STUDY ON THE NUTRITIONAL IMPORTANCE OF PEPPER (CAPSICUM ANNUUM) CULTIVATED IN THE SOLARIUM UNDER THE INFLUENCE OF THE CULTURE SUBSTRATE AND THE FERTILIZATION REGIME

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Abstract

Research shows that the food requirements of the human body can be met by an average daily food ration consisting of foods of animal origin in the amount of 714 grams and 1225 grams of foods of plant origin, of which 400 grams must be vegetables (Gonțea , 2011).

Pepper occupies a very important place in the assortment of vegetables, being able to be consumed raw, its content being fully used by the human body.

Key words: bell peppers, vitamin C, calcium, phosphorus, iron

INTRODUCTION

The pepper is native to Guatemala, Peru, Brazil and Mexico where it has been cultivated since ancient times. It was first reported by the doctor CHANCA (1494). In Europe it spread first to Spain, then to other countries, including Hungary, where it has been known since 1585 (Somos, 1967).

In Romania, peppers have been cultivated since the 19th century, first in the southern parts and then in the rest of the country (Bălașa, 1980).

The specialized documentations highlight the worldwide trend of increasing the areas occupied by peppers and especially of increasing the production per unit area by improving the culture technology with a special emphasis on fertilization, irrigation and mechanization, by creating high productivity varieties, with superior qualitative qualities and on the extension of some culture methods in order to stagger the culture for a longer period.

Very large areas of land are cultivated with peppers in the USA, France, Italy, Bulgaria, Hungary, Russia.

In our country, peppers with their different varieties are cultivated annually on an area of about 15,000 hectares.

Very favorable areas are the river meadows in the Danube Plain and in the Western Plain, favorable are the Plain and the Transylvanian Plateau, the North of Moldova and the sub-hilly area of the Carpathian Mountains.

MATERIAL AND METHOD

The analysis of the pepper fruit content was made for the plants grown in the solarium in bags with organic substrate and in the soil for the varieties Romanesc 69 and Favoritul Pieții.

The variety Romanesc 69 is semi-early with prismatic fruits truncated with 3-4 pronounced ribs, medium in size, lemon yellow at technical maturity and red at physiological maturity.

The variety Favoritul Pieții is also semi-early with prismatic fruits with 3-4 pronounced edges, of medium size and light green color at technical maturity and bright red at physiological maturity.

By combining the factors, eight variants were made as follows:

V_1 - culture in bags with organic substrate with the variety Romanesc 69, with fertilization when N, P, K decrease to critical levels;

V_2 - culture in bags with organic substrate with the variety Romanesc 69, with complete fertilization maintaining N, P and K at optimal levels;

V_3 - bag culture with the Favoritul Pieții variety, with fertilization when N, P and K decrease to critical levels;

V_4 - bag culture with the Favoritul Pieții variety, with complete fertilization maintaining N, P and K at optimal levels;

V_5 - soil cultivation with the variety Romanesc 69, with fertilization when N, P, K decrease to critical levels;

V_6 - soil cultivation with the variety Romanesc 69, with complete fertilization maintaining N, P and K at optimal levels;

V_7 - soil cultivation with the Favoritul Pieții variety, with fertilization when N, P and K decrease to critical levels;

V_8 - soil cultivation with the Favoritul Pieții variety, with complete fertilization maintaining N, P and K at optimal levels;

The surface of the harvestable plot was 30 m^2, and of the whole experience 240 m^2. The number of plants harvested from the experimental plot was 90 (3 plants / m^2).

RESULTS AND DISCUSSION

The best results in terms of total production were obtained in variant 4 - culture in bags on organic substrate with complete fertilization maintaining N, P and K at optimal levels with the variety Favoritul Pieții of 49.2 t/ha, followed by variant 3 with the variety Romanesc 69 and the other variants cultivated in bags on an organic substrate.

Table 1

The influence of the cultivation system and of the fertilization regime on the pepper production

Variants	Culture system	Fertilization regime	Production obtained t/ha	± D	Significance of the difference
V_1	Culture in bags on organic substrate with variety Romanesc 69	Fertilization when N, P and K fall to critical levels	45.8	2.2	x
V_2	Culture in bags on organic substrate with variety Romanesc 69	Complete fertilization maintaining N, P and K at optimal levels	48.7	5.1	xx
V_3	Culture in bags on organic substrate with variety Favoritul pieții	Fertilization when N, P and K fall to critical levels	46.3	2.7	x
V_4	Culture in bags on organic substrate with variety Favoritul pieții	Complete fertilization maintaining N, P and K at optimal levels	49.2	5.6	xx
V_5	Soil cultivation with variety Romanesc 69	Fertilization when N, P and K fall to critical levels	43.6	-	-
V_6	Soil cultivation with variety Romanesc 69	Complete fertilization maintaining N, P and K at optimal levels	47.2	3.6	xx
V_7	Soil cultivation with variety Favoritul pieții	Fertilization when N, P and K fall to critical levels	45.3	1.7	x
V_8	Soil cultivation with variety Favoritul pieții	Complete fertilization maintaining N, P and K at optimal levels	47.9	4.3	xx

LSD 5% - 1.69; LSD 1% - 3.21; LSD 0,1% - 6.10

The soil cultivation system gave yields lower than 47.9 t / ha at variant 8, with complete fertilization maintaining N, P and K at optimal levels with the Favoritul pieții variety, followed by variant 6, with the variety Romanesc 69 and the other variants grown in soil (Table 1). Statistical analysis shows the significant difference between variants 1,3,7 and control and distinctly significant between variants 2,4,6 and control.

These differences are due both to the culture substrate that ensured different conditions of temperature and mineral nutrition at the level of the root system and to the different fertilization with mineral substances.

The chemical analysis of the composition of the pepper fruits (table 2) shows that the culture system and the fertilization regime do not essentially change the content in vitamin C, phosphorus, calcium and iron per 100 grams of fresh product (table 2).

The highest content in vitamin C was the fruits of variant 7, the crop in the soil with the variety. Market favorite with fertilization when N, P and K decrease to critical levels of 180 mg/100 grams of fresh product.

The content of vitamin C is lower in the fruits of the variants on organic substrate, with complete fertilization, a fact that can be attributed to the higher volume of production.

Table 2

The content of vitamin C, phosphorus, calcium and iron in pepper fruits grown in solarium under the influence of the culture substrate and the fertilization regime

Variants	Culture system	Fertilization regime	Vitamin C mg/100g	Phosphorus mg/100g	Calcium mg/100g	Iron mg/100g
V_1	Culture in bags on organic substrate with variety Romanesc 69	Fertilization when N, P and K fall to critical levels	164	24	8,0	0,3
V_2	Culture in bags on organic substrate with variety Romanesc 69	Complete fertilization maintaining N, P and K at optimal levels	148	28	9,9	0,6
V_3	Culture in bags on organic substrate with variety Favoritul pieții	Fertilization when N, P and K fall to critical levels	167	25	8,5	0,3
V_4	Culture in bags on organic substrate with variety Favoritul pieții	Complete fertilization maintaining N, P and K at optimal levels	151	29	10,1	0,7
V_5	Soil cultivation with variety Romanesc 69	Fertilization when N, P and K fall to critical levels	175	20	7,4	0,2
V_6	Soil cultivation with variety Romanesc 69	Complete fertilization maintaining N, P and K at optimal levels	170	25	9,0	0,4
V_7	Soil cultivation with variety Favoritul pieții	Fertilization when N, P and K fall to critical levels	180	22	7,7	0,2
V_8	Soil cultivation with variety Favoritul pieții	Complete fertilization maintaining N, P and K at optimal levels	172	27	9,7	0,5

Regarding the phosphorus, calcium and iron content, the highest values are found in the fruits of the variants that have been fertilized by maintaining N, P and K at optimal levels (table 2).

CONCLUSION

1. Pepper is a species with great nutritional and economic value, occupying an important place in the assortment of vegetables.

2. The very pleasant taste and the very varied range of uses, fresh, as a simple salad or with other vegetables, in dishes, sauces, soups, stuffed peppers have determined the continuous increase of pepper consumption in all countries.

3. The nutritional value of pepper is given by the high content of vitamins, sugars, minerals, amino acids and organic acids.

4. The content of fruits in vitamin C is higher in soil culture than in bags in organic substrate. It is also higher in the Favoritul pieții variety than in Romanesc 69 variety.

5. Phosphorus, calcium and iron are found in larger quantities in the fruits of plants grown in bags on organic substrate with complete fertilization, maintaining N, P and K at optimal levels, than those fertilized when N, P and K decrease to critical levels. They are also higher in the Favoritul pieții variety than in the Romanesc 69.

6. Pepper fruits harvested from plants grown in soil with complete fertilization maintaining N, P and K at optimal levels contained higher amounts of phosphorus, calcium and iron than those fertilized when N, P and K decrease to critical levels.

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