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THE EFFECT OF SOWING TERMS ON THE YIELD OF WHEAT VARIETIES

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Abstract: The dependence of sowing dates on the yield of local and foreign varieties of winter wheat was determined based on the results of a correlation analysis of several indicators (seedling quantity, number of grains per grain, grain weight).

Keywords: winter wheat, variety, sowing time, yield structure, yield, seed, seedling thickness, yield, correlation.

Introduction. Productivity is one of the most complex quantitative indicators. Its complexity is explained by many factors, including soil fertility, planting rate, duration, water and nutrient regime, and biological characteristics of the varieties.One such factor is the timing of planting. In the conditions of the republic, winter wheat varieties can be sown in September, October, November and even December. Therefore, determining the optimal planting dates and selecting varieties is one of the possibilities of high and quality harvest.

The Decree of the President of the Republic of Uzbekistan "On approval of the Strategy of agricultural development of the Republic of Uzbekistan for 2020-2030" states: and implementation ”are identified as priorities for implementation.This requires, first of all, the selection of wheat varieties suitable for the climatic conditions of the region and the improvement of agro-technologies for their cultivation.

Literature review. According to MS Atabaeva, the optimal sowing time for winter wheat for Andijan region is October 1-15 [1].

Seeds germinate early when sown early, accumulate well before winter due to sufficient air temperature, and even two-season (wall) varieties have time to germinate.In this case, due to the decrease in sugar content in plant cells, the plant

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becomes cold-resistant and emerges poorly from winter. As a result, the number of seedlings in the grain fields and the yield are negatively affected.When winter wheat is sown late, the seeds germinate sparingly, do not have time to fully accumulate and increase winter hardiness, go into winter with 1-2 leaves, seedlings thin out, weeds increase, yield decreases by 10-15 quintals.

R.I.Siddikov does not recommend starting the early sowing period in Khorezm region on September 5 and sowing winter wheat in the evening, given the cold weather in the evening [3].

According to G. Uzakov, the sowing period has a significant impact on the yield elements of winter wheat varieties.According to the results of the experiment, 6 mln. The number of productive stalks per square meter in the early period was 600, in the medium term 588, in the late 492, 118 low-yielding stems were formed in the early period and 96 low-yielding stems in the medium term [4].

Object and methods of research. The object of research is the origin of winter soft wheat from foreign varieties "Alekseich", "Vexa", "Gurt", local varieties "Aziz", "Navbahor", "Uzbekistan" -25 ”varieties were selected.During the experiment, phenological observation, field and laboratory analyzes were carried out according to the method of the All-Russian Research Institute of Botany (1984). Biometric analyzes were carried out according to the method of the State Commission for Variety Testing of Agricultural Crops (1985, 1989). The SPSS-17 statistical program [6] was used in the statistical analysis of primary data.

Research results. This study provides information on the yield of winter wheat varieties and the effect of planting dates on yield elements (Table 1).According to the data in the table, when winter wheat varieties were planted in September (15.09), the number of seedlings per 1m2 area was 341.66, while the sowing period was 1.10 - 345.41 pieces; 15.10- 341.83 and 1.11- 337.25.From these data it can be seen that the number of seedlings in wheat varieties planted in October is higher than in November. This in turn also affected productivity.Yields of wheat varieties sown in September averaged 73.03 c / h, while those sown in early October were 75.83 c/ h,

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and those sown on the fifteenth of this month were 78.13 c/ h, and in November - 71.18 c/h.

Influence of sowing dates on the yield of winter wheat varieties

Table 1

Statistical indicators	The numbers of plants in 1 m2 area.	The height of the plant, cm	The length of the spike, cm	The number of spikes in the ear. pcs	The number of grains in a spike, pcs	Grain weight in spike, g	Yield, c/h
	Sowing time 15.09						
The arithmetic indicator	341,66 ±4.37	89,45 ±0.10	8,23 ±0.04	17.00 ±0.18	33,83 ±0.16	1,23 ±0.01	73,03 ±0.88
Minimum	324,00	89,15	8,05	16,50	33,50	1,20	70,15
Maximum	352,50	89,70	8,35	17,50	34,50	1,28	74,65
	Sowing time 1.10						
The arithmetic indicator	345,41 ±4.68	90.35 ±0.18	8.30 ±0.02	17.71 ±0.31	34,68 ±0.35	1,22 ±0.01	75.83 ±0.91
Minimum	326,00	89,81	8,25	17,00	34,00	1,19	73,75
Maximum	359,50	91,00	8,35	19,00	36,00	1,26	78,60
	Sowing time 15.10						
The arithmetic indicator	341,83 ±5.49	90.81 ±0.20	8.38 ±0.03	17.50 ±0.31	35,33 ±0.24	1,34 ±0.01	78,13 ±1.40
Minimum	322,50	90,40	8,25	16,50	34,50	1,32	73,60
Maximum	354,00	91,45	8,50	18,00	36,00	1,37	80,70
	Sowing time 1.11						
The arithmetic indicator	337,25 ±5.41	90.14 ±0.24	7.96 ±0.09	17.22 ±0.21	32,81 ±0.32	1,29 ±0.02	71.18 ±1.37
Minimum	319,00	89,50	7,75	16,50	31,50	1,25	66,90
Maximum	341.83	90,70	8,35	18,00	34,90	1,36	77,00

The degree of effect of sowing time on yield can also be clearly seen from the data in Figure 1. From the data in the picture, it can be seen that wheat varieties sown in September yielded 1.5c/h less than the average yield and in November 3.35 c /h

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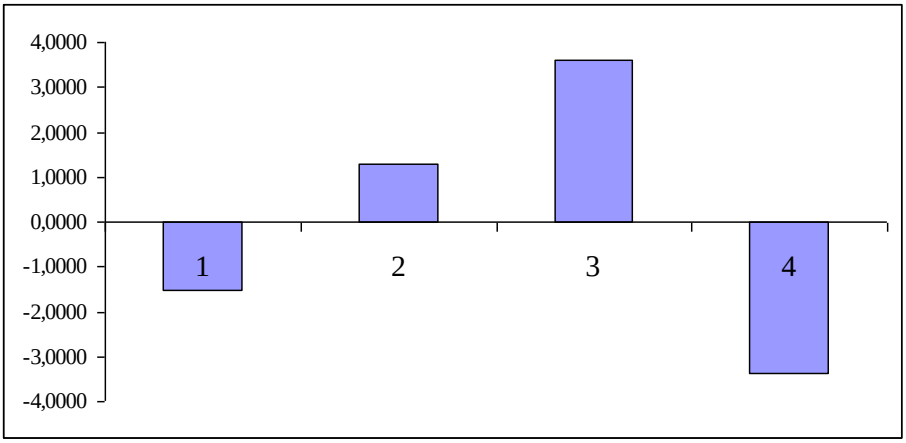
less. Yields of winter wheat varieties sown in October were found to be 1.3-3.3.6 c/h higher (relative to average yields).



The first picture. Yield depends on sowing time.

Note: The numbers indicate sowing dates

The first sowing period *15.09;* ***The third sowing period*** *-15.10;*

The first sowing period *-1.10;* ***The fourth sowing period*** *-1.11*

The data in Figure 2 confirm the extent to which productivity depends on yield elements.In wheat varieties planted in September, the amount of productive seedlings (1) (numbers represent symbols) was moderately correlated with the amount of grain in the spike (5) (r = 0.5–0.7) and strong (r) between the grain weight (6) and the responsibility (7). => 0.7) a correlation was noted.This means that the larger the seedling size, the higher the grain weight and yield in the spike. A strong correlation between the plant height (2) and the spike length (3) and an inverse strong correlation between the spikelets (4) was noted.

This indicates that the number of spikes in the spike (4) and the amount of grain in it (5) decreased while the spike in tall plants (2) was longer (3).In turn, an inverse correlation was noted between spike length (3) and number of spikes per spike (4), grain size per spike (5), and yield (7).This means that the number of grains, the number of grains and the yield were low in long-grain wheat varieties. This situation

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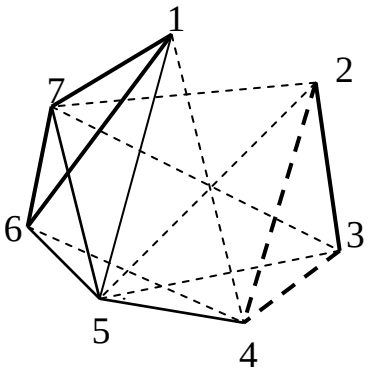
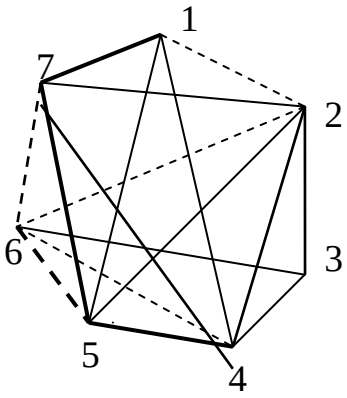
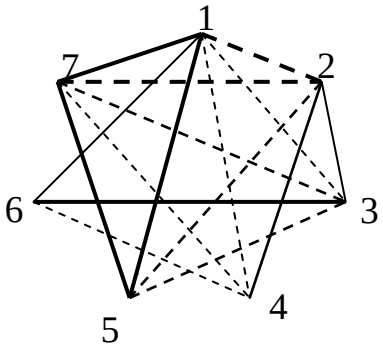
can be explained by the fact that in long-grain wheat varieties the spikes are not densely packed.A correct correlation was noted between the number of spikes in the spike (4) and the amount of grain in the spike (5).A moderate correlation was noted between the number of grains in the grain (5) and the grain weight in it (6) and productivity (7). This shows that when winter wheat varieties are planted in September, the yield depends primarily on the amount of seedlings and the weight of the grain in the ear.



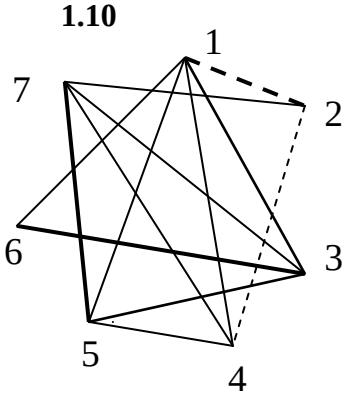
15.09



1.10



15.10



1.11

The second picture. Influence of the sowing dates on the yield of winter wheat varieties.

Note: the numbers represent the degree of correlation of the characters and the lines between them.

1- Number, pcs of seedlings in the 1m2 area
2- The height of the plant, cm
3- the length of the spike, cm;
4- the number of spikes in the ear. pcs;
5-the number of grains in a spike, pcs
6-grain weight in spike, g
7- yield,c/h:

——— **r=0.3-0.5;** ——— **r=0.5-0.7;**

r=>0.7; **r=-0.3-0.5**

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Changes in planting time also result in changes in the level of interrelationships between yield elements happened.It was noted that the yield (7) was strongly correlated primarily with the amount of seedlings (1) and the amount of grain in the grain (5). In wheat varieties sown in September, a strong correlation correlation was observed between grain size (5) and grain weight (6), while in October (1.10) an inverse correlation correlation was observed.A similar result was also noted between the grain weight (6) in the spike and the yield. A strong inverse correlation was observed between seedling size (1) and plant height (2) when planting time was 15.10. This means that the amount of seedlings in tall wheat varieties is low. It was noted that the yield (7) in this period is strongly dependent primarily on the number of seedlings (1) and the number of grains in the ear (5). It was noted that the yield of tall wheat varieties was lower than that of low-growing varieties.It was noted that the yield of wheat varieties sown in November is primarily strongly dependent on the amount of grain in the ear. The correlation between seedling quantity (1) and yield (7) was not true.

In general, sowing times affected the yield of winter wheat varieties.It was noted that the yield of wheat varieties sown in September and October depends primarily on seedling size, grain weight and grain size, and on wheat varieties sown in November, more on grain size.This is also shown by the results of statistical analysis (Table 2).The table shows the results of factor analysis on sowing periods.Factor analysis is a statistical method that determines the similarity of characters in terms of the degree of correlation.According to the table, when wheat varieties were planted in September, the factor loads were higher in terms of seedling area (0.654), number of

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grains per hectare (0.561), number of grains per hectare (0.916), grain weight per hectare (0.600) and yield (0.842).These traits are interrelated and are among the factors affecting productivity.Therefore, this factor can be called "productivity". Thus, the yield of winter wheat varieties depends on the amount of seedlings, the number of ears in the ear, the number of grains in the ear and the weight of the grain, which was noted during all sowing periods of the experiment.

Table 2

Results of factor analysis by factor

№	Indicators	Factor load on sowing times			
		1	2	3	4
		15.10	1.10	15.10	1.11
1	The numbers of plants in 1 m2 area.	**0,654**	**0,582**	**0,984**	**0,630**
2	The height of the plant, cm	-0,679	**0,524**	-0,977	-0,060
3	The length of the spike, cm	-0,698	0,217	-0,540	**0,867**
4	The number of spikes in the ear. pcs	**0,561**	**0,897**	-0,488	**0,537**
5	The number of grains in a spike, pcs	**0,916**	**0,989**	**0,783**	0**,819**
6	Grain weight in spike, g	**0,600**	-,736	0,205	**0,508**
7	Yield, c/h	**0,842**	**0,910**	**0,996**	**0,724**

The dependence of sowing times on the yield of varieties is shown in Table 3. From the data in the table, Gurt (0.94494, 1.02289) and Navbahor (1.34887, 1.46628) varieties of wheat sown in September and early October had the highest load.The yield of these varieties depended on the amount of seedlings, the number of spikes in the spike, the number of grains in the spike, and the weight of the grain. When the sowing period was 15.10, Alekseich (0.52173), Gurt (0.62582), Uzbekistan-25 (0.73830) and Navbahor (0.68480) varieties showed the same result in terms of yield. When the sowing period was 1.11, the factor loads were higher for Alekseich (1.67180) and Navbahor (0.44953) varieties.

Table 3

Loading of varieties by factors

№	Varieties	Factor loading

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		1	2	3	4
		15.09	**1.10**	**15.10**	**1.11**
1	Alekseich	-0.30901	-0.53219	**0.52173**	**1.67180**
2	Gurt	**0.94494**	**1.02289**	**0.62582**	-0.34962
3	Vekha	-1.14119	-0.87527	-1.38023	-1.24974
4	Uzbekistan-25	0.09491	-0.83185	**0.73830**	0.04126
5	Navbakhor	**1.34887**	**1.46628**	**0.68480**	**0.44953**
6	Aziz	-0.93853	-0.24986	-1.19041	-0.56322

This can also be seen from the data in Table 4. Wheat sown in September yielded 74.45 c/h from. Gurt variety and 74.65 c/h from Navbahor variety. It should be noted that during this period the yield of Alekseich was 74.20 c/h, and 0.25 c/h less than Gurt. These varieties did not differ sharply in yield (74.65–74.20 c/h), but the load on the first factor of the Alekseich variety was equal (-0.30901), and Gurt recorded a lower rate than the navigator. This suggests that the yield-related traits (as noted above) in this variety are weakly interrelated.The same result was observed between Uzbekistan-25 and Navbahor varieties. High results were observed in Alekseich, Gurt, Uzbekistan-25 and Navbahor varieties when sowing was carried out in mid-October, and in November in Alekseich and Navbahor varieties (Table 4).

Table 4

Yield of winter wheat varieties, c/h

№	**Varieties**	**Sowing times**			
		15.09	**1.10**	**15.10**	**1.11**
1	Alekseich	74,20	75,95	80,00	77,00
2	Gurt	74,45	78,50	80,50	71,75
3	Vekha	70,15	74,05	73,60	69,75
4	Uzbekistan-25	74,40	74,19	80,20	66,90
5	Navbakhor	74,65	78,60	80,70	71,85
6	Aziz	70,35	73,75	73,80	69,85

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Conclusions. It was noted that the yield of winter wheat varieties depends on the sowing period. The average yield of winter wheat sown in September was 73.0 t/ha, in early October - 75.0 c/h, in the middle - 78.0 c / h, and in November - 71.0 c/h. It was noted that the optimal period is October.

The results of the correlation analysis revealed that the yield of winter wheat varieties depends primarily on the amount of seedlings and the number of grains in the ear. It was noted that Gurt and Navbahor varieties of winter wheat are the most productive.

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