

QUANTITATIVE AND QUALITATIVE PARAMETERS IN ACORN SQUASH CULTIVAR IN THE CONDITIONS OF THE SLOVAK REPUBLIC

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ABSTRACT

The species *Cucurbita pepo* includes several types of squashes; in Slovak Republic, well-known and often grown squash types are patisson, zucchini, spaghetti squash, oil pumpkin etc. Several interesting squash types of *Cucurbita pepo* are grown abroad, including Acorn squash which is well-known mainly in USA. The aim of this study was to evaluate the important quantitative (yield per hectare, average fruit weight) and qualitative (total carotenoids, ascorbic acid, antioxidant activity, total soluble solids) yield parameters of Acorn squash fruits in comparison with patisson which is typical squash type of *Cucurbita pepo* in Slovak Republic. The field trial was realised in Košice-Šaca in 2016. Within experiment, four cultivars of Acorn type pumpkin were tested (Thelma Sanders; Jet Set; Table Gold; Cream of The Crop). The patisson 'Orfeus' was used as a comparative cultivar for evaluation of individual parameters of Acorn type pumpkin cultivars. Matured pumpkin fruits were harvested on the 7th September 2016. From aspect of yield quantity, Acorn cultivars are appeared as very interesting squash type with good yield potential for growing. The highest yield of squash fruits was found in the cultivar 'Cream of The Crop' (17.8 t.ha⁻¹). In mentioned Acorn cultivar, the yield was higher about 87.4% compared to the tested patisson cultivar 'Orfeus' (9.5 t.ha⁻¹). On the contrary, the average weight of squash fruits was reached in patisson cultivar 'Orfeus' (780.7 g). The qualitative parameters of fruits were expressively influenced by squash cultivar. The content of total carotenoids, ascorbic acid and total soluble solids was markedly higher in all Acorn cultivars, compared to the patisson cultivar 'Orfeus'. The highest content of total carotenoids (26.74 mg.kg⁻¹ fresh weight) and ascorbic acid (238.79 mg.kg⁻¹ f. w.) was found in the squash cultivar 'Table Gold'. The highest content of total soluble solids was determined in the cultivar 'Jet Set' (3.8 °Brix). On the contrary, the highest antioxidant activity (DPPH) was found in the patisson cultivar 'Orfeus' (10.80 %). On the basis of obtained results, it is possible to state that Acorn cultivars are very interesting squash type with promising yield potential for possible growing in conditions of Slovak Republic. In addition, Acorn squashes were expressed by higher content of several nutritional parameters compared to the typical squash type - patisson. Thus, these squashes could be an interesting vegetable for human nutrition.

Keywords: squash; Acorn; yield; quality

INTRODUCTION

The genus *Cucurbita* is a member of the *Cucurbitaceae* family which includes four major species, i. e. *Cucurbita pepo*, *Cucurbita maxima*, *Cucurbita moschata* and *Cucurbita ficifolia*. A lot of cultivars of these species are grown around the world and belong to the major agricultural commodities (Kim et al., 2012). According to FAOSTAT (2017), total world production of pumpkins, squashes and gourds was more than 25 millions tones in 2014. The main production area was Asia (63.9%), followed by Europe (15.7%), American continents (11.3%), Africa (7.9%) and Oceania (1.1%). The main producers of these species were China, India, Russia, Ukraine, USA, Iran and Italy. The production of squashes in Slovak Republic was 1480 tones in 2014. In recent

period, the squash production in Slovak Republic is characterized by increasing trend and its value was 3039 tones in 2015 (Meravá, 2016). The most important squash species is *Cucurbita pepo* which includes several known types, e. g. pattypan squash, zucchini or oil squash. The Acorn squash is an iconic fall vegetable in the USA, known for its unique ribbed fruit shape and culinary properties. Of the diverse types of *Cucurbita pepo*, acorn squash is the longest-storing and it has the highest fruit quality (Wyatt et al., 2015).

Carotenoids are known for several important biological activities. The most widely studied and well-understood nutritional role of carotenoids is their provitamin A activity (Cazzonelli and Pogson, 2010). Carotenoids are known to be very efficient physical and chemical

quenchers of singlet oxygen ($^1\text{O}_2$), as well as potential scavengers of other reactive oxygen species (ROS). It is the special significance, because the uncontrolled generation and concomitant increase of ROS level in the body results in "oxidative stress", an essential contributor to the pathogenic processes of many diseases (Fiedor and Burda, 2014). Carotenoids and some of their metabolites belong to the important antioxidants and they are suggested to play a protective role in a number of ROS-mediated disorders, i.e. cardiovascular diseases, several types of cancer or neurological, as well as photosensitive or eye-related disorders (Tang, 2010).

One of the most important and effective antioxidant substances, abundant in edible parts of many vegetable species, is vitamin C, also known as ascorbic acid (USDA, 2016). Though most animals are able to endogenously synthesize large quantities of vitamin C, humans do not have the capability to synthesize vitamin C due to a series of mutations of the gene encoding gulonolactone oxidase which catalyses the last enzymatic step in ascorbate synthesis. From this reason, it must be ingested in natural food form, most suitably as a component of fresh vegetables or fruits (Grosso et al., 2013). The vitamin C plays an important role in immune system, stimulation of leucocytes to the increased bacteria degradation or body resistance increase to the coldness (Haciševki, 2009). According to Gonzalez and Miranda-Massari (2014), vitamin C is considered as a very strong reductant and radical scavenger. It reduces unstable oxygen, nitrogen, and sulfur radicals. In addition, vitamin C acts as primary defense against aqueous radicals in blood. Pal, Sanal and Gopal (2011) state that vitamin C can inactivate the urease enzyme, which allows the endurance of *Helicobacter pylori* and the colonization of the gastric mucosa at a low pH. Thus, it may inhibit the spread, growth, and colonization of *H. pylori* in the early periods of infection. This bacterium is considered as important risk factor in stomach cancer formation.

Scientific hypothesis

The squashes of Acorn type are not known and grown in the Middle European region. The impact of cultivar on the quantity and quality of Acorn squash fruits (*Cucurbita pepo*) was tested in conditions of Slovak republic. As a comparative sample, cultivar of patisson was used because it is squash species commonly grown in Slovak republic.

MATERIAL AND METHODOLOGY

The field trial with pumpkins was realised in Košice in 2016. The experimental locality is described as the slightly hot area. Within experimental period (May-September 2016), the average month air temperature was 18.9 °C. The total rainfall sum was 355 mm. According to the climatic normal 1961 – 2010 for Košice, average month temperature is 17.9 °C and total rainfall sum is 370 mm within period May-September. Compared to the climatic normal, the experimental period can be evaluated as slightly cold and wetter.

Experiment organisation

Within experiment, four cultivars of Acorn type squash were tested ('Thelma Sanders', 'Jet Set', 'Table Gold',

'Cream of The Crop'). The patisson 'Orfeus' was used as a comparative cultivar for evaluation of individual parameters of Acorn type squash cultivars.

The total experimental area was 64 m² (8 m² for each cultivar). All cultivars were sowed in three replications. Each replication was presented by three planting holes with four seeds. The seeds were sowed on the 7th May 2016 and matured squash fruits were harvested on the 7th September 2016. The squash yield from all replications was sequentially calculated to the square unit of one hectare.

In all experiment area, same conditions were prepared for squash plants from aspect of fertilization or irrigation. According to agrochemical soil analyses, realised before experiment establishment, phosphorus and potassium could not have been applied because their sufficient content for squash growing. The calculated nitrogen dose was applied before squash seed sowing. The irrigation was realised in dependency on the weather and rainfalls. In the view of protection, plants were treated by several chemical preparations against mildew and silverleaf whiteflies.

Immediately after harvest, individual qualitative parameters of squash cultivars were analysed. The average sample from each replication was prepared from 3-4 fruits. All fruits were quartered and opposite quarters were used for qualitative analyses.

Total carotenoids (TC)

The extraction of samples was done at the Laboratory of Beverages, AgroBioTech Research Center, Slovak University of Agriculture (SUA) in Nitra. The estimation of total carotenoid content was realised in the laboratory of Department of Fruit Growing, Viticulture and Enology SUA in Nitra. The content of total carotenoids was estimated by spectrophotometric measurement of substances absorbance in petroleum ether extract on spectrophotometer PHARO 100 at 445 nm wavelengths.

As an extraction reagent, acetone was used acetone (Hegedüsová, Mezeyová, Andrejiová, 2015).

Ascorbic acid (AA)

The determination of ascorbic acid (vitamin C) content was realised in the Regional Institute of Public Health in Nitra. The modified HPLC method of AA content estimation according to the Stan et al. (2014) was used by the help of liquid chromatograph with UV detector. For separation, Res Elut 5 C18 (150 x 4.6mm) was used (Varian, Palo Alto, California, USA). Mobile phase was acetonitrile – phosphate buffer solution (pH = 3.5) 5 : 95. UV detection was adjusted to 264 nm (Waters 2489 UV/VIS Detector).

Antioxidant activity (AOA)

The liophilisation of squash samples for AOA analysis was realised at the Department of Animal Nutrition, SUA in Nitra. The total antioxidant capacity was measured by the method of Brand-Williams et al. (1995) using DPPH (2,2-diphenyl-1-picrylhydrazyl) scavenging activity calculated as inhibition of DPPH radicals in %. The absorbance was measured at 515.6 nm in the spectrophotometer Shimadzu UV/VIS-1240.



Figure 1 Field experiment with squashes.



Figure 2 Patisson 'Orfeus'.



Figure 3 Acorn 'Thelma Sanders'.



Figure 4 Acorn 'Jet Set'.



Figure 5 Acorn 'Table Gold'.



Figure 6 Acorn 'Cream of the Crop'.

Total soluble solids (TSS)

The total soluble solids content (°Brix) of individual squash cultivars were measured by a digital hand-held refractometer (Kern ORD 45BM, Balingen, Germany). The juice that exuded from the squash pulp was used as a sample. The average value of TSS for each cultivar was obtained by three measurements of sample (Hegedüsová, Mezeyová, Andrejiová, 2015).

Statistic analysis

The obtained data were processed into tables in Microsoft Office Excel 2007. Then analysis of variance (ANOVA)

was used by the help of the Tukey test (significance level $\alpha = 0.05$) for statistical analyses in the program StatgraphicCenturion XVII (StatPointInc. USA).

RESULTS AND DISCUSSION

Yield per hectare

All cultivars of Acorn squashes were characterized by markedly higher yield of fruits per hectare compared to the patisson cultivar 'Orfeus'. The difference of yield between Acorn squash cultivar 'Thelma Sanders' was showed as statistically non-significant. Differences among other

cultivars was evaluated as statistically significant (Table 3).

The yield of squash fruits was ranged from 9.5 t.ha⁻¹ (patisson 'Orfeus') to 17.8 t.ha⁻¹ (Acorn 'Cream of The Crop'). Differences among patisson cultivar and Acorn squash cultivars were varied in the range from 24.2 % (Acorn 'Thelma Sanders') to 87.4% (Acorn 'Cream of The Crop').

Kolota and Balbierz (2015) found similar yield of patisson fruits in cultivar 'Disco' (9.89 t.ha⁻¹) compared to the cultivar 'Orfeus', tested in realised experiment. Yield of other patisson cultivars, presented by authors, was markedly higher in comparison with cultivar 'Orfeus', e. g. 10.51 t.ha⁻¹ ('Polo F1'), 11.60 t.ha⁻¹ ('Gagat'), 13.27 t.ha⁻¹ ('Okra'), 14.46 t.ha⁻¹ ('Sunny Delight'). The fruit yield of Acorn squash type cultivars was the study subject of **Strang et al. (2001)**. Authors found significant yield variability in dependency on the tested Acorn cultivars. It was varied in the range from 6.17 t.ha⁻¹ to 23.45 t.ha⁻¹ (average = 13.58 t.ha⁻¹). In mentioned study, the lower yield was found in cultivars 'Table Gold' (10.43 t.ha⁻¹) in comparison with our study. On the contrary, the higher yield was reached in cultivar 'Cream of The Crop' (13.57 t.ha⁻¹), compared to our study. **Strang et al. (2006)** found relatively high yield of fruits in Acorn squash cultivar 'Autumn Delight' (18.29 t.ha⁻¹).

Average weight of fruits

In this study, statistically significant differences of average fruit weight among squash cultivars 'Orfeus' (patisson) ↔ 'Jet Set' ↔ 'Cream of The Crop' or 'Thelma Sanders' ↔ 'Table Gold' were not showed. Other differences among cultivars were evaluated as statistically significant (Table 3).

The average fruit was ranged from 532.4 g to 780.7 g and it was increasing in following cultivar order: 'Table Gold' < 'Thelma Sanders' < 'Cream of The Crop' < 'Jet Set' < 'Orfeus' (patisson).

Barátová, Uher and Štefunko (2011) found the variability of average patisson fruit weight in the range from 757 g to 922 g. These results are relatively comparable to the cultivar 'Orfeus', used in this study. Compared to the tested Acorn squash cultivars, similar values of average fruit weight were presented in the studies of **Strang et al. (2011)** and **Strang et al. (2016)** with variability in the range from 453.6 g to 725.7 g.

Total carotenoid content (TC)

Carotenoids are natural compounds of many vegetable species and they predominantly define the yellow, orange or reddish colour of various intensity in the edible parts of many crops, e.g. carrot, sweet potato or some squash types. The most prominent carotenoid in the most of vegetable species, including *Cucurbita* species, is β-carotene (**Maiani et al., 2009; Šlosár et al., 2013**).

The total carotenoid content in all Acorn squash cultivars was statistically significantly higher in comparison with patisson cultivar. Values of TC in tested squash cultivars were increasing in the following cultivar order: 'Orfeus' (1.10 mg.kg⁻¹ fresh weight) < 'Cream of The Crop' (7.31 mg.kg⁻¹ fresh weight) < 'Jet Set' (7.94 mg.kg⁻¹ fresh weight) < 'Thelma Sanders' (10.34 mg.kg⁻¹ fresh weight) < 'Table Gold' (26.74 mg.kg⁻¹). The content of TC in particular squash cultivars was closely depending on the intensity of fruit pulp colour. The expressly highest content of TC was found in the Acorn cultivar 'Table Gold' which fruits was characterized by intensive orange pulp colour.

Regarding to the tested patisson cultivar 'Orfeus', **Kolota and Balbierz (2015)** found relatively comparable carotenoid content which varied from 0.55 mg.kg⁻¹ to 1.05 mg.kg⁻¹ f. w. in dependence on the patisson cultivar. On the contrary, **Balbierz and Kolota (2017)** found markedly lower content of total carotenoids (0.27 mg.kg⁻¹ f. w.) in patisson fruits, compared to the tested cultivar 'Orfeus'.

Similar value of carotenoid content in Acorn squash, compared to our results, was presented in the study of **Wyatt et al. (2016)**, concretely 10,1 mg.kg⁻¹ f. w. **Murkovic, Mülleder and Neunteufl (2002)** monitored the carotenoid content (α-carotene, β-carotene, lutein and zeaxanthin) in different squash varieties in experiment realised in Austria. In fruits of Acorn cultivars, the average content of TC was 27.65 mg.kg⁻¹ f. w. This value is significantly higher than the average content of TC in our experiment (13.08 mg.kg⁻¹ f. w.). The second tested *Cucurbita* species in study of mentioned authors was *Cucurbita moschata* which is known for ther intensive orange colour of fruit pulp. The TC content in the fruits of this species was varied from 41.6 mg.kg⁻¹ to 130.4 mg.kg⁻¹ f. w. what indicate that *Cucurbita moschata* is richer source of carotenoids than *Cucurbita pepo* (Acorn varieties, patisson, courgette, spaghetti squash etc.). This fact was also presented in the study of **Mendelová et al. (2017)** who found variability of carotenoid content in fruits of *Cucurbita moschata* in the range from 28.2 mg.kg⁻¹ to

Table 1 Climate characteristics in experiment area in 2016 (Košice).

Month	Temperature (°C)		Rainfall (mm)	
	2016	Evaluation	2016	Evaluation
May	15.7	normal	75	normal
June	20.7	very hot	58	dry
July	21.2	normal	113	wet
August	19.6	normal	83	normal
September	17.4	hot	26	dry

Note: evaluation of months according to the climatic normal (long-term average 1961 – 2010) for Košice.

Table 2 Agrochemical characteristics of the soil before the experiment establishment in 2016 (Košice).

Humus (%)	pH/KCl	Nutrient content in the soil (mg.kg ⁻¹)					
		N	P	K	S	Ca	Mg
3.41 G	6,47 SA	18.9 M	85.8 G	152.3 M	28.7 M	605.1 H	632.5 VH

Note: SA – slightly acidic, M – medium content, G – good content, H – high content, VH – very high content.

71.8 mg.kg⁻¹ f. w.

Ascorbic acid content (AA)

The ascorbic acid content in fruits of all Acorn squash cultivars was statistically significantly higher compared to the patisson cultivar 'Orfeus'. The statistically significant differences were also found among individual Acorn squash cultivars. The highest AA content was found in cultivar 'Table Gold' (238.79 mg.kg⁻¹ f. w.). Difference of AA content between mentioned Acorn cultivar and patisson cultivar 'Orfeus' presented value of 181.49 mg.kg⁻¹. In other Acorn cultivars, differences of AA content, in comparison with patisson cultivar, were ranged from 67.50 mg.kg⁻¹ to 136.87 mg.kg⁻¹ f. w.

Compared to obtained results, **Kolota and Balbierz (2015)** found markedly higher values of AA content in patisson fruits which varied from 157.90 mg.kg⁻¹ to 267.30 mg.kg⁻¹ f. w., dependent on the cultivar. Similar value of AA content in patisson (232.50 mg.kg⁻¹ f. w.) was also presented in the study of **Balbierz and Kolota (2017)**. According to the **USDA (2017)**, the AA content in Acorn squash is 110 mg.kg⁻¹ f. w. All Acorn cultivars, tested in this study, were expressed by higher content of AA in the fruit pulp. After comparison of obtained results with study of **Andrejiová et al. (2016)**, Acorn squash (*Cucurbita pepo*) can be marked as a slightly richer source of AA in comparison with *Cucurbita moschata*, another important squash species. Authors found a variability of AA content in the fruits of *Cucurbita moschata* (six cultivars) in the range from 138.8 mg.kg⁻¹ to 186.9 mg.kg⁻¹ f. w. Similar value of AA content in *Cucurbita moschata* (139.9 mg.kg⁻¹ f. w.) was also presented in the study of **Chua (2007)**.

Antioxidant activity

Antioxidants are wide group of various substances

free radicals, responsible for many serious diseases, e. g. various cancer types, cardiovascular and neurological diseases (**Sindhi et al., 2013**). In the group of antioxidants, following substances are classified: flavanoids, vitamins C, E or K, carotenoids, phenolic acids, selenium etc. (**Nahak, Suhar, Sahu, 2014**).

From aspect of antioxidant activity, statistical differences among Acorn cultivars and patisson cultivar were founded. The values of antioxidant activity (AOA) were varied from 5.29% (Acorn 'Jet Set') to 10.80% (patisson 'Orfeus'). Obtained results are relatively comparable to the study of **Hamissou et al. (2013)** who found the AOA (DPPH) of *Cucurbita pepo* fruits (zucchini) on the level of 12.19%. **Oleárová et al. (2013)** found the variability of AOA in *Cucurbita pepo* fruits in the range from 2.72% to 6.24%. These values are, in average lower than the AOA of patisson and Acorn cultivars in realised study. The study of **Gajewski et al. (2008)** was focused on the comparison of various *Cucurbita* species (*Cucurbita pepo*, *Cucurbita moschata*, *Cucurbita maxima*) and quality of their fruits. The AOA of *Cucurbita pepo* fruits (DPPH) was the lowest from all tested species (9.5 – 13.6%); on the other side, values were higher compared to our obtained results. Other tested species, *Cucurbita maxima* and *Cucurbita moschata*, were characterized by markedly higher AOA compared to the *Cucurbita pepo*. The values of AOA in *Cucurbita maxima* were ranged from 56.7% to 73.2%. The AOA in the fruits of *Cucurbita moschata* was on the level of 63.1%. The fact that *Cucurbita moschata* and *Cucurbita maxima* are characterized by expressively higher AOA, compared to the *Cucurbita pepo*, was also presented by **Altmini et al. (2016)**, **Dinu et al. (2016)** or **Zhao et al. (2015)**.

Total soluble solid (TSS)

Table 3 Quantitative parameters of patisson and Acorn pumpkin cultivars.

Species/ cultivar	Yield (t.ha ⁻¹ ±SD)	AW (g ±SD)
Patisson 'Orfeus'	9.5 ±0.12 ^c	780.7 ±37.2 ^a
Acorn 'Thelma Sanders'	11.8 ±0.13 ^c	584.6 ±38.4 ^b
Acorn 'Jet Set'	12.0 ±0.10 ^{bc}	769.2 ±40.2 ^a
Acorn 'Table Gold'	14.7 ±0.11 ^b	532.4 ±37.0 ^b
Acorn 'Cream of The Crop'	17.8 ±0.13 ^a	708.8 ±33.1 ^a

AW – average fruit weight; SD – standard deviation.

Note: Values with different italic letters are significantly different at $p < 0.05$ by LSD in ANOVA.

Table 4 Qualitative parameters of patisson and Acorn pumpkin cultivars.

Species/cultivar	TC (mg.kg ⁻¹ ±SD)	AA (mg.kg ⁻¹ ±SD)	AOA (% ±SD)	TSS (BRIX ±SD)
Patisson 'Orfeus'	1.10 ±0.21 ^d	57.30 ±2.82 ^e	10.80 ±0.21 ^a	0.5 ±0.08 ^e
Acorn 'Thelma Sanders'	10.34 ±0.45 ^b	124.84 ±4.56 ^d	5.57 ±0.20 ^d	3.4 ±0.16 ^b
Acorn 'Jet Set'	7.94 ±0.23 ^c	194.17 ±3.78 ^b	5.29 ±0.12 ^d	3.8 ±0.22 ^a
Acorn 'Table Gold'	26.74 ±0.68 ^a	238.79 ±3.55 ^a	8.57 ±0.43 ^c	2.0 ±0.16 ^c
Acorn 'Cream of The Crop'	7.31 ±0.43 ^c	144.71 ±3.31 ^c	10.23 ±0.33 ^b	1.6 ±0.12 ^d

TC – total carotenoids; ascorbic acid (vitamin C); AOA – antioxidant activity; TSS – total soluble solids; SD – standard deviation.

present in vegetables, fruits or other crops. They are usually defined as substances which help to prevent human organism in small amount against negative influence of

The content of soluble solids (mainly sugars) in vegetable extracts is oftenly presented and marked as a total soluble (refractometric) solid (**Hegedüsová, Mezeyová, Andrejiová, 2015**). The statistically

significant differences of TSS among individual Acorn squash cultivars and patisson cultivar were found. Values of TSS were varied from 0.5 °BRIX (patisson 'Orfeus') to 3.4 °BRIX (Acorn 'Thelma Sanders').

The significantly higher TSS in *Cucurbita pepo* fruits (3.0 – 4.5 °BRIX), compared to this study, were presented by Gajewski et al. (2008). Compared to the tested patisson cultivar 'Orfeus', Kolota and Balbierz (2015) found higher values of TSS in the range from 1.57 °BRIX to 1.91 °BRIX, in dependency on the patisson cultivar. Silva and Bruce (2016) evaluated the content of TSS in fruits of six Acorn squash cultivars and its values were varied from 8.27 °BRIX to 10.42 °BRIX. Loy (2006) found variability of TSS in Acorn squash cultivars in the range from 5.9 °BRIX to 15.0 °BRIX. The significant differences among TSS values were caused by various harvest date and storage period of squash fruits. In all mentioned studies, the content of TSS in squash fruits was expressively higher compared to the *Cucurbita pepo* cultivars tested in realised experiment.

Several studies indicate that *Cucurbita pepo* fruits are characterized by lower content of TSS in comparison with some other *Cucurbita* species, e. g. *Cucurbita moschata* or *Cucurbita maxima* (Gajewski et al., 2008; Iacuzzo, Dalla Costa, 2009; de Carvalho et al., 2015).

CONCLUSION

The Acorn squash (*Cucurbita pepo*) is less-known cultivar type in Slovak Republic or Middle European region generally. It is wide-spread and grown on the large areas mainly in USA. The aim of this study was to evaluate the important quantitative (yield per hectare, average fruit weight) and qualitative (total carotenoids, vitamin C, antioxidant activity, total soluble solids) yield parameters of Acorn squash fruits (four cultivars) in comparison with patisson which is typical squash type of *Cucurbita pepo* in Slovak Republic. The average weight of patisson fruits (780.7 g) was higher than its value in Acorn squash cultivars (584.6 – 769.2 g). On the contrary, yield of Acorn squash fruits (11.8 – 17.8 t.ha⁻¹) was markedly higher compared to the patisson cultivar (9.5 t.ha⁻¹). Acorn squash cultivars were showed the higher total carotenoid content (7.31 – 26.74 mg.kg⁻¹ f. w.) in comparison with patisson (1.10 mg.kg⁻¹ f. w.). Similarly, the higher content of vitamin C (124.84 – 238.79 mg.kg⁻¹ f. w.) and total soluble solids (1.6 – 3.8 °BRIX) in Acorn fruits compared to the tested patisson cultivar (57.30 mg.kg⁻¹ f. w.; 0.5°BRIX) was found. On the contrary, the higher antioxidant activity was found in patisson fruits (10.8%) in comparison with Acorn cultivar fruits (5.29 – 10.23%) Obtained results indicate that Acorn cultivars are very interesting squash type with promising yield potential for growing in conditions of Slovak Republic. The significant aspect of Acorn squash cultivar is also quality of fruits, which was expressively higher in several parameters compared to the patisson - typical species of *Cucurbita pepo* in conditions of Slovak Republic, or Middle Europe region generally.

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