is bordered by the Salar stream on the east side, the Buz-suv channel on the west side, the hospital of Tashkent PTI on the south side, and the residential area on the north side. The soil of the experimental farm is a typical sierozem loam that has been irrigated for a long time. This soil contains 0.8-1.0% humus, about 0.058 - 0.089% nitrogen, about 0.141 - 0.184% phosphorus and about 0.154 - 0.148% potassium, which is very little of the nutrients used by plants during growth that indicates that it is in quantity. The soil is not saline. It differs in soil water permeability, softening complexity.

Research Method

In the research work, "Kakhrabo" was studied as a control variety. Due to the small grain size of local durum wheat varieties, each variety was planted in 4 rows (randomly placed) 0.7 x 4 = 2.8 m wide and 18 m long each in 3 replicates (2.8 x 18 = 50 m² is the area of 1 option. 6 options were carried out in 3 iterations (a total of 900 m²).

winter wheat, ammonium nitrate (34% N) from nitrogen fertilizers, ammophos from phosphorus fertilizers (12% N; 46% P₂O₅), potassium salt from potash fertilizers (54% K₂O) was used. Norms and terms of application of mineral fertilizers in winter wheat given in the table 1.



The manual "Methodology of the State variety testing of agricultural crops" (M. Kolos, 1964) was used for carrying out phenological observations and calculations in winter wheat.

RESULTS AND DISCUSSION

It is known that the high yield of agricultural crops means that the crop structure is well formed. Among the main indicators that determine the weight of durum wheat harvest: spike length, number of grains in a spike, weight of grains in a spike and weight of 1000 grains are calculated. It depends on the source, method, moisture supply of the plant, feeding with mineral fertilizers and other similar factors.

According to the data obtained from the study of the first planting period in the conducted field experiment, the spike length is 8.56 cm on average in the control "Kahrabo" variety, and 9.27 cm in the studied "Javakhir" variety compared to the control variety reached. Table 1 below summarizes the data obtained from the spike analysis at the first planting period.

Table 1 Spike analysis of durum wheat cultivars

No	Varieties	Spike analysis			
		spike length, cm	The number of grains in one spike	in one spike, gr	Weight of 1000 grains, gr
Sown on October 10 in the autumn season					
1.	Kahrabo (control variety)	8.56	38	1.25	36.2
2.	Javakhir	9.27	42	1.28	38.7

According to the data obtained in the experiment on the study of the first planting period, the number of grains in one spike was on average 38 grains in the control variety "Kahrabo" and 42 grains in the "Javakhir" variety studied in comparison with the control variety.

In the first planting period, the studied hard wheat varieties had an average grain weight of 1.25 g in the control "Kahraba" variety, and 1.28 g in the studied "Javakhir" variety compared to the control variety established

In the scientific research conducted under the conditions of field experiments, during the first sowing period, the weight of 1000 seeds of durum wheat varieties was 36.2 grams on average in the control "Kahrabo" variety, and 38.7 grams in the studied "Javakhir" variety compared to the control variety organized.

According to the data obtained on the study of the second planting period in the conducted field experiment, the spike length was 8.28 cm on average in the control "Kahrabo" variety, and 8.71 cm in the "Javakhir" variety studied in comparison with the control variety .

Table 2 below summarizes the data obtained from the spike analysis in the second planting period.



Table 2 Spike analysis of durum wheat cultivars in the second planting period

No	Varieties	Spike analysis			
		Spike length, cm	The number of grains in one spike	in one spike, gr.	Weight of 1000 grains, gr
Sown on October 25 in the autumn season					
3.	Kahrabo (control variety)	8.28	35	1.21	35.8
4.	Javakhir	8.71	38	1.23	37.3

According to the data obtained in the experiment on the study of the second planting period, the number of grains in one spike was on average 35 grains in the control variety "Kahrabo" and 38 grains in the "Javakhir" variety studied in comparison with the control variety.

In the second planting period, the studied durum wheat varieties have an average grain weight of 1.21 g in the control "Kahrabo" variety, and 1.23 g in the studied "Javakhir" variety compared to the control variety. established

In the scientific research conducted under the conditions of field experiments, the weight of 1000 seeds of durum wheat varieties during the first planting period was 35.8 grams on average in the control "Kahrabo" variety, and 37.3 grams in the studied "Javakhir" variety compared to the control variety. organized.

According to the data obtained from the study of the third planting period in the conducted field experiment, the spike length was 7.82 cm on average in the control "Kahrabo" variety, and 7.57 cm in the studied "Javakhir" variety compared to the control variety.

Table 3 below summarizes the data obtained from the ear analysis at the first planting period.

Table 3 Spike analysis of durum wheat cultivars in the third planting period

No	Varieties	Spike analysis			
		spike length, cm	The number of grains in one spike	in one spike, gr	Weight of 1000 grains, gr
Sown in the autumn season on November 5					
5	Kahrabo (control variety)	7.82	33	1.16	33.9
6	Javakhir	7.57	32	1.09	33.2

According to the data obtained in the experiment on the study of the third planting period, the number of grains in one ear was on average 33 grains in the control "Kahrabo" variety, and 32 grains in the "Javakhir" variety studied in comparison with the control variety.

In the third planting season, the grain weight of one ear of studied durum wheat varieties was 1.16 g on average in the control "Kahrabo" variety, and 1.09 g in the studied "Javakhir" variety compared to the control variety established.

In the scientific research conducted under the conditions of field experiments, the average weight of 1000 seeds of durum wheat varieties during the first planting period was 33.9 grams in the control "Kahrabo" variety, and 33.2 grams in the studied "Javakhir" variety compared to the control variety organized. In conclusion to this section, it was found that



the spike analysis indicators in the first planting period are higher than those in the second and third planting periods.

CONCLUSION

According to the results of spike analysis, the longest spike length in the first planting period was 9.27 cm in the "Javakhir" variety, and the number of grains in one spike was 42, and the average weight of 1000 grains was 38.7 grams.

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