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Studying and Identifying Promising of Collection Varieties of Potatoes in The Conditions of The Republic of Karakalpakstan

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Abstract: This scientific article mainly provides information on the study and propagation of potato collection variety samples, their growth and development, and yield. The research was conducted in the experimental fields of the Karakalpak Research Institute of Agriculture in 2024. Today, potatoes are planted on more than 21.5 million hectares in more than 160 countries of the world, and more than 351 million tons of potatoes are harvested annually.

Keywords: Potato, collection, variety sample, germination, budding, flowering, number of stems, plant height, yield.

Introduction: Today, potatoes are the second largest agricultural crop in the world after wheat, rice, and corn in terms of area, and second in importance. That's why they call potatoes second bread. Potatoes are a source of proteins, starch, various vitamins, elements, and mineral salts that are important for humans.

The biochemical composition of potato tubers consists of 75% water and 25% dry matter. Starch constitutes 70-80% of the dry matter, and its content in the tubers is 13-20%, protein 2-3%, fiber 1%, oil 0.2-0.3%, sugar 1%, and ash 0.8-1.0%. In addition, potato tubers contain vitamins (C, B1-B6, PP, K, and carotenoids). Mineral elements (calcium, iron, iodine, sulfur, phosphorus, potassium, etc.) in nodules play an important role in strengthening bones and muscles in the body of a growing person. Potato protein is rich in essential amino acids (like lysine, leucine, valine, tyrosine, isoleucine, methionine, tryptophan) and surpasses other crop proteins in its biological significance.

The countries with developed potato cultivation are Russia (4.4 million ha), China (4 million ha), Poland (2.2 million ha), Germany (0.7 million ha), the USA (0.5 million ha). [4;5].

Potatoes are grown on very large areas in the USA, Canada, Holland, Finland, Germany, France, Italy, England, India, Poland, Czechoslovakia, Russia, Belarus, China, Japan. [5, 6].

METHODS

It was conducted in 2024 in the experimental fields of the Karakalpak Research Institute of Agriculture. In the study, 16 potato varieties, included in the state register created by the Research Institute of Vegetable, Melon Crops and Potato Growing, were planted in 2 rows at a

distance of 5 meters, in 1 repetition. Planting scheme 70x25 cm.

The following methodological guidelines were used in the research:"Methodology for Conducting Experiments in Vegetable Growing, Melon Growing, and Potato Growing"[1],"Methodology of Field Experiment"[2].

RESULTS AND DISCUSSION

Variety samples of early-season potatoes, imported from the Research Institute of Vegetable, Melon Crops and Potato Growing and sown for the purpose of studying and selecting local varieties in the conditions of the Republic of Karakalpakstan:

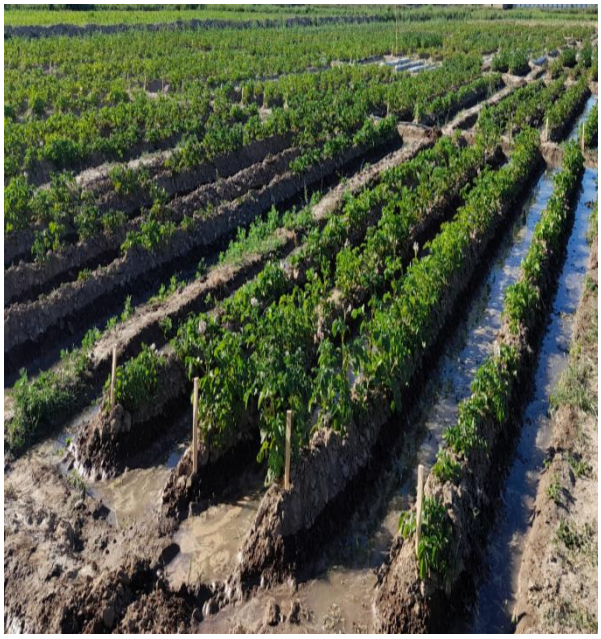
SPE AND KITI's Aqrob, Diyora, Toshkent Yertagisi, Uzbekistan Qizili, Umid, Pitek, Evolyushen, Kaya, Zerve, Hamkor-1150, Ultraeshim, Arizona, Quvonch-1656, Bardoshli-3, Yaroqli-2010. In the experimental field of local Santa varieties, samples of each variety were sown according to the 70×25 cm scheme in 5 meters in 2 rows, 1 repetition.

In the experimental variant, 16 varietal samples were sown. Phenological observations and biometric measurements were carried out on the potato collection planted in the selection garden. After sowing every 10 varieties, the Sante variety was planted as a control. In the top ten, the varieties Aqrob, Diyora, Toshkent ertagisi, Uzbekistan qizili, Umid, Pitek, Evolyushen, Kaya, Zerve, Hamkor-1150 were compared with the control Santa variety. If the control variety Sante germinated 10% in 18 days and 75% in 29 days, then compared to it, the lines Diyora, Uzbekistan qizili, Umid, Arizona, Evolyushen germinated 10-75% of seedlings 3-4 days earlier than the control variety. In the budding and flowering period, Uzbekistan red, Evolyushen, Khamkor-1150, Ultrayeshim, Quvonch-1656, Yaroqli-2010 samples were observed 1-7 days earlier compared to the St. Sante variety.

1-Table

Results of phenological and biometric measurements of potato samples planted in the selection garden

№	Variety samples	Germination of seedlings, days		During the mass flowering of the plant		Yield per bush, g	Yield, t/ha	% of the control
		10%	75%	number of stems, pieces	stem height, cm			
1	Aqrob	18	29	1,3	28	214	12,1	103,4
2	Diyora	17	29	1,5	33	253	14,3	123,0
3	Toshkent ertagisi	32	51	1,2	22	-	-	-
4	Uzbekistan qizili	14	21	1,1	25	267	15,1	129,0
5	Umid	15	22	2,5	45	114	6,4	55,5
6	Pitek	29	38	1,2	40	113	6,4	54,7
7	Evolyushen	17	24	1,6	32	592	33,6	287,1
8	Kaya	44	52	1,3	28	110	6,2	52,9
9	Zerve	-	-	-	-	-	-	-
10	Hamkor-1150	29	38	2,1	32	122	6,9	58,9
	Sante **(st)**	**18**	**29**	**1,5**	**32**	**206**	**11,7**	**100,0**
11	Ultraeshim	26	32	1,2	51	478	27,1	231,6
12	Arizona	17	23	1,3	32	198	11,2	95,7
13	Quvonch-1656	25	38	1,3	43	115	6,5	55,5
14	Bardoshli-3	27	40	2,1	37	731	41,5	354,7
15	Yaroqli-2010	26	38	1,3	45	231	13,1	111,9



According to the research results, in the control variety Sante, it took 18-29 days for 10-75% of potato seedlings to germinate, while in some potato samples, including the Diyora, Uzbekistan qizili, Umid, Arizona, and Evolyushen lines, germination was observed 3-4 days earlier.

Among the studied potato varieties, the yield of some varieties was higher than in the control variant. Among the collection varieties, the yield of the Uzb kizili variety was higher than the control variant by 3.4 tons or 29.0%, Evolyushen by 21.9 tons, 187.1%, Ultrayeshim by 15.4 tons, 131.6%, Bardoshli-3 by 29.8 tons, 254.7%.

CONCLUSIONS

Samples of 15 collections from the Research Institute of Vegetable, Melon Crops and Potatoes were studied. As a result of the research work, 5 varieties with good phenological and economically valuable traits, early-ripening, high-yielding, were selected in the selection kindergarten and will be used for research in the following year.

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