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BASIC CHARACTERISTICS OF THE RASPBERRY MARKETING CHAIN AND POSITION OF THE SMALL FARMERS IN SERBIA

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Abstract: The raspberry is one of the most important export products of Serbia. According to FAO data about 80,000 tons of raspberry are exported annually from Serbia with a total value of 165 million USD (2011). That is why the Republic of Serbia is one of the major exporters of this product. Raspberries are mainly exported in the frozen form. The raspberry are mainly grown on small farms, where the farm owners and their families carry out all necessary activities, with the seasonal labor hiring during harvest of raspberries. Positive trends in production are both the result of favorable climate conditions and the knowledge and skills of producers. The increasing demands of customers in terms of product safety, recently led to the development of quality systems that are mainly related to the processing of the products. However, the increased liberalization of international trade and increased risks in the area of food safety stress more attention to the health and safety of the products in primary production as well. It is expected that the primary producers with introducing a quality system achieve better position in the marketing chain. This paper aims to analyze the main characteristics of the raspberry marketing chain and position of small producers from two perspectives - the first one is position of the participants at the beginning of the marketing chain, and the second one is

the assessment of the effects of introduction the quality system on the volume of production and sales, as well as on the selling price. The research shows that the marketing chain of primary producers is short, and ends by the nearest cool storage. Introduction of quality systems create additional cost for producers and increased product quality. However, data do not show that higher quality standards are reflected in higher market prices.

Keywords: marketing chain, raspberryes, small producers

INTRODUCTION

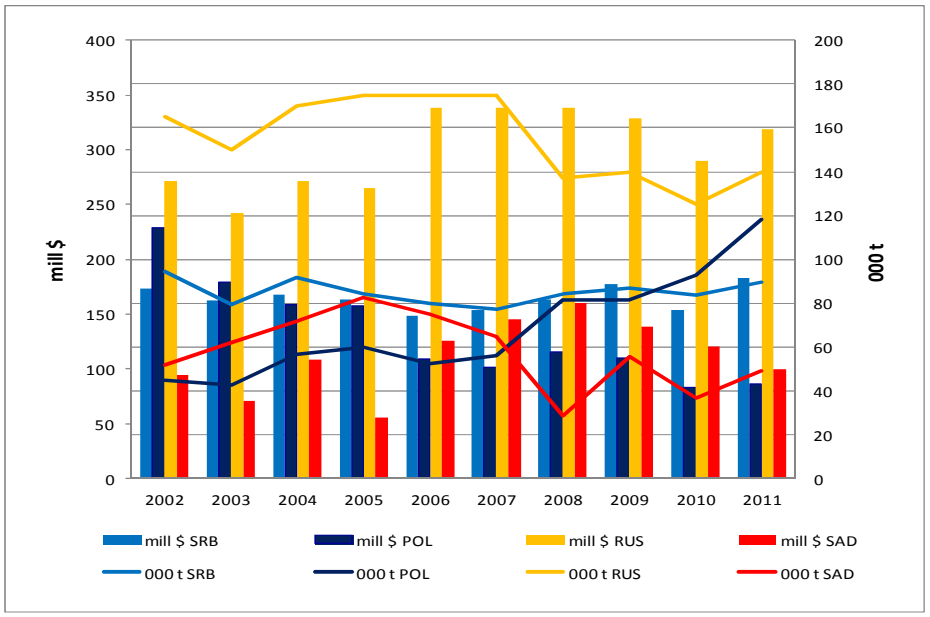
Growing of raspberry in the Republic of Serbia has tradition over a century. At the beginning it was cultivated as a garden crop and had no great economic importance. In the recent years it has become the most important berry product both by volume and by value of production. Raspberry is one of the most important export products of the Republic of Serbia.

Raspberry is a significant and valued fruit, primarily due to a pleasant, aromatic and refreshing taste. In human nutrition it is used as the fresh i.e. the dessert fruit, or in the form of various processed products: juices, syrups, compotes. Because of the high quality fruit it represents one of the most admired fruit species. Due to its specific taste, aroma and medicinal effects, the raspberries are increasingly consumed both in Serbia and all over the world.

The Republic of Serbia has favorable agro-ecological conditions for the raspberry production. An unpolluted soil, suitable climate, plenty of sunshine, make that the raspberry produced in this region has better characteristics, more intense flavor, color and taste than the raspberries from other countries. The central and western parts of Serbia are of the most important areas in the world for the raspberry production. This is particularly the western part of Serbia, whereas on the small area there is concentrated a large production in the well-known raspberry-yards.

The production of raspberry has growing tendency in the recent years and in 2011 it reached a level of 543 thousand tons, at the growing area of 100 thousand hectares. The most important producers of raspberries in the world are Russia, Poland, Serbia and USA. In the Graph 1 there are shown the production volume in tons and value of production in mill. $ in mentioned countries for the period 2002-2011. Based on these data it can be concluded that the volume and value of raspberry production in Serbia is likely to increase.

Graph 1: The volume and value of raspberry production in the countries the most important world producers (2002-2011)



Source: www.fao.org

The raspberry has been grown in Serbia on 15.3 thousand hectares with a production of 89.6 thousand tons (2011). The yield is on the level of 5.8 tons per hectare.

The biggest surfaces under raspberries in Serbia are in the Arilje area (around 1,000 hectares) and in the Ivanjica area (10,000 hectares). "Ariljska raspberry" is a synonym for a high quality and it has been protected by geographically origin indication (the registration number 52: *http://www.zis.gov.rs)*. This would increase the product competitiveness (Zaric at al., 2008). Arilje has protected the geographical origin of raspberries, but it should be also done even by the producers from other areas. This area is characterized by the highest concentration of raspberry plantations in the world, the highest yield per hectare, excellent quality and the existence of a significant cold storage capacity.

In production of Serbian producers there are two dominant varieties of raspberries - "*Vilamet*" presented on 87% of total raspberry area and "*Miker*" which is a little bit more productive variety. In Poland it has been introduced a "*Polana*" variety which gives yield during a few months a year well distributed in several months, so there is no "bottleneck" in the course of harvest and labor force could be better distributed as well. The "*Polana*" variety is very productive with the yields between 15 to 20 tons per hectare. More and more producers in

Serbia use Polish experience and so far this raspberry variety gives excellent results. However, revenues from the export of raspberries would be far greater if the dominant export products should be the processed products based on raspberry (e.g. marmalade, jam, compote). At the moment 97% of the Serbian raspberry export makes the frozen raspberries. Serbia faces an important task to use the existing agrarian resources and to take advantage of products with protected geographic origin *(http://glassrbije.org/privreda/srpska-malina-vrhunskog-kvaliteta* and *http://www.aleksinac.net/biznis/poljoprivreda/proizvodnja-i-potrosnja-malina-u-srbiji-voce-koje-jede-rak-.html).*

The secret of the Serbian raspberry success is in its production on small traditional family plantations with average size of 0.36 hectares, where the harvest is done by hand, where in the Arilje raspberry-yards it has been achieved a yield even up to 30 tons per hectare. Such average area could be well cultivated and harvested by the traditional family labor, with hiring of 2-3 seasonal workers in the harvest campaign (Gulan, 2011).

After harvest, the raspberries are transported from farms to the cold storage where it is performed the removal of impurities, then the sorting and quick freezing. From the cold storage the strawberries are sold to the foreign wholesalers. The longest storage period of the frozen raspberries could last until the next production season. If the weather conditions permit, the raspberry sorting is done even on the production plots, but it is more frequent in the cold storage. Small producers are not the owners of cold storages and their marketing chain ends with the sale of strawberries to the cold storage.

Because of different product quality and prices that are achieving, each raspberry producer directly delivers raspberries to the cold storage. It is obvious that the benefit of quality is higher than it would be of the savings in the transportation costs or in waste of time that producer has during the sale. Appropriate product labeling, which would mark in the collective transport who is the owner of raspberries, obviously is not a solution for the raspberry producers. In addition to logistical problems in organizing transport for many small producers because of loading, handling, etc., apparently there is a problem of trust and responsibility if it should be organized the joint marketing of the products.

However, the position of small producers depends on developments in the marketing chain, not only to the cold storage, but even when the goods leave the cold storage, i.e. up to the end customer.

The raspberry producers are small providers and individually they can not influence the price. Since they have no refrigerating capacities after raspberries' harvesting, they must sell their products immediately after harvest. Adjustment

of the quantities by an increase of area is limited due to intensive competition and high selling prices, or renting of land. Advanced producers, as a rule, have exhausted the possibilities of increasing productivity, so their only option is to increase the quality. This option they use by introduction of the quality system relating to the product safety. By introduction of the quality system the emphasis is placed on solving the critical phases in which it could happen endangering of the certified products.

In order to provide higher quality of products and implement the system of quality, the producers among other things have to meet certain requirements in terms of production, application of appropriate agro-technical measures and plant protection chemicals, optimal amount of mineral and organic fertilizers. In addition, each step or procedure must be documented. As a necessary measure it is imposed an overcoming of the harvesting problems. The raspberries must be picked up by using gloves otherwise one could not pass strict control of exports.

The raspberries producers from Arilje have introduced the Global GAP quality system. There have been established 20 farmers' groups with 10-15 of raspberry producers. Leaders of the groups are not producers but traders or processors. After establishment of the groups, in the second phase they plan to purchase equipment for the analysis of the pesticides and heavy metals' residues. In the third and final phase, the producers plan to improve distribution and marketing (Internal 1, Internal 2, Internal 3).

The marketing concept has to become the dominant in their operating, because only in this way of thinking and acting they can achieve better production results. It implies the fulfillment of the customers' requirements together with achievement of positive financial results, as well as an application and optimal combination of all marketing mix tools (Vlahović, Tomić, 2003).

An introduction of the quality system refers to the following elements: production processes - traceability, record keeping, choice of varieties; management of surfaces; the use and storage of fertilizers; irrigation; the use and storage of pesticides; harvest of raspberries; cold storages, waste management and pollution; health, safety and well-being of labor; protection of the environment, etc.

This paper aims to analyze the main characteristics of the raspberry marketing chain and position of small producers from two perspectives - the first one is position of the participants at the beginning of the marketing chain, and the second one is the assessment of the effects of introduction the quality system on the volume of production and sales, as well as on the selling price.

1. METHODOLOGY

In this paper there were used data collected from the farms for the 2006-2012 period. For assessment of the marketing chain it was used the SWOT analysis, and for the effects of the quality system introduction it was used the Quality Cost Index (QCI).

RESULTS AND DISCUSSION

Table 1: SWOT analysis of the raspberry production

Strengths	Weaknesses
• It is possible a delivery of raspberries several times a day • Application of the quality system depends exclusively on the farm owner and his family members • The quality control of the operations done by hired labor force is simple because the owners of the farm are also doing all operations in the raspberry plantation • The required quantity of products in one package could be simply evaluated • It can be done at the farm classification of the products by the quality • There is a chain visibility because after selling of raspberries to the trader, all risk and eventual costs have been transferred onto the trader • Advanced producers even before the implementation of the quality system had the functional system, so an introduction of the quality system did not require higher level of adaptation	• Each producer offers a relatively small amount of the product and can not influence the level of prices • The knowledge and skills, the understanding of quality and managerial skills of producers differ from one to another producer • The perception of quality is different • An interest in the extension of the marketing chain is different, mainly because of the perception of risk • Different expectations regarding the positive effects of the marketing chain extension • Different views on certain elements of the quality system
Opportunities	**Threats**
• The high-quality products are more likely to have better market valuation • Natural characteristics of area give a specific taste which together with the quality systems should lead to the increased demand • The processes of integration will further facilitate the procedures and accesses to developed markets	• The threat of increased competition from existing producers coming from other countries with more favorable prices but less quality of raspberry • The appearance of the producers from the third countries that do not have a tradition in raspberry production • Lack of institutional support • New regulations and legislation • The market does not value appropriately goods produced respecting the quality systems

Source: Own research done by the authors

An introduction of the quality system aiming at improvement of the position in the distribution chain creates additional costs for the producers. In research of this type of costs it is usually used the PAF model (Feigenbaum, 1961), which is described and applied even for the situation in Serbia (Đekić et. al. 2013). The essence of the concept suggests that the costs related to quality can be divided into three groups: (a) prevention (P) costs considered consulting and training activities for implementing and maintaining existing quality and food safety system; (b) appraisal (A) costs considered the costs of evaluating the achievement of quality requirements; and (c) failure (F) costs consist of internal and external ones.

$$TQC = \Sigma C_P + \Sigma C_A + \Sigma C_f$$

whereas TQC(s) are the total safety/quality costs per unit of product, ΣC_P is the summation of all prevention costs per unit of product, ΣC_A is the summation of all appraisal costs per unit of product and ΣC_f is the summation of all failure costs per unit of product. A Quality Cost Index (QCI) based on sales and PAF data was defined as follows (Lupin et al., 2010):

$$QCI = TQC/Net\ sales\ x\ 100$$

An introduction of the quality system leads to the increased sales volume and higher selling prices. As they can not increase the production, the producers have the only possibility to improve the quality. An analysis of the raspberry selling prices for the producers shows it is evident that in the period since an introduction of the quality system (2006) it has come to an increase of price, while since 2008 there has come to the decrease of prices.

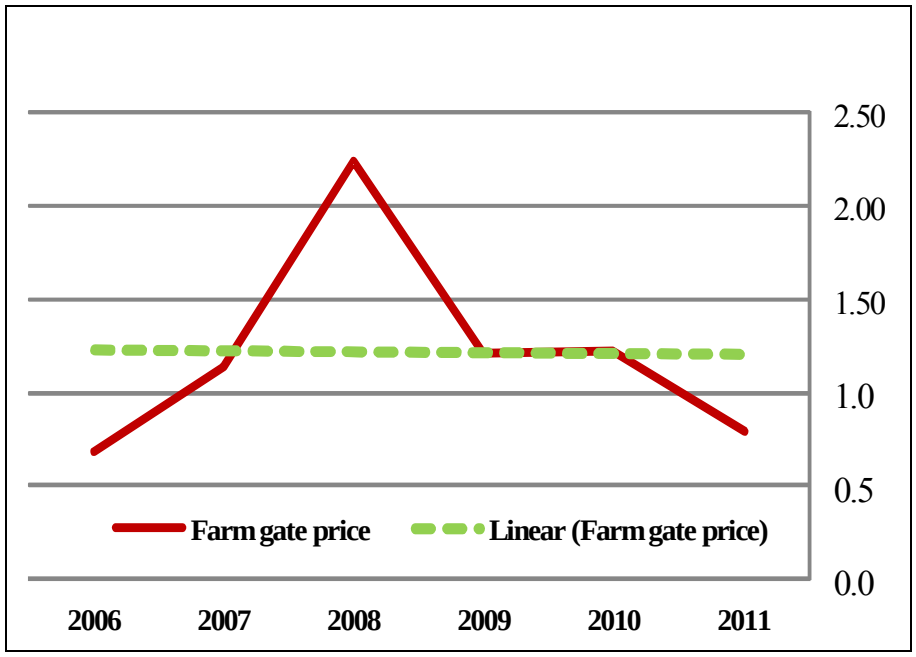
It is important to stress that usually the producers do not keep any records, because it is not possible to make additional relevant conclusions. However, it can be concluded that other factors have a greater impact on pricing than an introduction of the quality system.

This refers primarily to the power, i.e. monopoly position of the cold storage owners that have the capacities for the raspberry cooling and refrigerating, and without which the raspberry producers could not establish the prices. Introduction of quality system is a factor which has great influence on the product. Namely, a product where it is introduced the quality system has advantage compared to the one where the quality system has not been introduced. The quality system gives the added value to the product.

The estimated costs of quality system introduction amount to about 1,000 € per farm, while the system maintenance costs practically do not exist, because the owners are controlling the processes by themselves and implementing the

operations that they prescribed by the standards. Also, there are no costs of possible internal or external defects, as the farm owners have a high interest in avoiding such mistakes. Engaged external labor force is strictly controlled, so their mistakes are also kept to a minimum.

Graph 2: The selling price of raspberries for producers



Source: Own research done by the authors, based on Andrić farm from Ivanjica

Due to lack of records as well as the low costs, presentation of obtained results by utilization of the QCI indicator would provide much better situation than it is in real practice. In order to obtain more accurate results, it would be necessary to have data at the farm level. However, these limitations do not diminish the quality of the findings analyzed in this paper.

The results show that the small farmers, regardless of the short marketing chain, can improve their position by adapting to the customers' requirements and that an increase of the quality does not necessarily mean the higher costs.

Briefly, the analysis showed that small farms that produce quality products, respect the procedures and requirements of the customers, are able to improve the position in the marketing chain. It can be expected that these types of farms in the future seek to extend the marketing chain and have long-term agreements with their customers.

CONCLUSIONS

The research shows that the marketing chain of primary producers is short, and ends by the nearest cool storage. Introduction of quality systems create additional costs for producers and increased product quality. However, data do not show that higher quality standards are reflected in higher market prices.

By introduction of the quality systems, the small Serbian producers improve its negotiation position in relation to the customers. However, on the basis of the raspberry price changes at the farm, it can be noticed that the price is more influenced by some other factors (e.g. the demand conditions or power of the processors) than by introduction of the quality system.

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The cold storage "Flora" Ltd. from Ivanjica and Innovation Centre for Agriculture Arilje have disclosed the documentation used in this paper.

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