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AGROCHEMICAL PROPERTIES AND TEMPERATURE OF THE SOIL OF THE SITE WHERE PLANTED NEW CULTIVARS OF HOT PEPPER (*CAPSICUM ANNUUM* L.)

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Abstract. *The article provides information about the agrochemical properties of the soil and the climate of the greenhouse during the growing season of newly created varieties of hot pepper suitable for greenhouse cultivation in the greenhouse experimental fields of the Scientific Research Institute of Vegetables, Melon Crops and Potatoes Growing in Koksaroy, Tashkent District, Tashkent Region.*

Key words: *greenhouse, hot pepper, soil, organic, plants, flowering, agrochemical properties, climate, temperature.*

The purpose of the research is to create hot pepper (*Capsicum annuum* L.) cultivars with high yield and good fruit quality suitable for growing in greenhouses.

The methods of the research. The laboratory and greenhouse experiments of the study was conducted according to methodological guides and manuals such as "Methodology of experimental work in vegetable and melon growing", "Methodology of conducting experiments in vegetables, melon crops and potato growing", "Methodological guidelines for studying and maintaining the world collection of vegetable nightshade crops (tomatoes, peppers, eggplants)", "Methodological recommendations for conducting experiments with vegetable crops in protected ground structures (SRIVG)" and the statistical analysis of the results was carried out using the Microsoft Excel program in the variance analysis method of B.A. Dospekhov.

Optimal air temperature for growth and development of hot pepper plant in greenhouses is + 20...–25 °C. In the very cloudy weather at temperature + 20...+ 22 °C and in sunny weather at + 25–30 °C the plants grow well. 50-60 day old plants are especially sensitive to temperature changes. During the growth period the temperature should not fall below + 14 °C. Plants struggle to grow at temperatures falling by +2 °C, but the literature reports that prolonged periods of such conditions can cause root growth to stop. [4].





According to the information given by H. Aktas and K. Abak in the National Encyclopedia of Turkey, hot pepper is planted in Turkey at the end of April and beginning of May. The seeds germinate at temperature +18...+20 °C in 11–14 days and at +22... +25 °C they grow and develop well. Information is also given on the soil fertility of hot pepper and its requirement for mechanical composition of soil [1; pp.4378–4386].

Since hot pepper is a heat-loving crop, it is recommended to plant its seedlings when the temperature in the 8-10 cm layer of the soil is 13-15 °C. This period corresponds to the first 10 days of April in the southern regions of Uzbekistan, and to the second ten days of April in the regions located in the central climatic regions. For the northern regions, the planting period is April 20–30 [2; p.310].

In their research, the team of scientists of the All-Russian Vegetable Research Institute recommended to follow the following temperature regime when growing hot pepper plants in greenhouses. They reported that during the day the air temperature should be 24-26 °C, air humidity 55-65%, air temperature should not be lower than 25-28 °C in sunny weather, 22-24 °C in cloudy days, and 18 °C at night [3; p. 8–17].

The experiments were conducted in the greenhouse experimental fields of the Research Institute of Vegetables, Melon Crops and Potato Growing in 2020–2023. The institute is located in the Tashkent district Tashkent region, in the north of Tashkent city. The weather of the site where the experiments were conducted

is similar to the conditions of most vegetable farms located in the plains of Uzbekistan.

Agrochemical properties of the soil of the experimental site (2020–2023)

Stages of plant development	ph	organic, %	Cl, %	salt, %	movable in 100 g/mg soil					
					N-NO ₃	N-NH ₄	P ₂ O ₅	K ₂ O	CaO	MgO
flowering	7,3	15,4	0,0095	0,365	21,7	2,4	6,2	60	80	30
fruiting	7,2	15,0	0,018	0,407	28,1	2,0	6,0	58	83	28
end of vegetation	7,4	14,2	0,025	0,420	31,8	1,8	5,8	58	90	24

The results of the analysis of the agrochemical properties of the soil of the unheated greenhouse site where the experiments were conducted in 2020-2023 were as follows: in full flowering of plants ph value was 7.3, organic substances





15.4 %, Cl was 0.0095 %, salt was 0.365 %, movable N-NO₃ was 21.7 %, N-NH₄ 2.4, P₂O₅ 6.2, K₂O 60, CaO 80 and MgO was 30 mg/g. In the fruiting period ph value was 7.2, organic substances were 15.0 %, Cl was 0.018 %, salt 0.407 %, movable N-NO₃ 28.1 %, N-NH₄ 2.0, P₂O₅ 6.0, K₂O 58, CaO 83 and MgO was 28 mg/g, while at the end of growth period Ph was 7.4, organic substances 14.2 %, Cl 0.025 %, salt 0.420 %, movable N-NO₃ was 31.8 %, N-NH₄ 1.8, P₂O₅ 5.8, K₂O 58, CaO 90 and MgO 24 mg/g.

Due to the fact that the area of Tashkent region is located far from the seas and oceans, the temperature of the climate region changes dramatically. The zones of the climate region are characterized by heat and light and dry temperatures.

A characteristic feature of this region's weather is that there is sufficient light and heat, and continental variability, and the air is dry. The duration of sunlight is 2,700–3,000 hours per year, with 360–380 hours of sunlight per month in summer and 90–130 hours in winter. The variability of temperature in one day is high (10–15 °C in winter and 15–20 °C in summer) and reaches up to 30 °C by year.

Climate. The three-year average data of the Qovunchi station of the Yangiyol District Hydrometeorological Center for 2020-2023 were compared with multi-year results. All physiological and biochemical processes in the plant, water absorption, movement of nutrients from root to leaf, shoot and fruit, movement of plastic substances from leaf to root depend on soil and air temperature.

For most vegetable crops, photosynthesis increases when the temperature is + 20...+ 25°C. If the temperature rises above this, photosynthesis slows down and stops completely when it reaches + 40...+ 50 °C. The favorable temperature for photosynthesis depends on many factors, primarily light and the concentration of carbon dioxide gas. If light is low, carbon dioxide content is low, comfortable temperature should be + 10 °C, if light is sufficient, carbon dioxide gas is sufficient (0.03%), comfortable temperature could be + 20 °C, if light is sufficient, but CO₂ is 1.22%, then comfortable temperature must be 30 °C.

The natural climatic conditions of the farms where the experiments were conducted are similar to the climate of the central region of Uzbekistan, and are distinguished by a sharp continentality, an almost uneventful winter, a rapid transition from cold to warm rainy spring, and from warm spring to hot dry summer. The transition from autumn to winter is also sharp. It was noted during the study that the daily temperature changed with a large difference in the continentality of the climate (7-9°C in winter and 10-15°C in summer), and the daily temperature in January and July varied with a large amplitude (up to 27-30°C).





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