

**ТУРЛИ СУҒОРИШ ТАРТИБЛАРИНИ КАРТОШКАНИНГ ЎСИБ-
РИВОЖЛАНИШИГА ТАЪСИРИ (АНДИЖОН ВИЛОЯТИ
МИСОЛИДА)**

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**ВЛИЯНИЕ РАЗНЫХ СПОСОБОВ ОРОШЕНИЯ НА РОСТ И
РАЗВИТИЕ КАРТОФЕЛЯ (НА ПРИМЕРЕ АНДИЖАНСКОЙ
ОБЛАСТИ)**

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**THE INFLUENCE OF DIFFERENT IRRIGATION METHODS ON THE
GROWTH AND DEVELOPMENT OF POTATOES (USING THE
EXAMPLE OF THE ANDIJAN REGION)**

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Аннотация

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Ушбу мақолада ўтлоқи-бўз тупроқлар шароитида картошкadan барқарор ва юқори ҳосил етиштиришнинг асосий омилларидан бири мақбул суғориш тартибларини аниқлаш бўйича ўтказилган илмий тадқиқот натижалари ёритилган.

Аннотация

В данной статье приведены результаты научного исследования по определению оптимальных режимов орошения, одного из основных факторов выращивания стабильного и высокого урожая картофеля в условиях лугово-сероземных почв.

Annotation

This article presents the results of a scientific study to determine optimal irrigation regimes, one of the main factors in growing a stable and high yield of potatoes in meadow-gray soils.

Калит сўзлар: суғориш тартиби, вегетация даври, суғориш усуллари, суғоришнинг давомийлиги, суғориш меъёрлари.

Key words: watering regime, vegetation period, watering types, duration of watering, irrigation rates.

Ключевые слова: режим орошения, вегетационный период, способы орошения, продолжительность орошения, нормы орошения.

INTRODUCTION

Today, potatoes are a staple food in the daily diet of many regions of the world and currently rank fourth in terms of consumption. "According to preliminary data, the world production of potatoes in 2022 has decreased by 6% to 354.3 million tons due to the reduction of areas and unfavorable climatic conditions. This was announced by the French Interprofessional Potato Committee (CNIPT), citing FAO data, writes FreshPlaza. According to the latest data published by the Food and Agriculture Organization of the United Nations (FAO), which are included in the report "World potato markets", in 2021 a record amount of potatoes was produced in the world - 376.1 million tons.¹

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.²

Early potato productivity largely depends on the width of the row spacing and the thickness of the bush. In this case, due to the short growing season of potatoes, according to the biological characteristics of quick-ripening varieties, its layer does not grow strongly. [1; p-35.].

It is considered expedient to grow potatoes from 57,000 to 71,000 seedlings per hectare, or in a 70x20-25 cm pattern, that is, 70 cm between rows and 20-25 cm

¹ <https://www.tridge.com/news/world-potato-production-is-declining>

² <https://www.atlasbig.com/>



between plants. For this, it is necessary to plant 3.0-3.5 tons of seed tubers per hectare, and the weight of the planted tubers should be 30-80 grams. [2; p-430.], [3; p- 443.]

Potato productivity is not affected by the shape (configuration) of the feeding area and it is primarily determined by the width between the rows. It has been determined that seed tubers of the same weight are planted at different distances between plants in rows with a spacing of 60 cm to 90 cm. In most of the Central European countries, it is accepted to plant potatoes in rows with a distance of 75 cm, in the CIS countries 70 and in some cases 90 cm, in England - 80-90 cm. Potatoes planted in rows 60 cm apart have damaged roots during inter-row tillage and most of the tubers turn blue due to lack of soil when mowing. [4; p-113.], [5; p-232.], [6; p-152.], [7; p-351.], [8; p-194.], [12.]

In the experiments, the standard for planting seed tubers of the following potato varieties in a 70x20-25 cm scheme is 3 tons per hectare, the yield when planting seed tubers weighing 20-30 grams is 165.2 centners, when planting seed tubers weighing 30-50 grams is 208.3 centners, and when seed tubers weighing 50-70 grams are planted and 206.1 centners were harvested by planting tubers. By increasing the planting rate by 3.5 tons per hectare, 173.3 quintals of small tubers weighing 20-30 grams were planted, 224.4 quintals of medium tubers of 30-50 grams were planted, and 219.5 quintals of large tubers of 50-70 grams were planted per hectare. It has been proven that when 30-80 grams of tubers are planted, the quality of the crop is much improved, the marketable tubers are increased by 3-4%, and the starch in the tubers is increased by 0.5-0.8%. [9; -p 23.]

In this experiment, the planting scheme was 70x25, and potatoes were grown in early and late periods.

RESEARCH METHODOLOGY

Field experiments were conducted in 2020-2022 on the experimental fields of the Andijan Experimental Station of the Research Institute of Vegetable Growing, Melons and Potatoes in order to study the effect of using different irrigation methods (furrow and sprinkling) on potato yield, where early and late sowing dates of mid-early potato varieties Serkhosil and Desire were studied. The experiment consisted of five variants, repeated four times. With the furrow irrigation method, the irrigation regimes of 65-75-75% (standard), 75-75-85% and 75-85-85% of the maximum field

moisture (MFM) were studied, and with sprinkling irrigation, respectively, 75-75-85% and 75-85-85% of the MFM.

RESEARCH SYSTEM

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

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, 5 in irrigated irrigation is determined using a 90° Thomson weir. Irrigation was carried out using a sprinkler system designed by Eurodrip. Water consumption in sprinkler irrigation was determined using a water meter.

RESEARCH RESULTS

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:

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

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. In rain variants 2 and 4, the total weight of plants of the Serkhosil variety increased by 57-47 g, and the total weight of tubers per bush increased by an average of 157-152 g.

Table 1. Influence of sprinkling on seeding thickness.

Variation	Thousand.bush/ha	At the end of vegetation period. Thousand bush/ha
Furrow watering 65-70-75 % (control)	57,03	51,5
Sprinkling 75-75-85 %	57,08	51,7
Furrow watering 75-75-85 %	57,10	51,6
Sprinkling 75-75-85 %	57,10	51,7
Furrow watering 75-85-85 %	57,11	51,5

According to the results of the experiment, the number of seedlings in the rain-irrigated variants was 4% more than the control variant. The maximum number of seedlings was 51.5 thousand, or 90%, compared to 57.1 thousand.

CONCLUSIONS

From the obtained results, it can be concluded that irrigation methods and procedures have a direct impact on the sustainable development of potato seedlings. In the harsh continental climate and grassy soils of Andijan region, it will be possible to create an optimal microclimate for the healthy growth of seedlings through the method of sprinkler irrigation. This leads to an increase in potato yield and product quality.

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