TESTING AND DETERMINING THE PRODUCTIVITY OF WORLD COLLECTION SAMPLES OF THE POTATO PLANT IN THE SOIL AND CLIMATE CONDITIONS OF KARAKALPAKSTAN

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ABSTRACT: *This article covers testing potato varieties in soil and climatic conditions, selection of productive varieties, their planting rates, schemes, and yield. It consists in determining the maximum and minimum varieties of potatoes according to the phenological characteristic of crop quality.*

KEY WORDS: *Potato varieties, description, phenological characteristics, timing, days, germination, flowering, technical ripening, ripening, number of buds per plant, yield.*

Introduction. Scientific research was conducted at the Research Institute of Vegetable, Melon Crops and Potatoes at the Scientific Experimental Station of the Republic of Karakalpakstan in 2023. Field experiments were conducted in experimental plots located in the Nukus district of the Republic of Karakalpakstan.

The hydrogeological and reclamation conditions of the territory are unfavorable, which is associated with the general weakness of groundwater flow. This is due to the weak slope of the delta, the composition of soil-forming rocks characterized by high dustiness, and the absence of uniform water-permeable layers in the structure of the soil-ground layer. Therefore, the depth of groundwater distribution here is determined by the ratio of its inflow and outflow. The depth of groundwater distribution varies in different parts of the Amu Darya delta, depending on the degree of development, water availability, and drainage of the territory [4].

Table 1

Some agrochemical indicators of soils of the experimental plot (2023)

Soil horizon	**Humus, %**	**Mobility, mg/kg**			**Ph**
		Nitrogen	**Phosphorus**	**Potassium**	
By field area I					
Plow layer (0-30 cm)	0,76	0,088	0,263	0,575	7,6
Subsoil (31-50 cm)	0,69	0,072	0,172	0,420	7,2

by field area II					
Plow layer (0-30 cm)	0,81	0,083	0,217	0,509	7,6
Subsoil (31-50 cm)	0,77	0,076	0,181	0,411	7,3

In irrigated areas and between them, the placement of gray and high soils corresponds to the leaching period and the irrigation period during the growing season. Soil samples were taken and analyzed from the plowed horizon and sub-plowed horizon (0-30 cm) (31-50 cm) of the soils of the experimental site. The humus content in the soils of the plowed (0-30 cm) layer was 0.76%, and in the lower (30-52 cm) layer - 0.69%. Total nitrogen was 0.088-0.072% respectively, total phosphorus 0.263-0.172%, and total potassium 0.575-0.420%. Exchangeable potassium was 211-186 mg/kg (Table 1).

Relevance and necessity of the research. It is important to conduct scientific research in this region to provide recommendations for the cultivation of vitamin-rich potatoes for the population of the Republic of Karakalpakstan on saline soils. One of the urgent problems is the determination and selection of varieties suitable for our conditions and their yield during spring planting in the conditions of Karakalpakstan of local potato varieties Bardoshli-3, Bakhro-30, Kuvonch, Hamkor, included in the Register, and foreign varieties Evolution, Radial qizil, Orlo, Salvana, Arizona, Savyolla, Red Skarlet, Sante.

Experiments on research were conducted in 2023 in the conditions of the Republic of Karakalpakstan, in the Nukus district, in the fields of the scientific experimental station of the Republic of Karakalpakstan at the Research Institute of Vegetable, Melon Crops and Potatoes..

The purpose of the research is to assess potatoes of the nightshade family in the Republic of Karakalpakstan in spring crops according to morphological and economically valuable traits, as well as to select varieties suitable for our conditions and determine planting dates.

Object and methods of research. In this experiment, conducted in 2023, we tested potato varieties adapted to our soil and climatic conditions and compared their effectiveness [1][2].

Indicators of the studied samples by general characteristics for 2023 (Table 2)

№	Variety name	Germination (days)	Flowering (days)	Technical ripeness (days)	Ripening (days)	Number of potato yields per potato	Weight of one potato /g	Weight of one potato bush /kg	Total yield t/ha
1	Evalyushn	19	55	85	117	31,06	83,7	2,599	14,437

2	Bardoshli-3	13	50	83	110	35,7	100,7	3,594	19,964
3	Baxro- 30	18	58	87	114	30,1	96,1	2,892	16,065
4	Radial qizil	16	56	85	117	27,4	87,3	2,392	13,287
5	Orlo	17	58	90	120	37,1	91,6	3,398	18,875
6	Salvana	17	59	87	116	31,3	89,3	2,795	15,526
7	Quvonch	20	60	90	115	31,9	89,7	2,861	15,892
8	Arizona	16	53	86	119	35,4	93,2	3,299	18,325
9	Volaris	18	55	85	116	35,5	89,9	3,191	17,728
10	Xamkor	15	51	84	114	32	93,5	2,992	16,620
11	Savyolla	19	60	90	120	24,9	88,6	2,206	12,254
12	Red Skarlet	21	60	90	120	28,2	81,3	2,292	12,732
13	Control variety Sante	12	56	80	100	31,1	102,7	3,193	17,737

During the research, it was established that the varieties created by our scientists showed good results, that is, the Bardoshli-3 variety, as a result of phenological observations during its growing season, surpassed other varieties, namely the Red Scarlet variety, in each indicator, that is, the weight of one potato bush was 3.594 kg, and in the Red Scarlet variety this indicator was 2.292 kg, that is, it had 63.7% more weight. As for the total yield of the Bardoshli-3 variety, it was 19.964 tons per hectare, Red Scarlet - 12.898 tons, which is 64.6% more. Thus, the conclusion is that varieties imported from foreign countries have low adaptability to our soil and climatic conditions. (Table 2)

Hosildorlik ko'rsatkichlari bo'yicha Nazorat navda (t/ga) farqi. (3-jadval)

№	**Nav nomi**	**Xosildorlik (t/ga)**	**Nazorat dan farqi (t/ga)**
		2023 yil	**2023 yil**
1	Evolution	14,437	-3,3
2	Bardoshli 3	19,964	+2,227
3	Baxro 30	16,065	-1,672
4	Radial qizil	13,287	-4,45
5	Orlo	18,875	+1,138
6	Salvana	15,526	-2,221
7	Quvonch	15,892	-1,845
8	Arizona	18,325	+0,588
9	Volaris	17,726	-0,011
10	Xamkor	16,620	-1,117
11	Savyola	12,254	-5,483
12	Red scarlet	12,732	-5,005
13	Control variety Sante	17,737	

In any agricultural crop, the final result is the amount of yield obtained from each hectare. When analyzing the studied samples by yield characteristics, the following results were revealed. The highest yield was shown by the Bardoshli-3 (19.964 t/ha), Orlo (18.875 t/ha), Arizona (18.325 t/ha) samples, which exceeded the control variety from 0.588 t/ha to 2.227 t/ha.

Samples Salvana (15,526 t/ha), Khamkor (16,620 t/ha), Volaris (17,726 t/ha), Bakhro 30 (16,065 t/ha), which showed an average result, differed from the control variety from -2,221 t/ha to -0,011 t/ha.

The lowest yield was shown by samples Savyolla (12,254 t/ha), Red Scarlet (12,732 t/ha), Radial Red (13,287 t/ha), Evolution (14,437 t/ha), and the yield was lower than the control variety from -5,483 t/ha to -3,3 t/ha. The yield from the control variety was 17.737 t/ha. (Table 3)

Conclusion. In conclusion, the Bardoshli-3 variety, which is considered our local variety, surpassed other varieties in terms of quality indicators for sowing, while varieties imported from foreign countries, such as Red Scarlet and Orlo, have lower quality indicators for sowing compared to other varieties.

This means that the varieties created in our conditions have once again proven their suitability for our soil and climate, while potato varieties imported from foreign countries have not yet fully adapted to our conditions.

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