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DETERMINATION OF APPROPRIATE PLANTING TIME OF CABBAGE VARIETIES AND HYBRIDS IN LOW SALINITY SOIL AND CLIMATE CONDITIONS OF KARAKALPAKSTAN

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Abstract:
Growing of vegetable crops is common in China, India, Russia and many other countries with appropriate climate. To meet the needs of the population for food products, and to increase the export potential, for farmers, peasant farms and landowners, at present time the following issues are very actual: developing of resistant to diseases, flexible, early –mid- and late ripening new varuetues and hybrids; wider implementation of resource-saving technologies in vegetable production, reduction of product costs and other.

The total volume of cabbage cultivation in the world is more than 82.8 million tons, and for the cultivation of white headed cabbage: the People's Republic of China, (accordingly, 25.2 kg per capita, the total planted area is 1.0 million ha , productivity 35.0 t/ha, gross production 35.1 million tons), India (7.2 kg, 388.0 tho. ha, 23.2 t/ha, 9.56 million tons), South Korea (47.9 kg, 68.2 t/ha, 2.47 million tons), Russia (16 kg, 67.9 tho. ha, 34.7 t/ha, 2.35 million tons) and Uzbekistan (20.8 kg, 12.6 tho.ha, 54.0 t/ha, 680,640 tons).[1]

In recent years, in order to ensure food security in our country, it is necessary to meet the needs of the population for high-quality, low-cost vegetable products. large-scale measures are being implemented to plant agricultural crops in high demand, especially vegetables, and more rational use of land and water resources. In the 30th goal of the development strategy of New Uzbekistan for 2022-2026 of the Republic of Uzbekistan, "...growing of exportable products and development of fruit and vegetable growing" [2]is set as one of the priority tasks. Therefore, selection of white headed cabbage varieties and hybrids suitable for cultivation in areas with low salinity, improvement of cultivation technologies, and correct selection of planting dates are urgent issues.

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[1] http://surl.li/odnwq
[2] Decree of the President of the Republic of Uzbekistan dated January 28, 2022 No. PF-60 "On the Development Strategy of New Uzbekistan for 2022-2026" .

on improvement of white headed cabbage cultivation technologies in different soil and climatic conditions in foreign countries. Research were carried out in our country by V.I.Zuev, S.V.Sitkinov, O.K.Kadirkhojaev, B.J.Azimov, T.E.Ostonakulov, A.M.Abbasov, M.X.Aramov, A.J.Shokirov, S.S.Lapasov and many others.

Selection of varieties for growing white headed cabbage, optimal planting schemes, planting periods and plant density, cultivation from seedlings, cultivation from seeds, technologies of plant care in the main area, varieties specific to the soil climate of certain regions for late cultivation selection, planting plants in convenient schemes and periods, application of agrotechnics specific to varieties, irrigation, feeding and cultivation in repeated crops, selection of optimal varieties, their optimal planting scheme, determining the period, mineral fertilizers and irrigation recommendations for development and implementation of optimal standards for each varietywere studied by researchers. However, these recommendations were developed for the specific soil-climatic conditions of various regions. The soil and climate conditions of the northern region of our republic, in the Republic of Karakalpakstan, especially in recent years, weather vagaries, water shortage, soil salinity on cultivated fields are increasing.

The scope of scientifically based research on selection of white headed cabbage varieties and hybrids suitable for cultivation in low salinity areas of the Republic of Karakalpakstan, planting schemes of varieties according to biological and economic characteristics and determining optimal planting periods cannot be considered sufficient. According to this issue, it is urgent to carry out scientific research on the determination of optimal planting dates of white headed cabbage varieties and hybrids in the low solanity soil and climate conditions of the Republic of Karakalpakstan, the growth and development of plants, and the study of their morphobiological characteristics is considered.

In the cultivation of vegetable crops, taking into account the soil and climate conditions of the region, the correct selection of planting periods and planting schemes, especially the selection of varieties suitable for certain conditions, are considered to be the main elements. In addition, it is desirable to correctly assess the morpho-biological characteristics of the cultivated type of crop. It is known from the sources that sowing seeds and planting of seedlings in the ground too early or too late in early spring has a significant impact on the growth and yield of vegetables.

Early or late ripening of the variety, its characteristics, in which climatic conditions, in which scheme and in what periods of planting, should be carried out on a scientific basis. Varieties are recommended to be planted in different periods, if late-ripening or mid-ripening varieties are planted early, their harvest will coincide with the hot period of summer, and the productivity will decrease sharply, and there will be no possibility to plant repeated crops in the field. If the early varieties are planted in the late or mid-term, their biological characteristics do not correspond.

According to the literature, the white headed cabbage variety "Belorusskaya-455" was planted in 4 periods (May 24-31, June 6-12), and May 24 was considered the most favorable period. The yield of cabbage planted in June is 27.7 t/ha compared to that planted in May. from 16.3 t/ha. reduced to [15; pp. 43–52].

In 2007-2014, in the conditions of Tashkent region, two varieties of white headed cabbage,

Saratoni and Sharqiya, were planted in 5 planting dates in the summer months for repeated cropping, and they recommended that the optimal dates are from June 15 to July 1 [9; pp. 50–53, 17; pp. 115–119, 11; s-38., 12; -136.].

In order to provide the population with a new crop of cabbage until late autumn, if the "Iyunskaya" variety is sown in April, the first crop will ripen on June 15-20. The harvest of the "Nomer pervyy Gribovsky-147" variety ripens from the beginning of July to the middle of August, and the harvest of the "Stakhanovka-1513" variety ripens from the end of August to the beginning of September [12; s-136.].

Emphasized that the planting period is important for obtaining a high yield of cabbage. It is recommended to sow evening cabbage varieties "Zimovka-1474" and "Kharkovskaya zimnyaya" in the first decade of May, "Amager-611", "Moskovskaya pozdnyaya" types in the second half of May, and mid-evening and evening cabbage varieties in the third decade of May [11; s-38.].

The scientists of our republic have determined the planting dates of early, mid-early, and late white headed cabbage varieties by regions: February 10-12, May 10-12, August 1-15 in the southern regions; February 25-March 10 in regions located in the central region; April 15-May 1; June 15-July 1; in the northern regions, it is planted from March 15-30, April 1-15, and from May 25 to June 5. Seedlings should have 6-7 leaves [13; pp. 221-228, 15; s-43-52., 18; s-130-135.].

Early ripening cabbage seedling in Samarkand, Tashkent and Fergana regions from February 25 to March 15 depending on the arrival of spring, early cabbage in the field with direct seeds on April 1-10, with seedlings in May, evening cabbage seedling It is planted from June 25 to July 25 [25; pp. 221–228].

As a result of the research carried out by the researchers, recommendations were made for planting different types of white headed cabbage at different times, including early-ripening varieties in the morning, mid- and late-ripening varieties in the evening. However, the soil and climate conditions of the Republic of Karakalpakstan differ by 20-30 days compared to our Central regions. Cultivation of mid-early and late-early varieties in the late period increases the salinity level in the soil due to excess irrigation due to the increase in temperature in summer. Therefore, it is effective to plant mid-season varieties earlier than in Central regions.

Methodology

In 2021-2023 we conducted research in the Experimental farm of Karakalpakstan Institute of Agriculture and Agro-Technology and in the farms of Nukus districts, in order to determine the optimal planting dates of varieties and hybrids selected from among the varieties of white headed cabbage in the spring season.

Research was conducted with use of the following Guides: B.J. Azimov, B.B.Azimov's "Methodology of conducting experiments in vegetable, melon crops and potato growing" (2002), "Metodicheskie ukazaniya po ekologicheskomu ispytaniyu ovoshchnyx kultur v otkrytom grunte" VNIISSOK, M., (1987), Metodika polevogo opyta v ovoshchevodstve. M., VNIIO, (2011). V.F.Belik's "Metodika opytnogo dela v ovoshchevodstve i bakchevodstve" (1992), "Metodicheskie ukazaniya po ekologicheskomu ispytaniyu ovoshchnyx kultur" (1987).

Statistical analysis of the research results was carried out using B.A. Dospekhov's "Metodika polevogo opyta" (1985), dispersion method in "Excel 2010" and "Statistica 7.0 for Windows" computer programs, with a confidence interval of 0.95%.

In 2021, in experiments on the selection of varieties and hybrids suitable for cultivation in low saline soil, early rupening Navruz, mid-early ripening Tashkentskaya 10 varieties, and early ripening Magnus F1 and mid-ripening Fresco F1 hybrids 40-45 days' seedlings were planted in March 20; March 30, April 10, April 20, and April 30,. The effect on plant growth and yield was studied. The experiment was in 4 replications, each replication had 4 rows, 10 m. long. Planting scheme is 70x30 cm. March 30 date for early ripening varieties and April 20 for mid-ripening varieties were selected as control variants.

In 2022-2023, the Navruz variety of white headed cabbage was planted on different dates of March-April.

In the control (30.03) variant, it took 32 days for cabbage heads to start forming from the day seedlings were planted in the Navruz variety. Compared to the control variant, it started 3 days later in variants planted on March 20 at the earliest and April 30 at the latest, 2 days later when planted on April 20, and 1 day earlier in the variant planted on April 10 (31 days). Magnus F_1 hybrid, the earliest set of seedlings was faster than in other varieties. Cabbage harvesting began on the same 28 days in the control variant (30.03) and the variants planted on April 10, and in the same 29 days in the variants planted on March 20 and April 20-30.

In themid-ripening variety Tashkentskaya 10, there was no significant difference in germination of seedlings in all periods, seedlings planted on April 30 took 5 days to germinate. In the Tashkentskaya 10 variety, the 2 and stage of the growing season occurred 37-40 days after planting seedlings in all variants for cabbage packing. Compared to the control variant (38 days), the variant planted on April 10 (37 days) started 1 day earlier, March 20 (39 days) 1 day later, and the variants planted on April 20-30 (40 days) started 2 days later. Fresco F1 In the hybrid, seedling emergence was shown in 3 days in the control variant, and in 4 days in the other variants. Fresco F1 hybrid cabbage harvest stage started at 40-43 days, 40 days in control (20.04) and variants planted on April 10, and 41 days in variants planted on March 30, and 3 days later than the control variant in 43 days in the earliest and latest planted variants .

We concluded that the reason for this was that the soil and air temperatures were relatively lower in the earliest (20.03) planted variants, and relatively higher in the latest (30.04.) planted variants. All processes are accelerated when there is an optimum temperature for plants (Table-1).

Table-1 Phenological indicators of white headed cabbage varieties planted at different times in spring (2022-2023 year)

Planting time	Survuval of seedlings		Beginning of ripening		Ripening	
	day	date / month	day	date / month	day	date / month
"Navruz" variety						
20/III	4.0	24 /III	35	20/IV	87	17/VI
30/III (control)	3.0	04/IV	32	02/V	86	25/VI
10/IV	3.0	ontrol13/IV	31	11/V	86	05/VII

20/IV	4.0	24/IV	34	25/V	87	16/VII
30/IV	4.0	04/V	35	06/VI	88	27/VII
"Magnus F $_1$ " hybrid						
20/III	3.0	23 /III	29	20/IV	63	23/V
30/III (control)	3.0	03/IV	28	28/IV	61	01/VI
10/IV	3.0	13/IV	28	08/V	61	11/VI
20/IV	4.0	24/IV	29	20/V	65	25/VI
30/IV	4.0	04/V	29	30/V	67	06/VII
"Tashkentskaya 10" variety						
20/III	4.0	24/IV	39	29/IV	109	08/VII
30/III	3.0	03/IV	38	08/V	106	16/VII
10/IV	4.0	14/IV	37	17/V	106	26/VII
20/IV(control)	4.0	24/IV	40	05/VI	108	07 /VIII
30/IV	5.0	05/V	40	10/VI	110	19 /VIII
"Fresco F $_1$ " hybrid						
20/III	4.0	24 /III	43	03/V	92	21/VI
30/III	3.0	03/IV	41	10/V	91	30/VI
10/IV	4.0	14/IV	40	20/V	91	09/VII
20/IV(control)	4.0	24/IV	40	01/VI	91	20/VII
30/IV	4.0	04/V	43	13/VI	93	02 /VIII

When the maturity of the cabbage heads of the studied varieties and hybrids was calculated, it took 86 days in the control (30.03) variant of the Navruz variety. In the variant planted on April 10, this stage occurred in the same 86 days, corresponding to June 25-26. Cabbage ripening in the earliest March 20 and April 10 varieties took 87 days to mature, while it was 1 day later than the control variety.

Early ripening Magnus F1 hybrid took 61-67 days to mature in all variants. The control (30.03) variant and plants planted on April 10 took the same 61 days to mature, corresponding to June 1 and June 10-11, respectively. Cabbage ripened on the 63rd day in the variant planted on March 20, and harvested on May 23-24. In our variants planted on April 20-30, cabbage ripened 4-6 days later than the control variant in 65-67 days.

The ripening of cabbages in the mid-season Tashkentskaya 10 variety is between 106-110 days in all variants, 106 days in the control (30.03) and variants planted on April 10,2 days later in the variant of April 20, 108 days, and 3 days late in the variant planted the earliest. and on April 30, the lateest planted variant ripened 4 days late in 110 days.

Fresco F1 hybrid cabbage, the control required 91 days for the variant 20.04 and variants planted on March 30 and April 10,1 day for the variant planted on March 20 (92 days), and no later than for the variant planted on April 30 (93 days) arrived 2 days late.

Early ripening Navruz variety 20.03; (control 30.03); 10.04; 20.04; When planted and cultivated on 30.04, the ripening of cabbages is respectively: 16-17.06.; 25-26.06.; 05-06.07.; 15-16.07. and 26-27.07., Magnus F1 hybrid yield, respectively: 23-24.05.; 01-02.06.; 10-11.06.; 25-26.06. and 06-07.07. collected on the dates.

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Mid-ripening Tashkentskaya 10 variety when planted and grown in these periods, respectively: 07-08.07.; 15-16.07.; 25-26.07.; 06-07.08.; 19-20.08. and Fresco F1 ripening of cabbages in the hybrid, respectively: 20-21.06; 30-31.06.; 08-09.07.; 20-21.07 and 01-02.08 dated.

In 2022-2023, when the cabbage weight of white headed cabbage varieties planted in different periods was studied, the planting period had a significant effect on the cabbage weight. The average weight of cabbages in the control variant, Early ripening Navruz variety, planted on March 30, was 1225.0 g (Table 2)..

Table 2 Cabbage indicators of white headed cabbage varieties grown in low salinity areas for different periods (202 2 -2023 yy.)

Planting time	Cabbage indicators						
	Cabbage size, cm		Cabbage weight, g				Cabbage index
	tall	width	2022 y.	2023 y.	average	vs. control, %	
"Navruz" variety							
20/III	14.4	14.1	1132.4	1167.6	1150.0	93.8	1.02
30/III (control)	14.4	14.3	1215.8	1234.2	1225.0	100.0	1.00
10/IV	14.6	14.5	1257.0	1283.0	1270.0	103.6	1.00
20/IV	14.5	14.4	1208.0	1252.0	1230.0	100.4	1.00
30/IV	14.5	14.4	1186.6	1217.4	1202.0	98.1	1.00
LSD_{05}	0.8	0.9	63.5	73.2	20.4	-	-
Sx %	0.9	1.0	0.9	1.0	0.3	-	-
"Magnus F_1" hybrid							
20/III	13.4	12.8	1109.4	1134.6	1122.0	86.3	1.05
30/III (control)	14.6	14.0	1287.2	1312.8	1300.0	100.0	1.04
10/IV	13.8	13.4	1166.0	1194.0	1180.0	90.7	1.04
20/IV	13.8	13.3	1158.0	1177.0	1167.5	89.8	1.04
30/IV	12.4	11.4	829.4	839.6	834.5	64.2	1.08
LSD_{05}	0.8	0.8	61.2	68.7	22.0	-	-
Sx %	1.0	1.0	0.9	1.0	0.3	-	-
"Tashkentskaya 10" variety							
20/III	13.1	13.0	896.0	942.0	919.0	69.4	1.00
30/III	13.3	13.1	933.5	974.5	954.0	72.0	1.02
10/IV	14.2	13.8	1107.3	1132.7	1120.0	84.6	1.03
20/IV (control)	15.6	15.4	1298.5	1349.5	1324.0	100.0	1.01
30/IV	14.5	14.3	1187.0	1203.0	1195.0	90.3	1.01
LSD_{05}	0.8	0.7	65.4	68.4	66.7	-	-
Sx %	1.0	0.9	1.0	1.0	1.0	-	-
"Fresco F_1" hybrid							
20/III	13.4	12.3	847.4	883.0	865.2	57.0	1.08
30/III	14.5	13.4	1367.3	1433.1	1400.2	92.3	1.08
10/IV	15.6	14.5	1446.6	1503.8	1475.2	97.2	1.07
20/IV (control)	15.9	14.9	1495.2	1540.0	1517.6	100.0	1.07
30/IV	14.7	13.6	1361.0	1389.0	1375.0	90.6	1.08
LSD_{05}	0.9	0.8	73.0	83.4	26.9	-	-
Sx %	1.0	1.0	0.9	1.0	0.3	-	-

The average weight of cabbage in the variants planted on March 20 and April 30 at the latest was 6.2-1.9% lower than the control variant. The variant planted on April 20 was almost no different from the control variant, but the variant planted on April 20 (1270 g) was 3.6% heavier.

Magnus F_1 hybrid cabbage was studied, the control (30.03) was the highest in the variant (1300 g). Cabbage weight was 13.7-9.3 and 10.2% lower in variants planted on March 20, April 10-20 than the control variant, respectively. The smallest cabbages were recorded in the version planted on April 30 (834.5 g).

When analyzing the weight of carnations of the Tashkentskaya 10 variety, the control was 1324.0 g in the version planted on April 20. Compared to the control, the variants planted on March 20-30 were 30.6-28% lower, and the variants planted on April 10-30 were 15.4-9.7% lower. In mid-season Tashkentskaya 10 variety, the smallest cabbage heads were observed in the earliest planted variants.

Cabbage weight was higher in Fresco F1 hybrid compared to other varieties. The average weight of cabbage in the control (20.04.) variant is 1517.6 g, compared to the variant planted on March 30 (1400.2 g) by 7.7%, compared to the variant planted on April 10 (1475.2 g) It was 2.8% higher than the version planted on April 30 (1375.0 g) and 9.4% higher. It was observed that the average weight of cabbage in the variant planted on March 20 was 865.2 g, and it was smaller by 30.0-43.0% compared to all variants.

LSD_{05} difference of the experiment on cabbage weight was 20.4 g in Navruz variety, 22.0 g in Magnus F1 hybrid, 66.7 g in Tashkentskaya 10 variety and 26.9 g in Fresco F1 hybrid. The $Sx_{\%}$ accuracy of the experiment was 0.3% positive for the Navruz variety, 0.3% for the Magnus F1 hybrid, 1.0% for the Tashkentskaya 10 variety, and 0.3% for the Fresco F1 hybrid.

During the years 2022-2023, in the low saline soil conditions, in determining the yield indicators of white headed cabbage varieties planted at different times in the spring, the cabbages of all plants in the experimental area were collected and weighed during the period when the cabbages ripened in all variants and returns.

In the yarly ripening Navruz variety, the average values of all variants fluctuated between 54.7-60.5 t/ha. In the control (30.03) variant, the average yield per hectare was 58.3 t/ha. The total yield of the variant planted on March 20 was 54.7 t/ha, 6.2% lower than the control variant, and 1.9% lower than the variant planted on April 30. The highest yield was obtained from the variant planted on April 10 (60.5 t/ha) and was 3.7% higher than the control variant.

The non-productive crop was separated from the total yield per hectare, and the marketable yield was determined. In the control variant, which planted Nowruz variety on March 30, the non-product yield was 8.0%, and the product yield was 53.6 t/ha. In the variant planted on March 20, the marketable yield (48.1 t/ha) was 10.3% lower than the yield of the control variant. In the variants planted on April 20-30, the yield of sorghum was 51.5-49.2 t/ha and was 4.0-8.2% lower than the yield of the control variant. In the variant planted on April 10, it was found that the yield of sorghum (93.0%) was 56.2 t/ha, which was 4.8-14.5% higher than the control and other variants.

LSD_{05} - 2.8 t/ha, the accuracy of S $x_{\%}$ of the experiment - 0.9% was positive when the Navruz variety yield indicator was analyzed.

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Early ripening Magnus F_1 hybrid, the average total yield in 2022-2023 in the control (30.03) variant was 61.9 t/ha, and the marketable yield (93%) was 57.5 t/ha. In the variants planted on March 20 and April 20, the marketable yield was 49.1-49.5 t/ha, by 14.6-14.0% compared to the control variant, in the variant planted on April 10 (51.1 t/ha t) decreased by 11.2%. In the variant planted no later than April 30, the total yield per hectare (39.7 t/ha) was 35.9% lower than the control variant, and the marketable yield (75%) was 48.4% lower.

Magnus F_1 hybrid, the LSD_{05} difference between the yield indicators of the variants was 3.1 t/ha, the accuracy of $Sx_{\%}$ of the experiment was 0.3% in the total yield, and 1.1% in the commodity yield.

The average total yield of Tashkentskaya 10 varieties for 2022-2023 was 63.0 t/ha in the control (20.04) variant, and 56.7 t/ha in the marketable yield (90%). The average total yield of the varieties planted on March 20-30 is 43.8-45.4 t/ha, the marketable yield is 37.2-39.0 t/ha, compared to the yield of the control variant 34.4-31 decreased to .2%. In the variants planted on April 10-30, the total yield is 53.3-56.9 t/ha, the marketable yield is 46.9-50.6 t/ha, which is 17.3-10.8% lower than the yield of the control variant. was found to be.

When analyzing the data of experimental variants of Tashkentskaya 10 variety, LSD_{05} - the difference in total productivity is 3.2 t/ha, in marketable yield is 2.8 t/ha, $Sx_{\%}$ of the experiment - accuracy is 0.3-1.0% positive ldi (Table 3).

Table 3 Yield indicators of white headed cabbage varieties grown in different periods in areas with low salinity (2022-2023 year)

Planting time	Productivity, t/ha			vs. control, %	Not-marketable yield, %	Marketable yield, t/ha	vs. control, %
	2022 y.	2023 y.	average				
"Navruz" variety							
20/III	53.9	55.6	54.7	93.8	12.0	48.1	89.7
30/III (control)	57.9	58.7	58.3	100.0	8.0	53.6	100.0
10/IV	59.8	61.1	60.5	103.7	7.0	56.2	104.8
20/IV	57.5	59.6	58.6	100.5	12.0	51.5	96.0
30/IV	56.5	57.9	57.2	98.1	14.0	49.2	91.8
LSD_{05}	3.0	3.5	1.0	-	-	2.8	-
$Sx_{\%}$	0.9	1.0	0.3	-	-	0.9	-
"Magnus F_1" hybrid							
20/III	52.8	54.0	53.4	86.3	8.0	49.1	85.4
30/III (control)	61.3	62.5	61.9	100.0	7.0	57.5	100.0
10/IV	55.6	56.8	56.2	90.8	9.0	51.1	88.8
20/IV	55.1	56.0	55.6	89.8	11.0	49.5	86.0
30/IV	39.5	39.9	39.7	64.1	25.0	29.7	51.6
LSD_{05}	2.9	3.3	1.0	-	-	3.1	-
$Sx_{\%}$	0.9	1.0	0.3	-	-	1.1	-
"Tashkentskaya 10" variety							
20/III	42.6	44.8	43.8	69.5	15.0	37.2	65.6
30/III	44.4	46.4	45.4	72.0	14.0	39.0	68.8
10/IV	52.7	53.9	53.3	84.0	12.0	46.9	82.7

20/ IV (control)	61.8	64.2	63.0	100.0	10.0	56.7	100.0
30/IV	56.5	57.3	56.9	90.3	11.0	50.6	89.2
LSD_{05}	3.1	3.3	3.2	-	-	2.8	-
Sx %	1.0	1.0	1.0	-	-	1.0	-
"Fresco F_1" hybrid							
20/III	40.3	42.0	41.2	57.0	17.0	34.2	52.0
30/III	65.2	68.2	66.7	92.4	13.0	58.0	88.3
10/IV	68.8	71.6	70.2	97.2	10.0	63.2	96.2
20/IV (control)	71.2	73.3	72.2	100.0	9.0	65.7	100.0
30/IV	64.8	66.1	65.4	90.6	10.0	58.8	89.5
LSD_{05}	3.5	4.0	1.3	-	-	3.7	-
Sx %	0.9	1.0	0.3	-	-	1.1	-

The average total yield in 2022-2023 in the Fresco F_1 hybrid fluctuated between 41.2-72.2 t/ha for all variants. The highest yield was obtained in the variant planted on April 20 (72.2 t/ha), while the lowest indicator (41.2 t/ha) was recorded in the variant planted on March 20. In the remaining variants, it was as low as 2.8-9.4%. When the non-vegetable crops were separated and compared, the non-vegetable yield in the variant planted on March 20 was 34.2 t/ha, 48.0% more than the yield of the control variant, and by 11.7% in the variant planted on March 30 (58.0 t/ha)., it was observed that it was 10.5% lower in the variant planted on April 30. In the variant planted on April 10, the yield of sorghum per hectare was 63.2 t/ha, and (20.04) it was 3.7% lower than the yield of the control variant.

When analyzing the parameters of the yield variants in the Fresco F1 hybrid, the difference between LSD05 in the total yield is 1.3 t/ha, in the market yield is 3.7 t/ha, the accuracy of Sx% of the experiment is 0.3-1.1 % was positive.

summary. In the early Navruz variety of Aqbosh cabbage planted on April 10, the marketable yield was the highest 56.2 t/ha and was 4.8-15.0 higher than the control and other variants, while the Magnus F 1 hybrid was planted on March 30 11.2-48.4% higher yield compared to other variants was obtained in the variant of 57.5 t/ha.

In the mid-season Tashkentskaya 10 variety (20.04), the yield obtained from the control variant is 11.8-34.4% compared to all variants, and in the Fresco F1 hybrid, the maximum yield was 65.7 t/ha in the variant planted on April 20, and other was 3.8-48.0% higher than the variants.

REFERENCES

1. Mirziyoyev Sh. PF-4947-son “Uzbekistan Republicsini yanada rivozhlantirish buyicha haraqatlar strategy tugrisida”. President Farmoni. – Tashkent, 2017 February 7.
2. Mirziyoyev Sh. PF-5388-son “Uzbekiston Respublikasida meva-sabzavotchilikni zhadal rivozhlantirishga doir quimcha chora-tadbirlar tugrisida.” President Farmoni. – Tashkent, 2018 March 29.
3. Mirziyoyev Sh. PҚ-2460-son “2016–2020 yillarda qishlok khuzhaligini yanada rivozhlantirish va islo qilish chora-tadbillari tugrisida.” President Karori. – Tashkent, 2015 December 29.

4. Azimov B.Zh., Azimov B.B. Sabzavotchilik, polizchilik va kartoshkachilikda tazhribalar ўtkazish methodology // - Tashkent, UzME. 2002. – B. 9–11.
5. Belik V.F. Experimental methods in vegetable and melon growing. – M.: Agropromizdat, 1992. – P. 30–45.
6. Dospehov B.A. Field experiment methodology. – M.: Kolos, 1985. – P. 316-328.
7. “Guidelines for environmental testing of vegetable crops in open ground” VNIISSOK, M., 1987, – P. 40.
8. Methodology of field experiment in vegetable growing. M., VNIIO, 2011. – P. 650 (Ed. S.S. Litvinov).
9. Azimov B.D., Shokirov A.Zh., Kosimova Sh. Economic assessment of the planting scheme for white cabbage. / “Scientific support of potato, vegetable and melon growing: achievements and prospects”, international scientific and practical conference (2013; Kainar village). – Almaty, 2013. – P.50-53
10. Azimov B.Zh., Shokirov A.Zh., The influence of planting scheme on the productivity of white cabbage in the conditions of meadow-gray soils of Uzbekistan. / “Federal Scientific Organizations of Russia Federal State Budgetary Scientific Institution “Caspian Scientific Research Institute of Arid Agriculture” Regional Foundation “Agrarian University Complex” Modern trends in the development of the agricultural complex. – Solenoye Zaimishche, Astrakhan region, Russia. 2016.-P.562-567.
11. Belik V.F. Varieties and hybrids of white cabbage. / Improving technologies for cultivating vegetables. – Moscow, 1988. – P. 38.
12. Bolotskikh A.S. Scheme for planting cabbage seedlings. // “Modern trends in selection and seed production of vegetable crops. Traditions and prospects". I International Scientific and Practical Conference (August 4–6, 2008). – Moscow, 2008. – T. 1. – P. 136.
13. Buriev Kh.Ch., Zuev V.I., Kodirkhojaev O.K., Mukhamedov M. Karam usimliklari. Karam navlari / Ochik zhoyda sabzavot ekinlari etishtirishning progressive technologylari. – T.: OzME, 2002. – B. 221–228.
14. Voitenkovka L.I. Promising varieties of white cabbage for the Far East // Journal: Potatoes and vegetables. – Moscow, 2002. – No. 7. – P. 10.
15. Zuev. IN AND. Peculiarities of cultivating vegetable crops on saline soils. Publishing house "FAN". Uz SSR. Tashkent. 1977 – pp. 43–52.
16. Ibragimov S.B., Shokirov A.Zh., Yozgi muddatta ekish uchun okbosh karam navlarini tanlash. “Ozbekiston agrar fani khabarnomasi” magazine. // “Ozbekiston agrar fani khabarnomasi” magazine – Toshkent, 2014. - No. 2 (56). –B. 35-39.
17. Lapasov S.S., Shokirov A.Zh., Takroriy muddatta ekilgan karamni ekish muddatlari va optimal ekish schemalarining hosildorliga tasiri / Innovative approaches in modern science: collection. Art. based on materials from the XLVII International Scientific and Practical Conference “Innovative approaches in modern science.” No. 11 (47). – Moscow., “Internauka”, 2019.-P.115-119.
18. Pivovarov V.F., Aramov M.Kh., Dobrutskaya E.G., Turdikulov B.T., Bakhramov B.B., Khasanov A.R., Nadzhiev Zh.N., Kuchkarov A.M. White cabbage. / Vegetable and melon

crops in Uzbekistan. – Moscow, 2001. – P. 130-135.

19. Shokirov A.Zh., Lapasov S.S. Tstablishing the timing and planting scheme for white cabbage (Brassica capitata Lizg.) at a late stage of cultivation // integrated system of plant protection from pests and diseases. Plant protection. Monograph. Germany, 2019 – pp. 177-185.
20. Lapasov S.S., Shokirov A.J., Azimov B.J. Selection of White-headed cabbage Variety Samples Those are Cultivated in Uzbekistan Conditions // International Journal of Science and Research (IJSR) ISSN (Online): 2319–7064. Volume 6 Issue 11, November 2017. – P. 1999–2002.