

**КАРТОШКАЧИЛИКДА СУВ ТЕЖАМКОР СУГОРИШ УСУЛЛАРИНИ
ҚЎЛЛАШ САМАРАДОРЛИГИ (АНДИЖОН ВИЛОЯТИ МИСОЛИДА)**

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**ЭФФЕКТИВНОСТЬ ПРИМЕНЕНИЯ ВОДОСБЕРЕГАЮЩИХ МЕТОДОВ
ОРОШЕНИЯ В КАРТОФЕЛЕВОДСТВЕ. (НА ПРИМЕРЕ АНДИЖАНСКОЙ
ОБЛАСТИ)**

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**EFFECTIVENESS OF USE OF WATER-SAVING IRRIGATION METHODS IN
POTATO GROWING. (ON THE EXAMPLE OF ANDIJAN REGION)**

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Аннотация

Ушбу мақолада Андижон вилоятининг ўтлоқи-бўз тупроқлари шароитида картошка
етиштиришдаги ялпи маҳсулот ишлаб чиқаришни кўпайтириш ва ҳосилдорликни

оширишнинг асосий омилларидан бири замонавий суғориш режимини жорий этиш бўйича илмий изланишлар натижалари ёритилган.

Аннотация

В данной статье описаны результаты научных исследований по внедрению современного режима орошения, что является одним из основных факторов увеличения валового производства картофеля и повышения урожайности в условиях лугово-сероземных почвах Андижанской области.

Annotation

This article describes the results of scientific research on the introduction of a modern irrigation regime, which is one of the main factors for increasing the gross production of potatoes and increasing productivity in the meadow-gray soils of the Andijan region.

Калит сўзлар: суғориш режими, вегетация даври, суғориш техникаси, суғориш технологиялари, суғориш усуллари, суғоришнинг давомийлиги, суғориш меъёри, сув исрофи, сувдан фойдаланиш коэффициенти.

Key words: watering regime, vegetation period, watering technique, watering technologies, watering types, duration of watering, limit of watering, waste of water, coefficient of water usage;

Ключевые слова: режим орошения, вегетационный период, техника орошения, технологии орошения, способы орошения, продолжительность орошения, норма орошения, расход воды, коэффициент водопользования.

Today, the population of the planet Earth is growing at a high rate and approaching the figure of 8 billion. Potatoes are the main product in the daily diet of many regions of the world and are currently the fourth largest in terms of consumption. [4]

According to statistics, by the end of 2021, 377 mln. tons were harvested. According to the website <https://www.atlasbig.com/> in the Republic of Uzbekistan, potatoes were planted on 89,576 hectares, with a total yield of 2,925,020 tons and a yield of 34,763 T / ha.

Field experiments were conducted on the lands of Andijan Experimental Station of the Scientific Research Institute of Vegetables, Melons and Potatoes to determine the irrigation regime of potato plants grown by different irrigation methods on the example of varieties "Serhosil" and "Desiree" according to the following system:

RESEARCH SYSTEM

№	Spring season		Summer season	
	Soil moisture before irrigation, in% of Border steppe wet capacity (BSWC)	Watering scheme	Soil moisture before irrigation, in% of Border steppe wet capacity (BSWC)	Watering scheme
1	Furrow watering 65-70-75 (control)	1-1-5	Furrow watering 65-70-75 (control)	1-1-5
2	Sprinkling 75-75-85 %	2-2-6	Sprinkling 75-75-85 %	2-3-8
3	Furrow watering 75-75-85 %	1-2-5	Furrow watering 75-75-85 %	2-2-6
4	Furrow watering 75-85-85 %	1-2-6	Furrow watering 75-85-85 %	2-2-7

All types of hydraulic reclamation measures are aimed at creating, controlling and managing a water regime that is acceptable to the plant. In addition to water regime, changes in soil air, heat and nutrient regimes, pest control measures and analysis of the process of fertile soil formation in arable lands. The experiments also included mechanical analysis of soil composition, water-physical properties, agrochemical studies and phenological observations. [5]

The amount of water supplied to options 1, 3, 4 in irrigated irrigation is determined using a 90° Thomson's water pipe. Irrigation was carried out using a sprinkler system designed by Eurodrip. Water consumption in sprinkler irrigation was determined using a water meter.

Table 1. THE TABLE OF USE OF WATER ON RESEARCH FIELD

№	Күрсаткычлар	Variation							
		Serhosil				Desiree			
		Planting scheme 70x25				Planting scheme 70x25			
		1	2	3	4	5	6	7	8
1	Reserve water at the beginning of the growing season, m ³ /ha	5612	5612	5612	5612	5612	5612	5612	5612
2	Reserve water at the ending of the growing season, m ³ /ha	5294	4546	5319	5330	5255	4490	5279	5289
3	Use of reserves of the soil, m ³ /ha	318	1066	293	282	357	1122	333	323
4	Use of reserves of the soil, %	5,7	19	5,2	5	6,4	20	5,9	5,7
5	Limits of Season of watering, m ³ /ha	3530	2240	3829	3348	3530	2240	3829	3348
6	Limits of Season of watering, %	89,9	66,2	91,2	90,3	89	65,1	90,3	89,3
7	Precipitation, m ³ /ha	78,2	78,2	78,2	78,2	78,2	78,2	78,2	78,2
8	Precipitation, %	2	2,3	1,9	2,1	2	2,3	1,8	2,1
9	The amount of total used water, m ³ /ha	3925,9	3384,5	4199,8	3708,7	3965,5	3440,6	4239,8	3748,9
10	Productivity, cwt/ha	243	333	292	267	243	333	292	267
11	Harvest with used 1 m ³ water, kg	6,19	9,84	6,95	7,2	6,13	9,68	6,89	7,12
12	Used water for 1 cwt harvest, m ³ /cwt	16,2	10,2	14,4	13,9	16,3	10,3	14,5	14
13	Coverage of 1 m ³ of irrigation water used by crop, kg	6,9	14,9	7,6	8	6,9	14,9	7,6	8

Influence of irrigation methods on seedling thickness

Phenological observations on the growth, development and yield of potato varieties were conducted on each experimental variant and yield. The actual seedling thickness of the experimental field was determined in two periods: at the beginning and at the end of the operation period, ie before the harvest, by counting the available plants in the counting plots in each variant and return. The analysis of the number of real and lost seedlings was conducted on the basis of the following formula:

$$P = \frac{M^2}{P_q}; \text{per/ha};$$

Here, P – the number of plants (per); M – crop field (ha);

$P_q = b_e b_o' (m^2)$ – one row crop field; $b_e b_o'$ – planting scheme.

In the experimental variants, the seedling thickness of potatoes was determined, taking into account that the potato Serhosil, Desiree varieties also depend on the agro-technical measures taken in the maintenance of sprinkler irrigation technology.

Table 2. Influence of sprinkling on seeding thickness

Variation	Thousand.bush/ha	At the end of vegetation period.bush/ha
Serhosil variety		
Furrow watering 65-70-75 % (control)	57,03	50,9
Sprinkling 75-75-85 %	57,08	55,5
Furrow watering 75-75-85 %	57,10	54,4
Furrow watering 75-85-85 %	57,11	53,2
Desiree variety		
Furrow watering 65-70-75 % (control)	57,02	50,9
Sprinkling 75-75-85 %	57,1	55,2
Furrow watering 75-75-85 %	57,1	54,1
Furrow watering 75-85-85 %	57,09	53,2

In the first harvest in 2020-21, separate yields were determined for each option in all 4 returns. The data show that in all traditional irrigated methods, the yield of potatoes in the Serhosil variety was 10.0 T/ha higher than in the control variant, and in the Desiree variety 8.2 T/ha higher than in the control.

Table 3. INFLUENCE OF SPRINKLING ON POTATO YIELD.

Var.	Planting scheme	Irrigation types	Productivity (t/ha)	Differences, ±
Serhosil variety				
1	70x25	Furrow watering 65-70-75 % (control)	23,7	-
2	70x25	Sprinkling 75-75-85 %	33,7	10,0
3	70x25	Furrow watering 75-75-85 %	29,8	6,0
4	70x25	Furrow watering 75-85-85 %	27,8	4,1
Desiree variety				
1	70x25	Furrow watering 65-70-75 % (control)	24,6	-
2	70x25	Sprinkling 75-75-85 %	32,8	8,2
3	70x25	Furrow watering 75-75-85 %	30,2	5,6
4	70x25	Furrow watering 75-85-85 %	28,1	3,6

CONCLUSIONS

Based on the results of research on the use of improved water-saving sprinkler irrigation technology, which provides optimal irrigation regimes for potatoes "Serhosil" and "Desiree" in the conditions of hydromorphic, medium-heavy sandy meadow gray soils of Andijan region. The following can be summarized as follows:

- Significant savings on fuel and lubricants by sprinkler irrigation;
- The negative impact of irrigation water on the volume weight of the soil is reduced;
- Optimal conditions for potato roots have been created, the plant's supply of moisture, nutrients and other factors has been improved;
- In the case of sprinkler irrigation, the seasonal irrigation norm was 2536 m³/ha, and water was saved twice as much as in the control variant;
- 9 tons more potatoes per hectare than the control option.

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