



Research Article

THE EFFECT OF PLANTING SCHEMES FOR VARIETIES OF HOT CHILI PEPPER ON THE YIELD OF PLANT IN UNHEATED GREENHOUSE CONDITIONS

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ABSTRACT

This article reveals the results of the study on different planting schemes for Margilan 330, Uchkun and Tillarang varieties of hot chili peppers in unheated greenhouse conditions. According to the results of the study, the number of fruits was higher in 70x20 cm reduced variants of planting scheme, while in the variants planted in 70x50 cm scheme, the fruit weight increased even though the number of fruits was less.

KEYWORDS

Hot chili pepper, unheated greenhouse, plant, planting scheme, number of fruits, fruit weight, yield.

INTRODUCTION

Today, 4.6 million hectares of land around the world are planted with hot chili pepper (*Capsicum annum* L.), from which 69.3 million tons are harvested. The average yield is 100-110 tons per hectare in greenhouses and 14.1-18.3 tons per hectare in the open

field. Nowadays, the interest and need for hot chili pepper crop is growing day by day, and this crop is grown in all countries of the world. Although the world average yield of hot chili peppers (*Capsicum annum* L.) increased from “7.3 tons in 2006 to 18.4 tons in 2019 in

open fields and from 80 tons to 110 tons in greenhouses”, the creation of hot pepper varieties resistant to heat and cold, diseases and pests, suitable to grow saline soils is a topical issue today.

In recent years, the research has been conducted worldwide on the creation of varieties of hot chili peppers suitable for growing in unheated greenhouses, with a bitter content of more than 10 points, export-oriented, good fruit quality, yield 80-90 t / ha using innovative methods, and on the development of optimal planting dates and schemes for them in unheated greenhouses. In countries that are leaders in the cultivation of hot peppers, hot chili peppers are the main crop and are widely used in industry and pharmaceuticals. Therefore, the creation of high-yielding varieties suitable for cultivation in unheated greenhouse conditions is an important scientific direction. One of today's urgent tasks is the selection of varieties suitable for cultivation in unheated greenhouses and the development of important elements of cultivation technology, as well as the provision of the population with new and fresh products throughout the year.

RESEARCH METHODS

Greenhouse and laboratory research experiments were conducted based on methodological manuals by V.F. Belik "Methods of experimental work in vegetable growing and horticulture ", B.J. Azimov and B.B. Azimov's "Methods of conducting experiments in vegetable, melons and potatoes growing", Ye.Ya. Glushenko, M.V. Vronina, A.I. Strekalova's "Methodical instructions on the study and support of the world collection of vegetable crops (tomatoes, peppers, eggplants)", "Methodical recommendations on conducting experiments on the vegetable crops in protected soil (SRIVE)", and statistical analyses of the results were performed using B.A. Dospekhov's

method of dispersion analysis with the help of the program Microsoft Excel.

RESEARCH RESULTS

Feeding area or planting scheme has a significant effect on fruit weight and the number of fruits of the hot pepper plant. As the feeding area expanded, so did the weight of the fruit. In the control variant of Margilan 330 variety, the fruit weight was 13.4 grams in the 70 × 30 cm planting scheme, while in the 70 × 20 cm scheme this figure was 9.1 g or 4.3 g lighter than the control. Planting schemes should be determined on the basis of experimental results, taking into account the soil and climatic conditions of the unheated greenhouse, the method of cultivation and the biological characteristics of the plant. Planting distance, that is, too close or too long planting between seedlings also affects plant growth and yield.

When the fruits of Margilan 330 variety technically ripened, the number of fruits per plant was 119 pieces in the control variant planted in the scheme 70 × 30 cm or 100%, in the variant planted in the scheme 70 × 20 cm this figure was 121 pieces which is 2 pieces more than the control variant, i.e 1.7% higher. As the planting schemes increased, the number of fruits was observed to decrease compared to the control option. This pattern was also observed in the varieties "Uchkun" and "Tillarang". Fruit weight showed a contrary indicator, that is, the weight of the fruit increased due to the expansion of the feeding area as the planting schemes increased. In the control variant planted in the 70 × 30 cm planting scheme, the weight of one fruit was 10.4 grams, i.e 100%, while in the 70 × 40 cm scheme 19.7 grams which is 9.3 grams higher than in the control variant, in the 70 × 50 cm scheme 22.6 grams which is 12.2 grams higher than the variant control.

Table-1

Number of fruits, fruit weight and yield indicators of hot chili pepper varieties planted in different planting schemes in unheated greenhouse conditions (in 2018–2020)

Variants	Planting schemes	At maturation of fruits, per plant						Yield	
		Number of fruits		Weight of one fruit		Total weight of fruits			
		pcs	%	g	%	kg	%	kg/m ²	%
Margilan 330									
I	70×20 cm	121	101,7	7,6	73,1	0,9	75,0	6,4	114,3
II	70×30 cm (cont)	119	100,0	10,4	100,0	1,2	100,0	5,6	100,0
III	70×40 cm	116	97,5	19,7	189,4	2,2	183,3	7,7	137,5
IV	70×50 cm	105	88,2	22,6	217,3	2,3	191,7	6,6	117,9
x		115,3	96,8	15,1	145,0	1,7	137,5	6,5	116,1
The least difference 05 kg/m ²								3,2	
Sx,%								4,4	
r=0,91±0,09									
«Uchkun»									
I	70×20 cm	96	104,3	10,0	75,8	1,0	53,3	6,8	119,3
II	70×30 cm (cont)	92	100,0	13,2	100,0	1,8	100,0	5,7	100,0
III	70×40 cm	90	97,8	24,1	182,6	2,1	116,7	7,9	138,6
IV	70×50 cm	88	95,7	28,7	217,4	2,5	138,9	7,1	124,6
x		91,5	99,5	19,0	143,9	1,8	102,2	6,9	120,6
The least difference 05 kg/m ²								3,3	
Sx,%								2,8	
r=0,93±0,07									
«Tillarang»									
I	70×20 cm	89	102,3	10,2	76,7	0,9	81,8	6,4	118,5
II	70×30 cm (cont)	87	100,0	13,3	100,0	1,1	100,0	5,4	100,0
III	70×40 cm	82	94,3	25,1	188,7	2,0	181,8	7,2	133,3
IV	70×50 cm	79	90,8	30,6	230,1	2,4	218,2	6,7	124,1
x		84,3	96,8	19,8	148,9	1,6	145,5	6,4	119,0
The least difference 05 kg/m ²								3,2	
Sx,%								3,1	
r=0,89±0,11									

When the weight of the fruits was analyzed, the weight of the fruits and the quality of the product decreased as the planting schemes decreased. Of course, this figure depended on the plant's absorption of nutrients from the soil. In the control variant planted in the 70 × 30 cm scheme, the yield was 5.6 kg per square meter, while in the variant planted in the 70 × 20 cm scheme, the yield was 6.4 kg, which is 0.8 kg / m² higher than the control variant. Although the yield in this planting scheme was higher than the control option, the commodity yield was lower than the yield in control variant.

The reason for this was that the plant could not provide enough nutrients to the fruits in the variant planted in the 70 × 20 cm scheme. Yield in the variants planted under the schemes 70 × 50 and 70 × 40 cm was 6.6 and 7.7 kg per square meter, i.e. 17.9–37.5% higher than the control variant. The increase in fruit weight was dependent on the feeding area. As the nutritional area of the plant increased, the weight and yield of the commodity fruit increased. Therefore, in the cultivation of hot peppers in unheated greenhouse conditions, it is important to take into account the feeding area of the plant. A large or small feeding area will cause the product quality to be good or bad.

The correlation between the number of fruit per plant and the total weight of fruits at the time of fruits maturation of Margilan 330 variety planted in different planting schemes was strong, $r = 0.91 \pm 0.09$. This pattern is also reflected in the varieties "Uchkun" and "Tillarang". The correlation of the coefficient between the number of fruits in a plant and the total weight of fruits was strong, $r = 0.93 \pm 0.07$, $r = 0.89 \pm 11$, respectively.

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