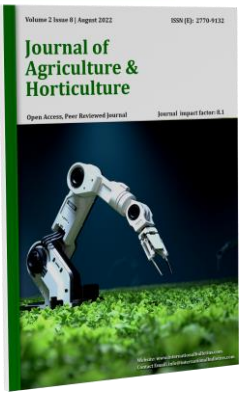

STUDYING THE BIOCHEMICAL COMPOSITION AND QUALITY INDICATORS OF RASPBERIES DURING STORAGE IN REFRIGERATED WAREHOUSES

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ABSTRACT

In this article, changes in quality indicators and biochemical composition of berries during storage of Polka, Progress, Sugana, and Laszka varieties of raspberries in a refrigerated warehouse are studied. The article analyzed the berry weight, size, sugar content, dry matter content, berry moisture content, berry temperature, and pH indicators of raspberry.

KEYWORDS: *raspberry varieties, berry, refrigerated warehouse, temperature, quality indicators, biochemical composition*

INTRODUCTION

It is known that raspberry is one of the berries with unique nutritional and medicinal properties. Its berries are a valuable source of biologically active substances, sugar and organic acids. Depending on the growing conditions, raspberry fruit contains 5-11% sugar, 0,6-0,9% pectin, 1,2-2,3% organic acids, and 50 mg% of ascorbic acid (vitamin C), a valuable component of raspberry fruit. does [3].

Today, as the volume of raspberry cultivation increases, the methods of its storage and processing are improved, and the demand for the creation of new modern enterprises is increasing. If picking, transporting and preliminary processing of raspberry products is carried out based on scientific and technical achievements and advanced experience, it is inevitable that wastage will be greatly reduced [2].

When studying the effect of different storage conditions on the biochemical composition of red raspberry, it was found that the amount of soluble solids, ascorbic acid, phenols, total anthocyanin and antioxidants in raspberry fruits is high. These chemicals tend to increase during storage [4].

MATERIALS AND METHODS.

The biochemical composition of raspberry fruits was conducted using the method of "Methods of biochemical research of plants" published of A.I. Ermakov (1987). In this case, the biochemical composition of raspberry fruit was determined before placing it in a refrigerated warehouse. Fruit size, sugar content, dry matter content, fruit moisture content, fruit temperature, pH indicators and berry weight were determined every 10 days during storage.

RESULTS AND DISCUSSION

The first stage of raspberry fruit storage was held in June. For storage in artificially cooled warehouses, raspberries were pre-cooled after picking. After cooling, the fruits was stored in the warehouse in various ways.

Before placing in the refrigerated warehouse, the weight of 1 piece of Polka fruit is 3,7 g, the diameter of the fruit is 2,2 cm, the sugar content is 14,5%, the dry matter content is

11,1%, the moisture content of the fruit is 88,9%, the pH is 3,20 and and the temperature of the fruit was 17 °C. In the Progress variety, the weight of 1 piece of fruit is 3,5 g, the diameter of the fruit is 2,0 cm, the sugar content is 14,0%, the dry matter content is 11,3%, the moisture content of the fruit is 88,7%, the pH is 3,30, and the temperature of the fruit was 18 °C. The weight of 1 fruit of the Sugana variety is 4,3 g, the diameter of the fruit is 2,7 cm, the sugar content is 15,1%, the dry matter content is 11,1%, the moisture content of the fruit is 88,9%, the pH is 3,36 and the temperature of the fruit was 17 °C. The weight of one Laszka fruit is 4,1 g, the diameter of the fruit is 2,4 cm, the sugar content is 14,7%, the dry matter content is 10,9%, the moisture content of the fruit is 89,1%, the pH is 3,33 and the temperature of the fruit was 17 °C (Table 1).

Table 1

Biochemical indicators of raspberry fruit before storage in cold warehouse (cold-storage temperature 2 °C)

№	Varieties	berry weight, g	berry diameter, cm	sugar content %	dry matter content %	moisture content %	pH	berry temperature °C
1	Polka	3,7	2,2	14,5	11,1	88,9	3,20	17
2	Progress	3,5	2,0	14,0	11,3	88,7	3,30	18
3	Sugana	4,3	2,7	15,1	11,1	88,9	3,36	17
4	Laszka	4,1	2,4	14,7	10,9	89,1	3,33	17

Among the varieties, the Sugana variety stood out with 1 fruit weight and high sugar content. In the Progress variety, the weight of 1 piece of fruit was the lowest compared to other varieties.

The quality indicators of the fruit of raspberry varieties were determined every 10 days during storage in a refrigerated warehouse. After the storage process in the refrigerated warehouse, the quality indicators of the fruits were summarized and had the following indicators (Figure 1).

The weight of 1 fruit of the Polka variety is 3,0 g, the diameter of the fruit is 1,7 cm, the sugar content is 15,0%, the dry matter content is 14,6%, the moisture content of the fruit is 85,4%, the pH is 3,34 and the temperature of the fruit is 1 °C established. In the Progress variety, the weight of 1 fruit is 3,1 g, the diameter of the fruit is 1,8 cm, the sugar content is 15,2%, the dry matter content is 15,0%, the

Figure 1. Determination of biochemical composition and quality indicators of raspberry fruit in the laboratory.

moisture content of the fruit is 85,0%, the pH is 3,43 and the temperature of the fruit is 1 °C established. The weight of 1 fruit of the Sugana variety is 3,8 g, the diameter of the fruit is 2,4 cm, the sugar content is 15,3%, the dry matter content is 14,7%, the moisture content of the fruit is 88,5%, the pH value is 3,45 and the temperature of the fruit is 1 °C established. Laszka fruit weight 3,5 g, fruit diameter 2,0 cm, sugar content 15,1%, dry matter content 14,3%, fruit moisture 85,7%, pH 3,45 and fruit temperature 1 °C constituted (Table 2).

Table 2

Biochemical indicators of raspberry fruit arter storage in cold warehouse (cold-storage temperature 2 °C)

№	Varieties	fruit weight, g	fruit diameter, cm	sugar content %	dry matter content %	moisture content %	pH	fruit temperature °C
1	Polka	3,0	1,7	15,0	14,6	85,4	3,34	1
2	Progress	3,1	1,8	15,2	15,0	85,0	3,43	1
3	Sugana	3,8	2,4	15,3	14,7	85,3	3,45	1
4	Laszka	3,5	2,0	15,1	14,3	85,7	3,45	1

During storage, it is possible to observe a decrease in the weight and size of fruits, moisture and temperature of fruits, and pH indicators in all varieties of raspberries. On the contrary, it was observed that the amount of sugar and dry matter in the fruit increased.

CONCLUSION

In the process of storing the fruits of raspberry varieties in a refrigerated warehouse, it was observed that the weight and size of the fruit decreased, and the amount of sugar and dry matter increased. Among the varieties after storage, the Polka cultivar lost 0,7 g of weight and had the highest index among the varieties. After storage, the weight of 1 fruit of Polka variety was 3,0 g. The highest sugar content was 15,3% in Sugana variety, while the lowest sugar content was 15% in Polka variety.

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