

Results of varietal testing of peking cabbage with a repeated planting in Uzbekistan

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Abstract - Peking cabbage is widespread in the countries of South-East Asia. For Uzbekistan, it is a little-known culture. In connection with this, the variety testing of 8 hybrids and 2 varieties of this foreign selection culture was carried out. By results of researches it was revealed that hybrids Seo Jin F₁ and Monoko F₁ are the most productive and early ripening.

Key Words: Peking cabbage, sprouts, average head weight, age, variety, hybrid, yield.

1. INTRODUCTION

The Peking cabbage has a high content of nutrients and biologically active substances. This determines its high value as a dietary and curative-prophylactic product. The consumption of Peking cabbage affects digestion and human health.

In the northern provinces of China, the share of Peking cabbage in the consumption of vegetables by the population in the winter months is up to 80%. In Japan, the area under it is 30,000 hectares, in Korea about 70,000, in Germany in certain years it grows to 1,000 hectares. [5,6]

As a cold-resistant culture, Peking cabbage in Uzbekistan is grown in a limited area, mainly in the summer-autumn period when the formation of cabbages occurs during the autumn cool period.

The most important element of the technology of cultivation of any agricultural culture is the proper selection of varieties and hybrids. On the importance of variety in improving yield and quality of Peking cabbage production reported in many scientific investigations. [4,5,6]

The assortment of Peking cabbage in Uzbekistan is not large. The "State register of agricultural crops recommended for sowing on the territory of the Republic of Uzbekistan" includes the Russian variety Xibinskaya and Japanese hybrids Cha-cha F₁ and Yuki F₁, which are regionalized on the basis of state variety during the spring planting period.

Studies on the selection of varieties of Peking cabbage for repeated planting in Uzbekistan were not conducted. Considering this and the fact that the cultivation of this culture in the summer-autumn period is becoming more widespread, we conducted research in this direction.

2. MATERIALS AND METHODS

Testing of varieties and hybrids of Peking cabbage in the repeated culture was conducted in 2015-2017 in the department of vegetable growing, melon growing and potato growing of Tashkent State Agrarian University. Field experiments were laid on the experimental and investigational base of the research institute of plant growing located in the Qibray district of the Tashkent region.

The soil of the experimental land is located on the upper terrace of the Chirchiq River and is represented by unsealed typical serozem with a deep (6-8 m) groundwater occurrence. [2]

The humus content is 0,86-1,07, the total nitrogen is 0,083-0,101, the phosphorus is 0,092-0,129, and the gross potassium is 1,60-1,80%.

The climate of the zone is continental, dry with a dry hot summer and a humid, unstable winter. It is characterized by large temperature changes in the annual and daily cycles. Aridity is expressed in a small

amount of precipitation (250-500 ml per year) and precipitation of them mainly in winter-spring period.[2,7]

The temperature regime of air over the years of research was close to the average long-term data with small fluctuations in years. The hottest month was July 2017, the average daily air temperature exceeded the average annual average by 0,8-1,2 °C.

When laying down the experience, they were guided by the method of field experience of B.A. Dospheov. [3]

The subjects of the study were 2 varieties and 8 hybrids of Peking cabbage of foreign selection. The standard was the Russian variety Kibinskaya, which was regionalized in Uzbekistan.

Sprouts of Peking cabbage were grown in a pottery way. At the age of 30 days, the seedlings were planted according to the scheme of 70×30 cm. Variety testing was carried out in 4-fold repetition with the area of the registered plots of 7 m², plots of two rows with a length of 5 m.

For each variety, the dates of planting into the open ground, the formation of heads in 10% of the plants and the technical ripeness of the heads (in 75% of the plants) were marked.

The harvested heads were sorted into commodity and non-commodity items at each collection, each fraction was weighed and counted separately. By weight and number of heads, the commodity and non-commodity yields and the average weight of the head were determined.

3. DISCUSSIONS AND METHODS

It was stated that the Seo Jin F₁ hybrid was the earliest entry into fruiting (from 6 to 19 October) and a friendly harvest (within 13 days). Close to him in early ripeness were hybrids of Monoko F₁, Koraenge F₁, and grade Goblet, whose products began to ripen on October 20-25, and harvest lasted up to 11-14 days. The regioned variety Xibinskaya, hybrids Yuki F₁ and Cha-cha F₁ as well as the Jang Won F₁ hybrid were later ripening. They began fruiting from October 31 to November 7 and their harvest lasted 15-17 days. Hybrids Chunchyubai F₁ and Za Jiao F₁ began fruiting on October 25-28, and their harvest lasted for 13-14 days (Tab 1).

Table 1.

The time frames for the receipt of products, the number of leaves, the average weight of

heads and the commercial yield of varieties and hybrids of Peking cabbage in the re-culture (2015-2017)

Varieties and hybrids	Date of first and last collection	Number of leaves, pcs / set.	Average weight of the head, kg	Marketable yield, t/ha				
				2015	2016	2017	Average	
							t/ha	% κ st.
Xibinskaya st	7/XI-23/XI	24,4	0,86	29,7	30,8	28,9	29,8	10,0
Bokal	23/XI-6/XI	18,5	1,46	53,8	56,6	55,8	55,4	185,9
Jang Won F ₁	31/XI-16/XI	31,8	2,07	78,7	75,9	78,3	77,6	260,4
Cha-cha F ₁	3/XI-19/XI	24,9	1,22	42,8	43,6	42,7	43,0	148,8
Yuki F ₁	6/XI-23/XI	28,1	1,35	49,7	47,5	48,6	48,6	168,2
Seo Jin F ₁	6/XI-19/XI	30,2	2,12	83,2	84,2	82,5	83,3	288,2
Monoko F ₁	20/XI-31/XI	28,7	2,09	78,7	79,4	78,3	78,8	272,7
Koraenge F ₁	20/XI-3/XI	31,0	1,88	68,8	67,5	66,3	68,2	236,0

Chunc hyubai F ₁	25/X -7/XI	2 9, 1	1, 7 6	6 7, 7	6 6, 4	6 4, 5	6 6, 2	22 9,1
Za Jiao F ₁	28/X - 11/X I	3 0, 4	1, 6 1	6 2, 4	60, 3	6 2, 8	6 1, 8	21 3,9
NSR ₀₅		1, 8 8	0 ,1 8	1, 46	1, 40	1, 34	1, 34	
P _%		3, 7 7	2 ,6	2, 37	2, 29	2, 20	2, 19	

It was also found that all the tested varieties, except for the variety Bokal, were superior to the standard variety in the number of leaves formed, the average weight of the heads being formed, tested variety and the hybrids weight without exception exceeded the standard.

By the number of leaves, the hybrids Jang Won F₁, Koraenge F₁, Za Jiao F₁, Seo Jin F₁ were allocated, and by the average weight of the head -Seo Jin F₁, Monoko F₁ and Jang Won F₁.

It should be noted that there is a positive correlation between the amount of leaves formed by the plants and the average mass of the heads they form, with a high correlation coefficient ($r = 0.95$).

With the same density of standing of the tested varieties and hybrids, their yield per unit area was directly proportional to the average mass of the head. As with the average weight of cabbages, the standard variety Xibinskaya, significantly inferior in yield to any of the tested hybrids and grade bokal. The highest yield was generated by hybrids Seo Jin F₁, Monoko F₁ and Jang Won F₁, which formed the largest heads.

As shown by statistical analysis, in most years of research the difference in yields in these three hybrids did not exceed the least significant difference (NDS) and did not go beyond the error of experience, which makes it possible to consider their yield equal. The difference in the yield of these two hybrids with other tested varieties and hybrids in most years of study was quite reliable and exceeded the NDS.

The use of heterosis hybrids requires additional costs for the purchase of more expensive seeds or seedlings. According to the prices of 2015, the number of seedlings required for planting on 1 m², for varieties costs 20 USA cents, and for hybrids 40 cents, that is, the additional costs are 20 cents per 1 m² or 2,000 USA dollars per 1 ha.

However, the seeming on the initial scale of large additional costs when using the identified high-yielding hybrids are more than pay off due to a high surplus yield. With an increase to the standard of a commercial crop of 47-53 t / ha and an implementation price of 50 cents per 1 kg, the price of the surplus yield is 23-26 thousand USA dollars. This shows that the economic efficiency of cultivation of the hybrids allocated by us is quite obvious.

4. CONCLUSION

1. All tested varieties exceed the standard variety according to the average weight of the heads being formed and the yield.

2. The most fast ripening were the F₁ Seo Jin, Monoko F₁ and Koraenge F₁ hybrids. Regioned in Uzbekistan Xibinskaya variety and the Cha-cha F₁ hybrid and the Yuki F₁ are the most late-ripening ones.

3. Seo Jin F₁ and Monoko F₁ hybrids are recommended as the most productive and early-maturing for cultivation in Uzbekistan's repeated culture.

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