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ASSESSMENT OF SERBIAN PEPPER VARIETIES GROWN IN CONDITIONS OF SOUTH BULGARIA

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The comparative estimation was carried out with eight Serbian pepper varieties (*Capsicum annuum* L.) during the period 2010-2011 in field conditions at Maritsa Vegetable Crops Research Institute, Plovdiv, Bulgaria. The varieties were evaluated by some important morphological traits of the plant and fruit, total and marketable yield. The assessment by plant and stem height showed proved differences between them. Romansa and Ekstaza formed significantly longer fruits than other varieties while Amanda was with the lowest values by this trait but with the highest ones by the diameter at the base and flesh thickness. Romansa, Ekstaza and Delfina were most productive before maturity stage with 46.04 t ha^{-1}, 45.31 t ha^{-1} and 45.13 t ha^{-1}, respectively. The varieties which were evaluated by yield of the fruit at maturity stage showed non proved differences by total yield and their values were from 21.34 t ha^{-1} for Delfina to 24.41 t ha^{-1} for Slonovo uvo.

Key words: Capsicum annuum L., plant, fruit, yield

INTRODUCTION

Sweet pepper *Capsicum annuum* L. is one of the most important vegetable crops in Balkan region where Bulgaria is supposed to be one of the secondary gene centers. The geographic specificity of the region accomplished by natural selection and purposeful breeding has led to genetically determined differences in the characteristics for shape, color, taste, biological value and type of use. (TODOROV and TODOROVA, 2002; KRASTEVA *et al.*, 2012).

The choice of variety is one of the main factors for farmer's decision in the growing of each agricultural crop. The usage of correct variety depending on the concrete area agroecological conditions could increase considerably economical interest of the farmers. That's why many of

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them are searching constantly for new local and foreign varieties. More than 2200 pepper varieties are listed in the common catalogue of varieties of vegetable species (OFFICIAL JOURNAL OF THE EUROPEAN UNION, 2015 http://www.vatzum.lt/uploads/documents/augalu_veisles/celex_c2015_395_01_en_txt.pdf). Each of them is created under certain conditions and for this reason in advance it must be evaluated in local environment before its sale and usage (JADCZAK and GRZESZCZUK, 2009; NKANSAH *et al.*, 2011; DELELEGNE *et al.*, 2014). The knowledge about assessment of new breeding lines and varieties is necessary for all - breeders, farmers and processing companies (TODOROVA and PEVICHAROVA, 2006; BOTEVA *et al.*, 2012; PANAYOTOV and DIMOVA, 2014; TODOROVA and ARNAUDOVA, 2014).

The aim of this study was to be evaluated some Serbian pepper varieties grown in the conditions of South Bulgaria by economical and morphological traits.

MATERIALS AND METHODS

The research was conducted in open field conditions at the Maritsa Vegetable Crops Research Institute (Maritsa VCRI), Plovdiv located on 42°9' N and 24°45' E, in the south part of Bulgaria in the region named Upper Thracian plain during the period 2010 – 2011. Eight Serbian pepper varieties (*Capsicum annuum* L.) created in Superior Seed Company, Velika plana were included in the study: Romansa, Amanda, Madona, Ekstaza, Delfina, Belo uvo, Prizrenka and Slonovo uvo. According to variety purpose the fruits from Romansa, Amanda, Madona, Ekstaza, Delfina and Belo uvo were harvested before maturity stage and the ones from Prizrenka and Slonovo uvo - at maturity stage. Delfina and Belo uvo were set in the trail in two variants and assessed by yield in two stages of the ripeness of the fruits. The seeds were sown in non-heated glasshouse on March 25th and 23th for the first and second experimental year, respectively.

On the land into which the open field trail was carried out was previously cultivated with wheat. The seedlings were transplanted in alluvial meadow soil on May 17th by randomized block design with four replications 40 plants per variety in each. The plants were placed on furrow surface at 0.15 m within row and 0.70 m between rows and grown according to adopted technology for mid-early field production. The plant nutrition was conducted with mineral fertilizers according to the results of the chemical analysis of the soil. During the vegetative period irrigation, soil cultivation and plant protection practices also were done regularly.

The assessment was conducted by plant height (cm), stem height (cm), branches from first order (number), fruit length (cm), fruit diameter (cm), fruit flesh thickness (mm), fruit weight (g), edible part of the fruit (%), total (t ha^{-1}) and marketable yield (t ha^{-1}). The evaluation by plant traits was done after the end of active vegetation growth. The morphological traits were assessed on 20 randomized plants and fruits for each variety (IPGR, AVRDC and CATIE, 1995; COMMUNITY PLANT VARIETY OFFICE, 2007).

The analysis of variance (ANOVA) was used to process the obtained data in order to be determined the significance of the variation sources. The strength of their influence (η, %) was also established. The uniformity of each variety was estimated by standard deviation (sd). Duncan's multiple range test (DUNCAN, 1955) also was used to separate the means at 5% ($p<0.05$).

RESULTS AND DISCUSSION

The assessment of studied Serbian varieties by plant height showed significant differences between them (Table 1). In all of the research period Delfina formed the highest plants (73.96 cm)

followed by Belo uvo (70.96 cm) and Romansa (70.33 cm). Slonovo uvo was with the shortest plants (56.50 cm). Amanda and Madona were ranged after it without proved differences. These varieties were on the last place with the shortest stems, respectively with 20.38 cm and 20.46 cm. Slonovo uvo (22.75 cm), Ekstaza (24.76 cm) and Delfina (24.88 cm) were with non-significant differences between them. Prizrenka demonstrated the highest stems (27.17 cm) followed by Belo uvo and Romansa.

The most evaluated varieties were characterized with small differences by number of branches at first order (Table 1a). Only Amanda formed significantly more branches than the others varieties.

The results after applied two-way analysis of variance showed that all systematic variation sources (genotype, year of growing and interaction genotype x year) had significant effect on the variation of stem height and branches number and only the year of growing had no proved role on the expression of plant height (Table 2). The genotype influence was prevailed on the variation of plant height (50.00%) and stem height (37.82%) while the one of the year had bigger influence on branches number (23.16%). The differences in the years of growing were dependent mainly from meteorological conditions (Fig. 1). In previous study with varieties and breeding lines kapia type TODOROVA (2006) established dominant effect of the environment on the variability of plant height and less one on embranchments.

Table 1. Estimation of studied varieties by plant traits

Variety	2010		2011		Average	
	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
1	2	3	4	5	6	7
Plant height (cm)						
Romansa	64.00 ab	6.22	76.67 a	6.13	70.33 ab	8.86
Amanda	57.00 b	1.63	58.00 c	3.74	57.50 e	2.72
Madona	63.25 ab	4.99	58.33 c	1.25	60.79 de	4.27
Delfina	70.25 a	4.92	77.67 a	4.50	73.96 a	5.90
Ekstaza	65.25 a	3.30	66.67 b	4.64	65.96 bc	3.81
Belo uvo	64.26 ab	4.17	77.67 a	6.55	70.96 a	8.78
Prizrenka	68.50 a	5.57	58.33 c	2.62	63.42 cd	6.76
Slonovo uvo	63.00 ab	3.92	50.00 d	3.26	56.50 e	7.71
Stem height (cm)						
Romansa	23.90 a	3.00	27.33 b	4.78	25.62 ab	4.12
Amanda	18.75 b	1.71	22.00 cd	2.45	20.38 d	2.62
Madona	22.25 ab	2.50	18.67 d	1.70	20.46 d	2.75
Delfina	22.75 ab	2.36	27.00 b	2.16	24.88 abc	3.09
Ekstaza	24.85 a	1.08	24.67 bc	2.05	24.76 bc	1.52
Belo uvo	24.48 a	2.51	27.33 b	2.49	25.91 ab	2.77
Prizrenka	23.00 a	2.71	31.33 a	1.25	27.17 a	4.86
Slonovo uvo	21.50 ab	3.70	24.00 bc	2.16	22.75 c	3.10

Table 1 a - continuation.

1	2	3	4	5	6	7
	Branches from first order (number)					
Romansa	3.15 b	0.10	2.93 bc	0.09	3.04 b	0.15
Amanda	3.55 a	0.19	3.07 a	0.09	3.31 a	0.29
Madona	3.20 ab	0.40	3.00 ab	0.00	3.10 b	0.28
Delfina	3.30 ab	0.26	2.87 c	0.09	3.08 b	0.29
Ekstaza	3.15 b	0.10	3.00 ab	0.00	3.08 b	0.10
Belo uvo	3.21 ab	0.14	3.00 ab	0.00	3.10 b	0.14
Prizrenka	2.95 b	0.25	3.08 a	0.09	3.01 b	0.19
Slonovo uvo	3.05 b	0.19	2.93 bc	0.09	2.99 b	0.15

a, b, c – Duncan's multiple range test ($p<0.05$)

Table 2. Two-way analysis of variance of plant morphological traits

Sources of variation	df	Plant height			Stem height			Branches		
		MS	F_{pract}	η %	MS	F_{pract}	η %	MS	F_{pract}	η %
Genotype (G)	7	335.87***	16.77	50.00	51.27***	7.79	37.82	0.08*	2.74	17.42
Year (Y)	1	15.30 ^{ns}	0.76		108.68***	16.52	11.45	0.71***	25.48	23.16
Interaction (G x Y)	7	196.31***	9.80	29.22	23.64 **	3.59	17.44	0.07*	2.48	15.79
Residual	48	20.03			6.58			0.03		

* $p<0.05$ ** $p<0.01$ *** $p<0.001$ ^{ns} non-significant

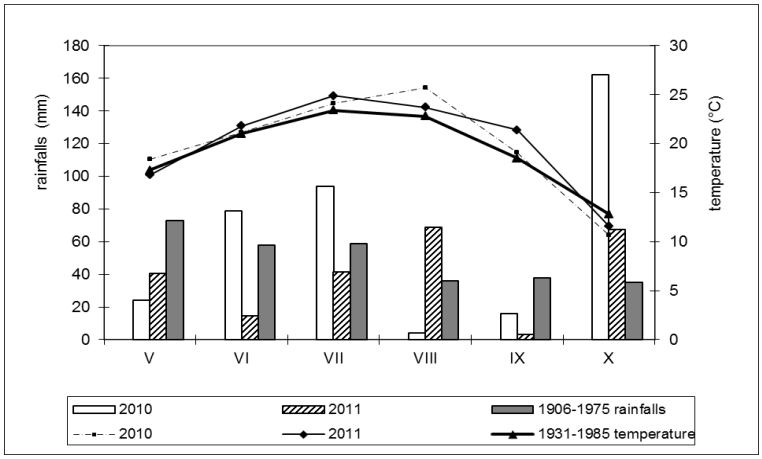

Figure 1. Meteorological conditions in the experimental years

Among the morphological traits most important for the farmers, tradespeople and consumers are length, diameter, weight, edible part and flesh thickness of the fruits. PANDEY *et al.* (2013) reported that fruit weight and fruit diameter were the most important for improving the genotypes while fruit length was considered second most important for applying selection in *Capsicum* genotypes.

All the time Romansa and Ekstaza formed significantly longer fruits than other varieties, on average 13.46 and 13.25 cm, respectively (Table 3). Amanda was characterized with the lowest values by this trait but with the highest ones by the diameter (5.89 cm). Delfina and Belo uvo also demonstrated wider fruits with 5.25 and 5.24 cm while Prizrenka and Ekstaza were on the last place by fruit diameter with 3.89 and 4.05 cm. The length and diameter of the fruits of Slonovo uvo and Prizrenka were more variable in the experimental period as the first experimental year was more favorable for them.

The eight Serbian pepper varieties were with proved differences by flesh thickness. Amanda (5.78 mm) and Slonovo uvo (5.35 mm) were with the thickest flesh while Ekstaza (4.15 mm) and Madona (4.20 mm) were with the thinnest one (Table 4).

Table 3. Evaluation of Serbian varieties by fruit length and diameter

Variety	2010		2011		Average	
	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
			length (cm)			
Romansa	12.90 ab	0.40	14.01 a	0.49	13.46 a	0.72
Amanda	7.82 d	0.62	7.80 e	0.36	7.81 e	0.47
Madona	9.85 c	0.31	9.49 d	0.20	9.67 cd	0.31
Delfina	10.48 c	0.68	10.94 c	0.20	10.71 b	0.53
Ekstaza	13.25 a	1.32	13.26 b	0.19	13.25 a	0.87
Belo uvo	9.75 c	0.81	8.60 e	0.75	9.17 d	0.95
Prizrenka	10.65 c	0.85	8.13 e	0.90	9.39 d	1.57
Slonovo uvo	12.00 b	0.41	8.20 e	0.49	10.10 bc	2.07
			diameter (cm)			
Romansa	4.98 c	0.30	4.80 c	0.11	4.89 c	0.23
Amanda	5.87 a	0.31	5.91 a	0.34	5.89 a	0.30
Madona	4.34 d	0.34	4.62 c	0.27	4.48 d	0.28
Delfina	5.02 c	0.29	5.47 b	0.37	5.25 b	0.39
Ekstaza	3.98 d	0.27	4.11 d	0.24	4.05 e	0.25
Belo uvo	5.62 ab	0.40	4.86 c	0.24	5.24 b	0.51
Prizrenka	5.11 c	0.10	2.67 f	0.08	3.89 e	1.31
Slonovo uvo	5.31 bc	0.12	3.38 e	0.37	4.34 d	1.06

Table 4. Evaluation of Serbian varieties by fruit flesh thickness (mm)

Variety	2010		2011		Average	
	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
Romansa	3.94 b	0.40	4.69 c	0.32	4.31 cd	0.52
Amanda	4.95 a	0.19	6.60 a	0.31	5.78 a	0.91
Madona	3.76 b	0.29	4.64 c	0.38	4.20 d	0.56
Delfina	4.24 b	0.20	5.57 b	0.20	4.91 b	0.73
Ekstaza	3.74 b	0.28	4.56 c	0.29	4.15 d	0.51
Belo uvo	4.81 a	0.24	4.36 c	0.36	4.59 bcd	0.37
Prizrenka	4.95 a	0.21	4.57 c	0.16	4.76 bc	0.26
Slonovo uvo	4.99 a	0.63	5.72 b	0.90	5.35 a	0.82

The data in Table 5 show the results from evaluated varieties by fruit weight and edible part of the fruit. Slonovo uvo demonstrated the highest average values by these traits – 94.57 g for the first and 85.60% for the second. Without proved differences Delfina followed it by fruit weight (89.34 g) and Romansa (85.19%), Belo uvo (84.81%) and Prizrenka – by edible part while unexpectedly Delfina was on the last place by this trait.

The second experimental year was better for most varieties: Romansa Amanda, Madona, Delfina, Ekstaza and Slonovo uvo by flesh thickness and for the first five of them by fruit weight.

Table 5. Evaluation of Serbian varieties by fruit weight and edible part

Variety	2010		2011		Average	
	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
			Fruit weight (g)			
Romansa	73.46 cd	7.21	82.38 bc	5.14	77.92 b	7.51
Amanda	69.40 cd	5.52	87.01 b	7.82	78.20 b	11.31
Madona	56.71 e	7.45	67.55 d	6.00	62.13 c	8.53
Delfina	76.44 c	4.22	102.25 a	14.24	89.34 a	16.88
Ekstaza	63.82 de	4.58	71.31 cd	5.10	67.57 c	6.01
Belo uvo	78.68 bc	11.97	79.22 bcd	8.34	78.95 b	9.55
Prizrenka	88.49 b	8.90	73.24 cd	2.68	80.86 b	10.17
Slonovo uvo	108.82 a	6.15	80.32 bc	3.41	94.57 a	15.91
			Edible part of the fruit (%)			
Romansa	83.29 bc	0.80	87.08 a	2.69	85.19 ab	2.74
Amanda	83.35 bc	1.74	83.70 bc	0.19	83.53 b	1.16
Madona	81.63 cd	1.12	79.73 d	1.12	80.68 cd	1.45
Delfina	76.55 e	3.85	81.82 c	1.76	79.19 d	3.95
Ekstaza	79.56 de	1.15	83.48 bc	1.00	81.52 c	2.32
Belo uvo	84.34 bc	2.97	85.28 ab	0.38	84.81 ab	2.02
Prizrenka	85.55 ab	1.86	81.92 c	1.34	83.73 ab	2.45
Slonovo uvo	87.99 a	2.27	83.21 bc	0.26	85.60 a	2.96

a, b, c – Duncan's multiple range test ($p<0.05$)

The obtained results from two-way analysis of variance revealed that the genotype, and interaction genotype x year had a proven effect (P<0.001) on the phenotypic expression of the five studied traits describing fruit while the year of growing – only on length, diameter and flesh thickness (Table 6). STOFFELLA *et al*., (1995) reported similar results for fruit weight in bell peppers and TODOROVA (2003) also established that the systematic factors had a proven effect on the phenotypic variability of length, diameter, weight and usable part of the fruit in red pepper for grinding. DELELEGNE *et al.*, 2014 recorded in hot pepper a very highly significant interaction effect of locations and varieties on fruit diameter and a highly significant one on fruit length and pericarp thickness.

Again the genotype predominated over the rest factors on the variation of studied fruit traits. Its influence was the highest on fruit length (76.64%) and it was within 45.92% to 51.48% on the rest evaluated traits. TODOROVA (2007) also reported dominant influence of the genotype on expression of diameter, weight and usable part of the fruit in kapia type breeding lines and varieties.

Table 6a. Two-way analysis of variance of fruit morphological traits

Sources of variation	df	Fruit length			Fruit diameter			Fruit flesh thickness		
		MS	F_{pract}	η %	MS	F_{pract}	η %	MS	F_{pract}	η %
Genotype (G)	7	31.32***	77.16	76.64	3.74***	50.33	51.48	2.65***	18.17	46.05
Year (Y)	1	9.82***	24.18	3.43	4.87***	65.58	9.58	7.08***	48.55	17.57
Interaction (G x Y)	7	5.36***	13.21	13.12	2.32***	31.22	31.93	1.09***	7.50	19.00
Residual	48	0.40			0.07			0.14		

* p<0.05 ** p<0.01 *** p<0.001 ns non-significant

Table 6b. Two-way analysis of variance of fruit morphological traits

Sources of variation	df	Fruit weight			Edible part of the fruit		
		MS	F_{pract}	η %	MS	F_{prac}	η %
Genotype (G)	7	879.17***	16.02	46.14	43.15***	12.99	45.92
Year (Y)	1	188.86ns	3.44		3.88ns	1.17	
Interaction (G x Y)	7	622.97***	11.36	32.70	27.48***	8.27	29.24
Residual	48	54.86			3.32		

* p<0.05 ** p<0.01 *** p<0.001 ns non-significant

The influence of genotype x year interaction in all investigated fruit traits was on second place from 13.12% for the length to 32.70% for the fruit weight. These results gave a base for consideration that studied varieties were characterized with good adaptation and plasticity. It is necessary to be mentioned that the years of growing even with proven effect had comparatively slight influence from 3.43% for fruit length to 17.57% for flesh thickness and observed variation of studied fruit traits was mainly due to genotypic differences and interaction genotype x year.

These revealed that varieties were differed significantly by these traits and meteorological conditions in the experimental years were not so important for them. The obtained results confirmed the lowest influence of the year of growing on fruit weight and usable part of the fruit established from TODOROVA (2007).

Romansa realized the biggest total yield (46.04 t ha^{-1}) of the fruits before maturity stage followed by Ekstaza (45.31 t ha^{-1}) and Delfina (45.13 t ha^{-1}) as there were not significant differences between them (Table 7). The lowest total yield was obtained from Madona during the whole investigated period. The varieties which were evaluated by total yield at maturity stage showed non proved differences in second experimental year and for whole period. Their values from 21.34 t ha^{-1} for Delfina to 24.41 t ha^{-1} for Slonovo uvo normally were lower than the ones for the total yield of the varieties for harvesting of the fruits before maturity stage. Many researchers (GRUBBEN *et al.*, 2004; MESSIAEN, 1992) also reported that harvesting before maturity stage stimulates fruit set and it is more profitable for farmers.

The most productive variety Romansa again demonstrated the highest (39.90 t ha^{-1}) values by marketable yield while Madona – the lowest ones (Table 8). Ekstaza and Delfina also were characterized with high marketable yield, respectively 37.75 t ha^{-1} and 36.03 t ha^{-1}. Between four varieties studied by marketable yield of the fruits at maturity stage Slonovo uvo was with higher values than others (18.94 t ha^{-1}). The variation of total and marketable yield between the experimental years was less in the varieties evaluated by this stage of fruit ripeness. Except for Slonovo uvo all estimated varieties manifested higher values by total yield in the second experimental year and most of them – by marketable yield.

Table 7. Estimation of studied varieties by total yield (t ha^{-1})

Variety	2010		2011		Average	
	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
before maturity stage						
Romansa	24.92 ab	0.12	67.16 a	2.83	46.04 a	22.66
Amanda	17.09 f	0.86	57.53 b	2.24	37.31 b	21.67
Madona	11.72 g	0.20	47.54 c	8.48	29.63 c	19.94
Delfina	17.60 ef	0.27	72.65 a	2.40	45.13 a	29.47
Ekstaza	21.66 cd	1.14	68.96 a	1.15	45.31 a	25.31
Belo uvo	22.64 bc	0.60	56.77 b	3.90	39.70 b	18.42
at maturity stage						
Belo uvo	19.80 de	1.48	24.86 d	4.17	22.33 d	3.96
Prizrenka	20.52 cd	3.32	26.57 d	0.34	23.55 d	3.90
Slonovo uvo	26.07 a	2.80	22.76 d	2.43	24.41 d	3.00
Delfina	16.80 f	1.15	25.89 d	6.64	21.34 d	6.56

a, b, c – Duncan's multiple range test ($p<0.05$)

Table 8. Estimation of studied varieties by marketable yield (t ha^{-1})

Variety	2010		2011		Average	
	$\bar{X}$	sd	$\bar{X}$	sd	$\bar{X}$	sd
before maturity stage						
Romansa	20.96 a	0.25	58.83 a	2.55	39.90 a	20.31
Amanda	12.98 d	0.08	41.26 b	3.98	27.12 c	15.34
Madona	9.26 e	0.41	37.06 b	8.49	23.16 d	15.87
Delfina	12.20 d	0.52	59.87 a	2.80	36.03 b	25.55
Ekstaza	16.29 b	0.22	59.21 a	3.68	37.75 ab	23.07
Belo uvo	16.00 b	1.61	40.18 b	1.95	28.09 c	13.03
at maturity stage						
Belo uvo	15.05 bc	0.70	17.56 c	3.64	16.30 ef	2.77
Prizrenka	17.00 b	2.50	15.82 c	1.26	16.41 ef	1.94
Slonovo uvo	22.55 a	2.33	15.34 c	2.19	18.94 e	4.39
Delfina	13.88 cd	1.11	15.97 c	2.92	14.92 f	2.33

a, b, c – Duncan's multiple range test ($p<0.05$)

From the results of two-way ANOVA it was determined that all systematic sources had proved significance ($p<0.001$) on the variability of these economical traits but with different influence (Table 9). The year as a component of the environment had bigger influence than genotype and interaction genotype x year, 47.97% on total and 37.40% on marketable yield, while it was with lower one on the phenotypic expression of fruit investigated traits, plant and stem height. These results were contrary to established by TODOROVA *et al.* (2007) that variability of the yield in kapia type varieties and breeding lines was mainly due to the genotype and genotype x environment interaction. DELELEGNE *et al.*, 2014 also reported a very highly significant interaction effect of locations and varieties on total yield and a highly significant one on marketable yield in hot pepper.

Table 9. Two-way analysis of variance of the yield

Sources of variation	df	Total			Marketable		
		MS	F_{pract}	η %	MS	F_{pract}	η %
Genotype (G)	9	848.04***	84.93	24.77	714.53***	86.98	28.62
Year (Y)	1	14783.92***	1480.62	47.97	8401.55***	1022.74	37.40
Interaction (G x Y)	9	866.86***	86.82	25.32	793.42***	96.58	31.78
Residual	60	9.98			8.21		

*** $p<0.001$

Meteorological conditions were the most probable reason for the differences in the years of growing and their significance on the variability of the yield. The last one was determined from many different traits as plant height, number of the branches and fruits on the plant, fruit weight, size etc. During the experimental period all other components of the environment were comparatively stable - plants were grown on soils with similar structure and composition and the applied technology was the same. The average monthly temperature in critical August in the second experimental year, 2011, was with slightly higher values than normal, while the previous 2010 was with considerably larger differences (Fig. 1). Moreover, the period June-July, in the first experimental year was characterized by significantly bigger amounts of rainfalls, in normal and 2011 both. In reverse, August rainfalls were scarce, relative humidity was reduced significantly, and although these conditions were somewhat compensated by irrigation, all this had a negative effect and probably determined shedding of buds, flowers and fruit sets and it was associated with lower yields and lower values for some traits in most of the tested varieties.

Other two sources demonstrated comparatively close values of the influence on these traits from 24.77% to 25.32% on total yield and from 28.62% to 31.78% on marketable yield. The importance of the effect of genotype x environment (G x E) interaction in testing of various genotypes also was established in potato (NACHEVA, 2006), garden pea (KALAPCHIEVA, 2013) and head cabbage (ANTONOVA, 2014). CHETAN *et al.* (2016) studied a possibility for substantial development in the area of analytical methodology to quantify and describe this interaction.

As a conclusion of this study it could be offered for growing in south parts of Bulgaria with success Romansa, Ekstaza and Delfina for harvesting of the fruits in before maturity stage and Slonovo uvo - in maturity stage. In other study TODOROVA *et al*. (2007) also established Slonovo uvo combined high yield and poor variation in the phenotypic character expression showing that it was stable in different growing conditions. PEVICHAROVA *et al*. (2007) reported that Slonovo uvo possessed high biological value recorded by ascorbic acid content and it could be used as natural nutritional supplements in the functional food production.

AUTHOR'S CONTRIBUTIONS:

Velichka Todorova contributed to the idea, experimental design and multiyear study, data analysis, writing and design of article. Ivo Djinovic contributed to experimental design, providing with seeds for the research.

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OCENA SORATA SRPSKE PAPRIKE GAJENE U USLOVIMA JUŽNE BUGARSKE

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Izvod

Uporedna ocena je urađena za osam sorata srpske paprike (*Capsicum annuum* L.) u toku 2010-2011 na poljima Maritsa Istraživačkog instituta za povrće u Plovdivu, Bugarska. Sorte su ocenjene za značajna morfološka svojstva biljke i ploda, ukupan i marketinški prinos. Ocena visine biljke i stabla ukazala je na značajne razlike: Romansa i Ekstaza su formirale značajno duže plodove u odnosu na druge sorte, dok je sorta Amanda imala najniže vrednosti za ove osobine, ali i najveći prečnik osnove i debljinu mesa. Romansa, Ekstaza i Delfina bile su najproduktivnije pre faze zrelosti sa prinosom od 46.04 t ha^{-1}, 45.31 t ha^{-1} i 45.13 t ha^{-1}. Sorte koje su ocenjene po prinosu ploda posle sazrevanja nisu imale velike razlike u prinosu, koji je varirao od 21.34 t ha^{-1} za sortu Delfina do 24.41 t ha^{-1} za Slonovo uvo.

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