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ECONOMIC DETERMINANTS QUALITY OF FRUITS

EKONOMSKE DETERMINANTE KVALITETA VOĆA

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SUMMARY

The quality of fruits is often defined as the sum of the differently associated fruit properties - external and internal mechanical, physical, chemical, organoleptic, from which certain state and favourableness emanate in sense of meeting the technological and nutritive requirements of the fruit as food. The properties which contribute most to the quality of fruit are: sensuous, organoleptic - especially ratio of sugar and acid, flavour and its significance and chemical-biological - content of vitamins, microelements and enzymes, as well as absence of pesticide residues.The quality of fruit depends both on favourable characteristics of fruits for satisfying physiological needs of human organism,on the one hand, and causing a significant level of pleasant feeling while being used, on the other hand. Bearing in mind the increasing demands set by the customers and international quality standards, the paper deals with economic aspects of the quality concept of agricultural-alimentary products, with special emphasize on fruit quality.

Key words: *quality, standards, economic determinants, fruits.*

REZIME

Kvalitet voća se najčešće definiše kao suma različito povezanih svojstava plodova - spoljašnih i unutrašnjih, mehaničkih, fizičkih, hemijskih i organoleptičkih, iz kojih proističe određeno stanje i povoljnost u smislu zadovoljenja tehnoloških i nutritivnih vrednosti voća kao hrane. Svojstva koja najviše doprinose kvalitetu voća su: estetska, organoleptička - naročito odnos šećera i kiselina, arome i njena izraženost i hemijsko-biološka - sadržaj vitamina, mikroelemenata i enzima, kao i odsustvo štetnih supstanci rezidua pesticida. Znači, kvalitet voća je uslovljen prvenstveno povoljnošću plodova da što uspešnije zadovoljavaju fiziološke potrebe ljudskog organizma, uz istovremeno postizanje značajnog stepena prijatnosti pri njihovom neposrednom korišćenju.

Polazeći od sve većih zahteva potrošača i međunarodnih standarda kvaliteta, u radu će biti sagledani ekonomski aspekti pojma kvaliteta poljoprivredno-prehrambenih proizvoda, s posebnim osvrtom na kvalitet voća.

Ključne reči*: kvalitet, standardi, ekonomske determinante, voće.*

INTRODUCTION

Fruit production comprises substantial developmental potential due to extremely favourable natural endowments for the growing of all continental fruit varieties and ever increasing demands for fruits and fruit products on the domestic and world markets (Milić and Radojević, 2003). However, apart from the increase in the market demands for fruits and fruit products, harsher requirements regarding fruit and fruit product quality are posed (Vlahović *et all*, 2008). Having taken into consideration the importance of the European market for the marketing of our products and the successful exchange of goods, capital, information, and work, it is necessary to establish a common quality system with the EU. Consequently, products ought to meet the requirements and standards of the ISO 9000, ISO 14000 and HACCP (Hazard Analysis and Critical Control Points). In order to increase fruit production in volume and quality, the regionalisation of fruit production in favourable areas has to take place. Fruit quality is a market feature because the quality is linked to fruit properties, the place of origin, and applied cultural practices (Ćejvanović, 2007). From the viewpoint of consumers, the quality features of fruit varieties are assessed by colour, taste, shape, and size.

International standards established by the International Organization for Standardization ISO have defined the quality application and management within all the stages of production, processing, and marketing. The quality management system, ISO 9000, is the essence of modern production. Food production is integrated within the system as well (Babović, 2005). The European Union has established the system of management and standards ISO 14000 and has defined the legal protection for consumers. HACCP is a systematic approach to the identification, assessment, and observation of microbiological, chemical, and physical hazards which accompany food handling. HACCP is applied in production, processing, and services aimed at preserving the wellbeing of people and environment from chemical, biological and physical agents. The control system protects the domestic market from the import of the goods which are hazardous for the health of the people and enhances the export.

MATERIAL AND METHOD

The subject of the research is fruit quality as a significant constituent of agricultural food products. The aim of the research is the comprehension of the concept of quality, quality management factors, and underlying economic determinants of fruit quality assessment. Considering the consumers' rightful expectations of food health security, the responsibility is increasingly passed onto the producer of agricultural food products while the quality management systems growingly serve as an important tool of self-control. In this paper, based upon empirical facts from various sources of literature, as well as hypothetical presumptions, an attempt is made towards defining the basic quality factors of fruits which will pose optimal requirements to be fulfilled by all the members of chain from producers to consumers.

RESULTS AND DISCUSSION

The concept of quality.

The issue of quality is very important hence it represents an essential constituent of market competitiveness which influences the decision of purchase. On the open world market, under the

circumstances of free competition, there is an ongoing struggle for market supremacy by means of quality. The market supremacy is not established by low pricing but by "sufficiently high" quality which enables the victory over the competition. The market conquest by means of quality entails secure and long-lasting marketing of products and services which is one of the basic factors of the company's longevity.

Quality is very difficult to define. According to Urošević (1971), "Quality represents the measure of product consumption value, i.e. the measure of its capacity to satisfy consumers' requirements and the requirements of the market. Crosby (1979) states that "Quality is the capacity of meeting requirements", while Juran (1994) claims that "Quality is expression of product usability" or "Quality is all that consumers recognize when they feel that a certain product or service satisfies their needs, as the properties of that product or service meet their expectations." The overall quality is determined by the following premises on improving quality: quality is in the eyes of consumers; quality needs to be reflected not only in a company's products, but also in every activity of the company; quality is to be the responsibility of all the employees; quality can always be improved; quality need not necessarily cost more; quality is important but not sufficient (Senić, 2000).

Economic determinants of quality

According to Rakita (2001) the International Organization for Standardization (ISO) claims that "quality is a set of all the properties and features of products, processes and services, which refer to their capacity to satisfy the already determined needs or indirectly expressed ones." The product quality in industry predominately refers to the quality of a product in the process of production, regardless of whether the finalized industrial product represents producer's goods (equipment, materials or components for other products) or consumer's goods (permanent or temporary). According to European Organization for Quality (EOQ), product quality represents a set of properties that serve to achieve certain level of service, in order to provide for higher quality of people's working and living conditions. Therefore, it is important to perceive the place and role of certain parameters of product quality which can be used both to influence quality in the process of production, and to influence the way of using quality in the process of exploiting (Sredojević et all, 2008).

The issue of supplying fruit processors continuously with the necessary raw materials needs to be regarded from both quantitative and qualitative aspects (Milić et all, 2007). The qualitative aspect is closely related to the crop selection and improvement in fruit production. Namely, the quality of the processed products depends directly on the quality of existing varieties, which need to have optimal properties for processing (Table 1).

Table 1: Important quality properties
Tabela 1. Značajne osobine kvaliteta

Properties	*Quality*
Definition/notion	Subjective
Dimension	Value-based
Purpose	Functional
Measurability	Difficult
Significance	Primary

After examining quality, it is possible to rank general features of quality in the following way:
*it is a complex category, which comprises the features that are related to consumers' needs
*it represents the basis for consumers' judgment and expression of their satisfaction
*it is does not depend on space and time
*it has the aim to describe the product or the process of satisfying needs
*it is a subjective category

According to Cons (1989), quality is a balance of the following four requirements: *technical-technological* – physical, chemical and biological requirements; *moral* – not to inflict any damage; *market* – satisfying consumers; *economic* – satisfaction of entrepreneurs (Figure 1). *Technical-technological* and *moral* requirements represent social interest, while *market* and *economic* requirements represent the interests of consumers and producers. Quality depends on the value system and judgments of consumers, producers and the society. Consequently, quality changes in time, due to changes in consumers' requirements, value systems, as well as the changes of conditions of production and consumption processes.

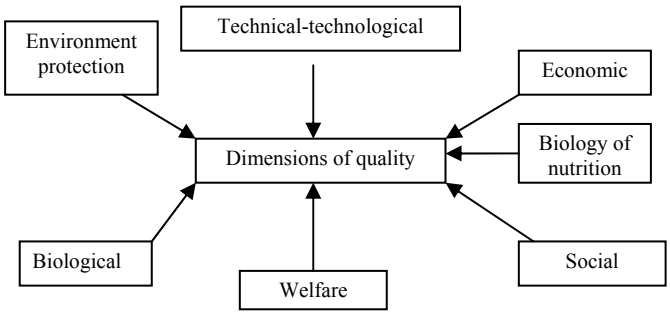

Fig. 1. Dimensions of quality (according to Lang, 1997)
Sl. 1. Dimenzije kvaliteta (prema Langu, 1997)

For agricultural-alimentary products, there are three kinds of product quality: *organoleptic* – appearance, taste, colour and scent; *commercial* – degree of preparedness of every product per unit of measure, and *technological* – suitability of a product for processing and application of certain technological procedures.

Determining fruit quality.

Fruit quality is most frequently defined as a sum of differently related properties of fruit (external and internal, mechanical, physical, chemical or organoleptic properties) which together result in certain state and favourability of crops to achieve technological and nutritive values of fruit as food. Organoleptic, sensory, morphological-physical, even alimentary-physical properties of fruit are of great importance (Vlahović, 1999).

Implementation of the concept of total quality enables, among others, simultaneous increase of the product class and product quality, which results in consumer's readiness to pay a higher price for the product; on the other hand, it leads to reduction of production costs which results in increasing profit for producers (Sredojević et all, 2009).

International standards precisely define the properties of fruit quality and measuring the quality. Among a great number of qualitative properties of fruit, the most significant are the following ones: size, regular shape, the colour of epidermis and lack of external damages. The size is determined by a fruit diameter and weight. A fruit shape is a ratio between its height and width.External damage are characterised by presence of points,stabs,other admixture, etc. Recently, the degree of colouration has started to be objectively determined. It generally refers to the colour of epidermis, as the colour of fruit reflects not only the quality of fruit, but also the degree of their ripeness. Taste

and scent can be determined by sensory analysis of fruits. Generally speaking, fruits are considered to be high-quality fruits if they are: healthy, without mechanical damages, intact, clean, with no admixtures, tasty and pleasantly scented.

Based upon the presence of the abovementioned properties, fruits (products) can be classified into: Exceptional, I and II Class (Peševski, 2003). *The Exceptional Class* – comprises fruits of excellent quality according to the appearance with high colour intensity and distinctive variety shape. They should be packaged within the so-called physiological packaging (vacuum sealed in foil) thus the decrease of O_2 occurs during the breathing of fruits accompanied with the increase of CO_2 which slows the ripening and prolongs the expiry date. For instance, the size of apple fruits of large-size varieties should be 65 mm, whereas the fruits of small-size varieties should be 60 mm. *The I Class* – comprises fruits of good quality, with no shortcomings, and assiduously packaged. For instance, the size of apple fruits should be from 55 mm to 60 mm. The difference in fruit size within a single packaging can be up to 10 mm in diameter. All the defects per a single fruit can total to a maximum of 1 cm^2. *The II Class* – comprises the fruits which display certain shortcomings within the margin of tolerance but they ought to meet the minimum of quality requirements. Within this class, e.g. the size of apple fruits is from 50 to 55 mm. The acceptable shortcomings on the epidermis are up to 2.5 cm. Certain deviations can be tolerated, namely: 5% for the Exceptional Class and up to 10% for the I and II Class. On every packaging label the following should be clearly stated: the name of product, the variety, the producer, the place of origin, the category (class) of product, the gross and net weight and other indicators of quality.

CONCLUSION

Within the conditions of contemporary living and ever increasing consumers' demand, as well as the implementation of international standards, the fruit quality requires diverse perspectives – biological, nutritive, commercial, economic, etc.

Among the numerous properties of fruit quality the following are most accentuated: size, shape, the colour of epidermis and lack of superficial defects. Based upon the presence of the abovementioned properties, fruits can be classified into: Exceptional, I and II Class. Apart from the technical and technological parameters of fruit production, the quality of final products depends considerably on the preparation of fruits for sale – the type and manner of packaging, marketing, etc.

The issue of quality is very important hence the quality itself provides the means of market conquest and advantage over competition. The quality should be managed during production, processing, transport, storage, packaging, i.e., during all the stages through which a product must go to reach the final consumer. With well-organised management and managing, the competitiveness is established as well as the increase in profit and satisfaction of the customer's demand.

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