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THE INFLUENCE OF TECHNOLOGICAL FACTORS ON THE PRODUCTION AND QUALITY OF THE PEPPER

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Abstract

The pepper, highly nutritious vegetable species is sensitive to alterations of the vegetation factors that may influence both commercial fruit quality and their content in carbohydrates, vitamin C and other biochemical components. Full paper shows the modifications and / or production dynamics and its quality in some cultivars of pepper in field crops from two dedicated areas: vegetable basin Silistraru (Braila) and Vidra (Berceni) Ilfov county, within some experiences regarding the allocated space for plants, their nutrition regimes and harvesting time. The researches were carried out within doctoral thesis in POSDRU/107/1.5/S/76888.

Key words: *Commercial quality, cultivars, field peppers, food quality.*

INTRODUCTION

Pepper is cultivated for its fruits, which have many uses in human nutrition, such fresh, and prepared or preserved (Stan et al., 2003).

Pepper fruits have a particular importance, considering the fact that you can eat fresh, as such, vitamins being fully utilized by the body (Ceausescu et al., 1984).

Pepper is considered a concentrate of vitamins easily assimilated by the human body. Among the vitamins, vitamin C comes first. From some studies conclude that mature pepper contains 4-6 times more vitamin C than lemon juice or orange juice (Ceausescu et al., 1984).

Pepper has twice as much vitamin C than lemon and twice as much vitamin A (630 IU) than butter (Dumitrescu et al., 1998).

Undertaken research purpose: to establish how, fruit maturity evolution technique at physiological maturity influence the commercial quality and food importance of pepper fruits grown in the field.

MATERIALS AND METHODS

To achieve this experience were studied variants shown in Table 1.

Table 1. Experimental variants. Peppers for fresh consumption, vegetable basins Silistraru Braila and Berceni Ilfov – 2012

Var.no.	Area of culture (A)	Var.no.	Time of harvest (maturity) (C)
1(mt1)	Silistraru Braila	Bianca F1 (b1)	Technical maturity (c1)
2			Physiological maturity (c2)
3		Atris F1 (b2)	Technical maturity (c1)
4			Physiological maturity (c2)
5		California Wonder F1 (b3)	Technical maturity (c1)
6			Physiological maturity (c2)
7(mt2)	Silistraru Braila	Bianca F1 (b1)	Technical maturity (c1)
8			Physiological maturity (c2)
9		Atris F1 (b2)	Technical maturity (c1)
10			Physiological maturity (c2)
11		California Wonder F1 (b3)	Technical maturity (c1)
12			Physiological maturity (c2)

Table 1 shows the type 2x3x2 trifactorial experience with 12 variants, with the following graduations.

Experimental factor A - Areal has two graduations: a1 - Silistraru vegetable basin Braila a2 - Ilfov Berceni vegetable basin Experimental factor B - Cultivar, has three graduations: b1 - Bianca F1 b2 - Atris F1 b3 - California Wonder F1

Experimental factor C - Time of harvest has two graduations: c1 - technical maturity of fruit c2 - physiological maturity of the fruit.

The biological material used in experience is composed of three cultivars.

Bianca F1, a pepper grown successfully in Romania, very early with good capacity fructification, large fruits white-yellow color.

Atris F1 early hybrid and highly productive, ripening from green to red. Long fruit with thick pulp is suitable for growing in the field and/or solarium. Good taste is juicy at technical maturity and also at its physiological.

California Wonder F1 hybrid with undetermined growth and long cycle of culture. Before maturity fruits have green color and at physiological maturity red color, the pericarp thick and juicy.

Specific technology applied to experience included the following groups of works and technical parameters (Atanasiu N., 2005).

Works in autumn - abolishing pre-culture, basic fertilization with superphosphate simple 3 kg per 100 m^2 (300 kg/ha) deep autumn plowing with incorporation of crop residues and superphosphate.

Foundation work, care and harvesting of crops:

Experience planting on 15 May 2012, by planting seedlings rarely without transplanters, produced in solarium with nutrient mixture layer placed on fresh manure aged 60 days to 70 cm between rows and 20 cm between plants in the row, providing density 71 400 plants/ha (Neata G., 2002).

Care of the most important works we mention integrated weed combat by herbicides combined with hoeing treatments to prevent/combat diseases and pests and crop specific area (Cristea S. and Neata G., 2004).

Fertilization was performed using soluble complex fertilizers Universol type, with higher content in nitrogen (blue Universol) until the first fruits and higher potassium content (Universol purple) during fructification (Neamtu G. et al.).

RESULTS AND DISCUSSIONS

Into experience were made observations and measurements, after which they were established the following results.

Table 2. The average weight of fruits (g). Silistraru Braila, Ilfov Berceni, 2012

Cultivar	Technical maturity		
	Grams of fruit	Differences	
Bianca F1	149,4	X	+
Atris F1	153,7	+	+
California Wonder F1	168,4	+	+
Bianca F1	141,2	-	X
Atris F1	136,2	-	-
California Wonder F1	149,5	-	-

The average fruit weight varied for analysis carried out from 153.7 g registered at the Atris F1 cultivars, up to the value of 168.4 g at California Wonder F1 witness against Bianca F1 149.4 g.

The differences are small and without statistical coverage.

Table 3. The dry matter content. Silistraru Braila, Berceni Ilfov, 2012

Cutivar	Technical maturity		Physiological maturity	
	Silistraru	Berceni	Silistraru	Berceni
Bianca F1	4.50%	4.35%	4.65%	4.47%
Atris F1	5.30%	5.15%	5.45%	5.32%
California Wonder F1	3.80%	3.65%	3.95%	3.77%

During the experiments and analyzes performed noted Atris F1 hybrid with a dry matter content of 5.45% at its physiological maturity in experimental conditions Silistraru, Braila. The dry matter content increases from technical maturity to physiological.

Table 4. The pericarp thickness. Silistraru Braila, Berceni Ilfov, 2012

Cutivar	Technical maturity		Physiological maturity	
	Silistraru	Berceni	Silistraru	Berceni
Bianca F1	4.86 mm	4.64 mm	5.15 mm	4.95 mm
Atris F1	4.54 mm	4.41 mm	4.65 mm	4.48 mm
California Wonder F1	7.15 mm	6.94 mm	7.30 mm	7.15 mm

During this research, the pericarp thickness ranged from 4.54 mm minimum value at Atris F1 (technical maturity, Silistraru) to 4.86 mm in case of Atris F1 cultivar (technical maturity, Silistraru) and 7.15 mm at cultivar California Wonder F1 (technical maturity, Silistraru) The differences were smaller when cultivars in Berceni, Ilfov because culture conditions.

Table 5. Vitamin C content. Silistraru Braila, Berceni Ilfov, 2012

Cutivar	Technical maturity		Physiological maturity	
	Silistraru, Braila County	Berceni, Ilfov County	Silistrar, Braila County	Berceni, Ilfov County
Bianca F1	131,90 mg/100 g s.p.	126,1 mg/100 g s.p.	139,12 mg/100 g s.p.	135,41 mg/100 g s.p.
Atris F1	152,44 mg/100 g s.p.	146,32 mg/100 g s.p.	156,28 mg/100 g s.p.	150,17 mg/100 g s.p.
California Wonder F1	118,40 mg/100 g s.p.	109,2 mg/100 g s.p.	125,60 mg/100 g s.p.	119,12 mg/100 g s.p.

Vitamin C content recorded the highest values in case of cultivar Atris F1 and lowest in case of cultivar California Wonder F1. Values increased from technical maturity to physiological maturity and are higher in cultivars from Silistraru Braila due to culture conditions and superior technology.

CONCLUSIONS

Based on the experimental results held the following conclusions can be drawn:

Among the cultivars used in experience stands in terms of average fruits weight with 168.4 g the hybrid California Wonder, which exceeds the average weight of fruits witness Bianca F1 (149.4 g).

The pericarp thickness increases from technical maturity to physiological all cases, and towards the witness Bianca F1 (5.15 mm, physiological maturity) in experimental conditions Silistraru, Braila County, the hybrid California Wonder F1 is distinguished with 7.30 mm (to physiological maturity).

Vitamin C content increases from technical maturity to physiological maturity and the highest values we meet at Atris F1 hybrid in experimental conditions in Silistraru, Braila.

In the experiments is remarkable growth indicators: solids content, vitamin C content and thickness of the pericarp cultivars when compared with cultivars Silistraru Braila in Berceni, Ilfov due to culture conditions and technology used.

Pericarp thickness and chemical composition ensures a balanced of fruit succulence and particularly flavor, it recommends the consumption of fresh and preserved condition.

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REFERENCES

Atanasiu N., 2005. Field crops for consumption of fresh peppers, Atar Publishing House, Bucharest.

Ceausescu I., Balasa M., Voican V., Savitchi P., Radu Gr., Stan N., 1984. General and special vegetable, Didactics and Pedagogical Publishing House, Bucharest.

Cristea Stelica, Neata Gabriela, 2004. Fertilization materials and plant protection products, AMD Veterinary Medicine Bucharest.

Dumitrescu M., Scurtu I., Stoian L., Glaman Gh., Costache M., Ditu D., Roman Tr., Lacatusu V., Vlad C., Zagrean I, 1998. Production of vegetables, Artprint Publishing House, Bucharest.

Neamtu G., Gheorghe Campeanu, Carmen Socaciu, 1995. Vegetable biochemistry, Didactic and Pedagogic Publishing House, Bucharest.
Neata Gabriela, 2002. Agro-chemistry and soil biology. Printech Publishing House, Bucharest.
Stan N., Munteanu N., Stan T., 2003. Vegetable growing, Vol. III, Ion Ionescu de la Brad Publishing House, Iasi.