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THE QUALITY AND SAFETY THROUGH ORGANIC FOODS SUPPLY CHAIN IN BULGARIA

M. Lubomirova¹, E. Vassileva¹, D. Ivanova¹, P. Mishev²

¹Department of Commodity Sciences, University of National and World Economy, Studentski grad, Sofia 1700, Bulgaria

²Department of Agribusiness, University of National and World Economy, Studentski grad, Sofia 1700, Bulgaria

Abstract

The organic food market in Bulgaria is newly emerging and is comparatively small. The share of realized Bulgarian organic produce in the country is below 5 %. The purpose of this article is to determine the effect of the structure, management and functioning of food supply chain upon the quality and safety of organic food regarding consumer demand. The scientific research was based on Delphi's enquiry method and 26 Bulgarian experts were interviewed.

The results show that the nature and character of organic food production is one of the most secure and sustainable agricultural productions, which determines the high quality and safety of the final produce. According to experts, food safety in addition to taste and nutritional value is the most important quality criteria for organic products.

The main objectives of the current GMP (Good Manufacturing Practices) and HACCP (Hazard Analysis Critical Control Point systems) are to ensure product safety and compliance with the visual size and labelling specifications and to maintain traceability. However, they are thought to be less well developed and implemented in organic food supply chains, and are almost never used in short local (e.g. direct sales or farm shop) supply chains and regional (e.g. farmers market) supply chains, that are popular in Bulgaria.

The systems of quality assurance and management (ISO 9000, etc.) may be successfully adopted for organic foods as well by adapting them to their production and processing specifics and to the characteristics of the chain of supply.

Introduction

Compared to the countries of the European Union where organic agriculture has had traditions for decades the interest in it in Bulgaria is a comparatively recent phenomenon. Taking into consideration the specifics of Bulgarian agriculture and the natural resources of the country we can say that the production of organic products is apt for our country. The total amount of planted organic cultures is over 12.2 thousand hectares, or about 1.2 % of the arable land. The plan of the agricultural ministry of Bulgaria [1] envisages 8 % of the used land to be cultivated with organic methods in 2013.

The organic food market in Bulgaria is newly emerging and is comparatively small. The share of realized Bulgarian organic produce in the country is below 5 % [2]. Granting safety and

quality of the certified organic produce in Bulgaria is of paramount importance to all interested parties along the chain of supply.

The quality and safety of organic foods have become the focus of numerous surveys.

Sensor aspects of quality of fruits and vegetables produced by the method of organic agriculture have been researched by Johansson, Haglund, etc. [3].

The basic topic of the conference of UN Food and Agriculture Organization (FAO) for Europe in 2000 was the impact of organic agriculture on food safety and quality [4]. In 2000 the distinguished British Food Standards Agency (FSA) conducted a survey on the content of pesticides in organic foods within the framework of activities on food standardisation [5].

The review, published in Britain in 2001 by the famous association of organic agriculture Soil Association compares organic and conventional foods according to several criteria: food quality aspects (food ingredients, health effect etc.) and hygiene-quality aspects (pesticides, micro-bacterial infectiousness, antibiotics, nitrates, genetically modifies organisms, etc.) [6].

The French study [7, 8] on quality and safety of organic foods established again that with respect to nutritional values these products are not much different from the ordinary ones. Differences were found in the content of some specific substances, contained only in the organic foods. This makes the monitoring of some areas necessary and reaffirms the systematic approach of organic agriculture as a potential model for more sustainable strategies for food safety.

In the light of food safety a detailed assessment of direct and indirect potential influences on the standards and regulations on the production of organic food was made [9]. Early identification of hazards along the chain of production of foods on the European market and the creation of a comparative data bank for assessment of health hazards for consumers of organic goods produced under various methods was the focus of a large-scale survey, which was started in 2004 [10].

There is very little data in reference literature about the quality and safety of organic foods along the supply chain. The purpose of this article is to determine the effect of the structure, management and functioning of food supply chain upon the quality and safety of organic food regarding consumer demand.

Methodology

The approach followed in this study is based on a Delphi analysis performed on a sample of stakeholders. A standard stakeholder analysis aimed [11] at classifying a sample of stakeholders in terms of influence and involvement throughout organic foods supply chain, was implemented (Table 1). The survey was conducted in the period November – December 2005 in one stage and the opinion of participants was studied through the in-dept method interview.

Discussion

Criteria for safety and quality of organic products through the viewpoint of the participants in the survey

The products of organic agriculture comply with the requirements of the strict norms and rules including safety and quality. The experts who participated in the survey unanimously state that the guarantee of organic products quality is the very manner of production.

All three criteria presented for comparison to the participants – safety, nutritional value and taste – are equally important for organic products and cannot be separated. In the present circumstances the best option is to combine these quality criteria, and some of the experts also point out the statutory requirement that only foods, which are safe for human health, can be offered on the market.

Table 1. Stakeholders' selection

N	Stakeholders' category	Number
1	Producers and/or processors	10
2	Distributors and/or merchants	5
3	Experts from government institutions	4
4	Experts from non-government organizations and consultants	3
5	Certifying organs and controlling agencies	2
6	Consumers	2

The respondents present the shared relation between them in the following manner:

- *Safety is a more important criterion compared to nutritional value of the product* – for organic food consumers the nutritional value is a significant motive for purchase but they will consume it only if it is safe for their health;
- *Safety is a more important criterion compared to the taste of the product* – organic foods are different from their conventional analogues in their taste, flavour and smell. These are the most important indices characterizing the quality of organic foods but they are irrelevant to consumers if these delicious and flavoured foods are harmful to their health.

The impact of the chain of supply on quality and safety of organic products in Bulgaria

The respondents emphasize the fact that in its essence and specifics organic agriculture is one of the safest and most sustainable agricultural productions, which determines the high quality of safety of the end product. The following conclusions related to the impact of supply chain on the quality and safety of organic products in the country can be outlined:

- *Responsibility of all interested parties along the chain* – all the participants along the chain of supply of organic foods have to conform to the requirements for safe and quality production, safekeeping and vending of the products. All of them have an interest to be informed and to take measures for complying with the high standard of safety and quality of the product;
- *The danger of “cross contamination” with conventional products* – when organic products are handled by intermediaries down the chain of supply, during the process of distribution, transportation, safe keeping and vending there might appear the so-called “cross-contamination” – contamination with conventional products. Organic standards include obligatory requirements for safekeeping, transportation and processing of organic products and if they are followed the risk for safety is minimal. In big retail chains which have their own programmes for testing the quality of the product (especially that of new suppliers) the danger of replacement with conventional product is minimal unlike the vending of organic foods on municipal market places;
- *The need for stronger control and traceability along the chain* – organic production presupposes high level of *traceability*, which in turn guarantees the safety of the products. The control along the chain of supply of organic foods from production and processing to vending plays an important role in maintaining quality and safety through competent, independent and transparent procedures.

Possibility for occurrence of contamination of physical, chemical or biological nature along the chain of supply

Within the framework of the survey the participants presented their point of view on the possibility for contamination of physical, chemical or organic nature along the chain of supply of organic products. Here are presented the results on the different stages of the chain.

- *The stages of production and processing* – it is extremely probable and possible there to have occurrences of contamination of all three types and the implementation of good agricultural and production practices is a satisfactory solution to their identification and control. Part of the respondents, predominantly producers, believe that it is unlikely for such contamination to occur in the process of production and its is impossible in all the other stages, justifying this with the requirements of the organic standards;
- *The stages of safekeeping, distribution and vending* – in *packaged durable goods* there is a very slight possibility of contamination i.e. it is almost impossible contamination of physical, chemical and biological nature to occur. Here of particular importance is the distributor and the retailer to be familiar with the product, to know the specifics of organic production and that of the particular product as well as the manner of presenting it to the end user. Possible dangers can occur in the event of *tearing the packaging*, which is related to the introduction of better practices of distribution and trade. In products with *animal origin* there is a big possibility for occurrence of physical or microbiological contamination due to the nature of these foods. Organically produced *recent, fresh fruits and vegetables* are perishable that is why if they are not properly kept there is a great risk of attacks by pests in the storehouses or at the retailer's. It is very likely for them to be mixed with conventional products if the requirements for their separate storage are violated especially when they are directly sold or on the municipal market places. Its is quite unlikely contamination of chemical nature to occur if the requirements for separate storage of organic and conventional products are followed. Nevertheless, the scandal in Germany showed that the storehouse in which the cereals were kept was used for conventional product and was contaminated with pesticides.

Measures for maintaining quality and safety of organic products along the chain of supplies

The participants in the survey believe that it is necessary to adopt suitable measures (statutory and voluntary) for maintaining the quality and safety of organic products along the chain of supply – Table. 2 reveals in percentages the expressed approval or disapproval of any of the suggested measures.

Table 2. Will the adoption of the following measures along the chain of supply lead to the maintenance of quality and safety of organic products?

Measures along the chain of supply	Yes, %	No, %	Do not know, %
Adoption of good agricultural and other practices	95,2	4,8	0
Adoption of HACCP system	85,7	9,5	4,8
Implementation of quality management system ISO 9000	77,7	5,6	16,7

Indicative is the fact that all producers, which export organic products from Bulgaria, have adopted these methods (Good hygiene and production practices, HACCP, ISO 9000, etc.) in their production.

Statutory (mandatory) measures

Good practices: The adoption of *good agricultural, production, distribution or vending practices* will lead to maintaining the quality and safety of organic products down the chain of supply. An important emphasis is put on the *training* of all interested parties along the chain, connected with the accumulation of knowledge about organic products and how to present them to consumers. Some experts direct the attention to the fact that not only the adoption but also the *strict compliance* with the requirements of good practices will guarantee the high quality of organic products.

The principals of self-control grounded in the European regulations of the called “hygiene package” on food safety, adopted by Bulgarian legislation apply to primary organic agricultural products and foods as well. The requirements of the traceability model along the whole chain of supply with food products applies to certified organic foods as well.

HACCP system: The adoption of the principals of HACCP (Hazard Analysis Critical Control Point) in ensuring safety and quality of food products is mandatory in Bulgaria under the Foodstuffs Act and applies for *processed* organic foods. The implementation of the HACCP system along the chain of supply will definitely diminish the health risks for consumers of organic products.

Voluntary measures

Quality Management Systems (ISO 9000): The implementation of quality management system in compliance with the requirements of the *international standards of the ISO 9000* series will create a good organisation in the particular production facility. On the other hand holding a quality system certificate ISO 9000 does not mean that all the requirements for food safety have been fulfilled. The implementation of such systems of management will influence indirectly the quality and safety of organic products by achieving *permanent level of quality*. Quality Management systems ISO 9000 are suitable for big enterprises in the food production industry with big capacity. For small production, with which we associate the organic sector in Bulgaria, the *quality standards are less popular*, at the expense of the mandatory measures for ensuring quality and safety as well as good production and hygiene practices.

Conclusions

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