Rural development policies from the EU enlargement perspective
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Harmonization of legislation on food safety in Serbia according to the European legislation

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Publisher: European Rural Development Network, www.erdn.eu
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ISBN 978-83-7658-275-7 © Institute of Agricultural and Food Economics – National Research Institute, Warsaw, Poland
Abstract: Safe food is imperative for the modern market. Safe food means that the process which produced a safe and controlled primarily in the context of the plan of analysis and critical and control points that are under constant surveillance in order to process, if necessary, correct it and got a health safety product. Serbia is in previous period of time made great progress in terms of adapting legislation on food safety, the Act on food safety and applied already passed acts relating to this very important area. The aim of this paper is to review the legislation on safety from the point of consulting experience and problem associated with these activities, with emphasis on primary production.

Keywords: food safety, HACCP plan, the legislation, primary production, consultancy services, field crops, vegetable crop, food chain
Introduction

Serbia in the previous period made great progress in terms of adjustment of legal regulations on food safety in terms of the Law on Food Safety and application already passed acts relating to this very important environmental area. In this field apply the norms of global standards and Serbia is lagging behind compared to neighbouring countries in this regard. Legislative acts that are relevant to food safety are applied in large and small food producers in Serbia. Many companies have introduced or are in the process of introducing standards that will increase our export potential in both the countries of the European Union and beyond.

Safe food is imperative for the modern market. Introduction of ISO standards, primarily as the main factor and the basis for all other certification requirements leads to global harmonization of legislation in all areas of life. Safe food mean that the process which produced a safe and controlled primarily in the context of the plan critical and control points that should be under constant monitoring of process, if necessary, corrected and received produce safe product, or if the corrective measures do not give a satisfactory product, eliminated. Of course each production step i.e., certain stages of the production process must be accompanied by documentation that follows the principle of traceability. Hierarchy pyramid of responsibility in the production process mean level of responsibility in accordance with a position that may factor in our production process and awareness of all factors involved in the process of the importance of healthy and safe food.

ISO 9001 is an international standard that includes requirements for quality management system in business organization that the organization must meet in order to align its operations with internationally recognized standards. Quality System is a management system that leads to achieving the set goals in terms of quality performance and service delivery. This system consists of an organizational structure, responsibilities of the organization, processes and resources required for system management. ISO 9001 series of standards consists of:

- ISO 9000 - Fundamentals and vocabulary: a management system concept and the terminology used,
- ISO 9001 - Requirements: Criteria that must be met if you want to work in accordance with the standards and obtain certification.
- ISO 9004 - Guidelines for performance improvement: based on eight quality management principles which are used by senior management as a guiding framework for the organization with regard to the needs of all stakeholders, not just clients.

The quality management system to ISO 9001: 2008 standard is based on eight management principles. These principles can be used by management as a framework to guide organizations in improving performance. The principles are derived from the collective experience and knowledge of experts around the world who participate in the work Technical Committee ISO/TC 176
ISO 9001 is suitable for all organizations wishing to improve their way of management, regardless of size or activity of the organization. In addition, ISO 9001 is compatible with other management system standards such as OHSAS 18001 Management System Occupational Health and Safety and Security Systems and Environmental Management ISO 14001. They share many principles so that they can integrate. (http://www.iso.org/) The purpose of this standard is to increase organizational efficiency through the application process approach. Its advantage is to provide a link between the individual processes, sectors and their interactions. By defining the input and output elements of the process and defining the resources needed to create a basis for planning and feedback on customer satisfaction. This model increases customer confidence in the product/service and leads to better positioning in the market.

ISO 9001 specifies the basic requirements for quality management system that an organization must meet in order to demonstrate its ability to consistently produce their products (including services), thereby increasing customer satisfaction and meet applicable legislation.

Benefits of implementing ISO 9001:2008 standard:
- Acquisition and/or improving business confidence in familiar and more importantly potential customers,
- Improvement of the capacity and productivity,
- Focus on achieving business goals and customer expectations,
- Achieve and maintain a stable level of quality of products/services to meet the expressed needs and demands of clients,
- Increase customer satisfaction,
- The provision of the belief that the desired level of quality achieved and maintained,
- Creating opportunities to win new markets and increase share in existing markets,
- ISO 9001 certification by an accredited certification body,
- The opportunity to participate in tenders and bidding.

ISO 14001 are specific requirements for environmental management. Meeting these requirements is necessary to document that there would be evidence of meeting standards and efficient work in accordance with the standard. Systems on environmental management ISO14001:2004 is a management tool that allows organizations of any size to:
- Identify and control the impact of our activities, products and services on the environment,
- Improve the relationship to the environment,
- Implement a systematic approach that will achieve goals related to environmental protection and provide proof that it has achieved the goals.
Implementation of environmental management can refer to the entire company, a branch or single work process and the choice largely depends on the needs of the company.

The main reasons that lead to the expressed need for introducing a system of environmental ISO 14001:2004 are:
- Continuously polluting the environment,
- Fear of complete exhaustion of natural resources,
- Lack of organized and systematic monitoring result of pollution,
- Increased public interest in preserving the environment,
- Legal provisions
- Special working conditions in the affected areas.

The advantages of implementing an environment protection system ISO 14001:
- Reducing the negative effects on the environment,
- Reducing the risk of environmental disasters,
- Increase capacity rapid and effective intervention,
- Enhanced reputation and create confidence among the community,
- Competitive advantage,
- Legal security for compliance with the law on environmental protection,
- Easier permits and licenses from local and state authorities,
- Improve image of company and reputation of client,
- Better use of energy and water protection, careful selection of raw materials and controlled recycling, helping reduce costs and raise competitiveness,
- Reduce financial burden due to reactive management strategic such as repairs, cleaning, paying fines for breaking the law,
- Improves the quality of jobs and employee morale,
- Opening up new opportunities in markets where significant ecological production,
- Environmentally conscious customers are emphasizes their commitment to environmental protection.

Standard OHSAS 18001 (Occupational Health & Safety Assessment Series) is a standard that defines requirements for system management health and safety at work. Health Protection at Work is intended for organizations that are aware the importance of safety and health of social security of workers in all occupations and prevent injury. The implementation of this standard, the company acquired the confidence of stakeholders assuring them that management is committed to meeting the requirements of the policies of health and safety at work, the emphasis on preventive rather than corrective measure, it is possible to provide evidence that relates to OHSAS the entire organization, not only on process for which there is legislation or a zone of great risk, and that concepts of OHSAS involves a process of continuous improvement.
Benefits of implementing OHSAS 18001:
- a workplace injury to a minimum;
- provides protection from injury, to employees, and visitors;
- contribute to the readiness of companies to timely remove a threat;
- coordinate the work processes of the company with legal regulations;
- improving the overall image of the company;
- attract foreign investors;
- reassure users / customers a commitment to managing the health and safety at work which can be proved;
- opening new market opportunities for cooperation with large foreign companies which is one of the main goals of safety and health at work.

The basis of this system is safety of employees in the workplace, which is achieved through the following steps:
- Identification and risk assessment in accordance with legal regulations,
- Determining policy objectives of safety and health at work,
- Determine the risks to the workplace,
- Planning, development and implementation of health protection,
- Internal audits of management systems health and safety at work,
- Certification

Implementation and certification of OHSAS 18001 system protect the company from unwanted costs, provides more favourable contracts with insurance companies, improve relationships with government agencies, increases worker productivity by reducing injuries, and therefore the length of sick leave. http://www.ohsas-18001-occupational-health-and-safety.com/

European Union market requires products that are sold and marketed must meet the essential requirements for safety or technical requirements. The largest number of consumer products and industrial products which fall under the new approach directives must carry the CE mark. CE mark stands for "Conformité Européenne" (engl. European Conformity) a label of manufacturer that a product complies with EU guidelines and the relevant European standards referred to in the guidelines. Therefore the manufacturer certifies that his product meets all the requirements given in the Directive relating to that product, as well as the conformity assessment procedures performed. Member States may not prohibits, restrict or hinder the sale of such products, unless the provisions of the directives are not applied properly or there is a risk not covered by the directives applied. The advantages of the existence of the CE mark on the product:
- It is possible the free movement of goods in the market of the EU
- No additional national tests.

CE mark must be placed on:
- All new products, manufactured in the EU or third countries,
- Used goods imported from third countries
- Products that are already on the European Union, but are significantly modified, so that they can be considered a new product.
GLOBAL G.A.P.

The principles of Good Agricultural Practice are important in agricultural production and they transformed into integrated protection, control and inspection of agricultural products. Within this framework, it should be noted that the retailers have initiated the formation of consortia and introduction of commercial standards in the production and control of agricultural products. Of commercial standards in the European Union, first place belongs to EUREPGAP (European Retail Product and Good Agricultural Practice). It is important to emphasize that this is one of the most widespread international standards relating to primary production of fresh fruits and vegetables. EUREPGAP prescribe the conditions of production, mechanisms of inspection and certification.

EUREPGAP is also used as the GLOBALGAP. Note that agricultural practice standards are not legally binding, but represent the most important precondition for accession to the EU market. GLOBALGAP is for all agricultural producers, regardless of the type and the size of their production. The whole system was placed at the service of consumers under the principle that everyone has the right to food, quality and above all the prominent attention on safety. If the guaranteed safety of agricultural products, consumers have made it clear those are willing to pay more for such products.

GLOBALGAP is an international commercial production of primary standard which includes agricultural products and activities after harvest. This standard is designed to provide warranty and retail customers, and that all measures are taken to control and product was safe the health of consumers. GLOBAL certification system includes fruits, vegetables, flowers and ornamental plant, fisheries, livestock production and integrated farming, which is applied in over 45 countries worldwide. GLOBALGAP is designed by the large retail houses, whose activity is linked the trade of primary agricultural products (supermarket chains). In much of the retail network in the EU, this standard requires their use. In no other EU country is not legally regulated, but it is voluntary and mandatory for producers who wish to sell their products large retail stores.

Principles of GLOBALGAP standards:
- Production of high quality products,
- Protection of Environment,
- Optimal use of natural energy resources
- Support for agricultural production economically acceptable
- Combining the best available –profitable practice
- Improving the living conditions of local communities

GLOBALGAP standards are intended to achieve:
- Food safety using HACCP principles
- Using the principles of good agricultural practice
- Protection of Environment
- Health and Safety
- Taking care of social welfare of employees
- Taking care of animal (where applicable) and farm animals on the GLOBALGAP follow good agricultural practice (GAP) was placed on the principle HACCP.

GAP good agricultural practice is regulated by international institutions such as the Organization for Food and Agricultural Organization of the United Nations –FAO. In Serbia good agricultural practice is not singled out as a separate document, but is in the laws and regulations on agricultural production. Since 2005 the implementation of GAP legal obligation and a condition for accession to the EU market and the world. Application of HACCP principles to the critical control points in time identify and thus eliminate possible threats to food safety. (www.fao.org/prods/GAP)

HACCP - Hazard Analysis Critical Control Points

HACCP is a food safety system based on the analysis and control of potential biological/microbiological, chemical and physical hazards that are exposed to raw materials, potential hazards in handling, manufacturing, distribution and consumption of the finished products. Its application implies respect of standard operating procedures and guidelines that reduce risks to food safety. That system is important because ensure: evaluates and controls hazards which could affect the safety of food, system manages the quality and food safety based on prevention, and workpeople was informed about what, who, when and why to be done to prevent the risk of food but also himself personal responsibility to end users consumed a healthy and safe food. Established hygienic practices are essential to monitor the situation throughout the food production chain, from primary production to final product. Application of HACCP achieves to prevent contamination and ensure an adequate environment for the handling of food. The EU countries have introduced HACCP in its legislation in all areas of work with food and banned the import of food products from other countries that are not produced according to the principles of HACCP.

HACCP (Hazard Analysis Critical Control Points) is a food safety system based on the analysis and control of potential biological/microbiological, chemical and physical hazards that raw materials are exposed to potential dangers in handling, production, distribution and consumption of the final product. It is founded on him Regulation of the European Union as follows:

- Alinorm 93/13A, Annex II;
- Regulation (EC) No. 852/2004;
- Regulation (EC) No. 882/2004;
HACCP system has been adapted to all types of food products and all types of production and handling of food. It is based on the following principles:

1. Hazard Analysis
2. Identification of critical control points – CPP
3. Identifying critical limits for each of CPP
4. Establishing a system for each CPP monitoring
5. Determine corrective action
6. Verification
7. Establishment of documentation.

The introduction and implementation of HACCP standards in Serbia have become the duty of all who produce food for humans and animals by adopting the Low on Food Safety (“Official Gazette of RS no. 41/2009). On the basis of Article 16 Paragraph 3 this low passed the Regulations on the keeping the Central Register of buildings in the area of food safety and animal feed, which bind all legal persons who operate food and feed them to register to 10. June, 2011. The provisions of this Law shall apply to:

- All production and processing of drinking water used or added during preparation, processing or manufacture of food
- All production and processing (bakery, butcher shops, dairies, slaughterhouses, production of cakes, jams, production of juices, spirits and soft drinks, fruit, vegetables, production of confectionery, candy, gum, etc.);
- All organizations involved in packaging and repackaging of food products;
- All organizations dealing with storage, transport and distribution of food products;
- Institutions involved in the preparation and distribution of food – for hospitals, children’s institutions, hotels, restaurants, airlines and other companies;
- Public Facilities and collective food (soup kitchens, canteens, hospitals, kindergartens, schools, etc.)
- Shops, supermarkets, mega markets, all wholesale facilities, all retail stores;
- Restaurants and catering service and delivery of prepared meals and more.

According to the Low on food safety HACCP system provides traceability of product so that there is control of the entire chain of production of raw materials, processing and food production, distribution and sales. This means that all participants in the chain required establishing a system for ensuring food safety at all stages of production, processing and trade, in any facility under its control, in accordance with the principles of HACCP, good manufacturing and hygienic practices. HACCP system involves keeping track of all these procedures during production, processing and trade of food products.

Because an increasing number of pollution sources and pollutants, but also the risk of diseases caused by problems in food production- the use of new technologies, changed lifestyles and less resistant people, introduction of HACCP system have a many advantages:
- Reduces the occurrence of food borne diseases;
- Provides supply to the population of healthy food production;
- Provides that the requirements of legislation and efficient inspection;
- Enables more efficient and effective operation of food businesses;
- Increase the competitiveness of companies in the world market;
- Removes barriers to international trade;
- Enables the efficient introduction of new technologies and products;
- Increases profits.

The law on safety of food and consumer goods prescribed by the mandatory of food safety, based on testing of final products. Despite its comprehensiveness and rigor, the system is unable to prevent the occurrence of incidents and food poisoning, microbiological, and chemical and physical agents. In addition, this type of control is costly, time consuming and significantly slow down the process of production and distribution of food.

Unlike traditional inspection products at the end of production process, HACCP is an integrated system that provides preventive food safety in every part of the process of production and distribution, thus helping reduce the risk to public health. HACCP system is logical, scientifically –based process control system of production and distribution of food products that that includes:
- Identification and assessment of all possible danger of physical, chemical or microbial origin, in all stages of food production;
- Determine the measures necessary for their prevention and control;
- Ensuring that these measures are successfully implemented in an effective manner.

Control of finished product is a reactive approach and is less effective than proactive HACCP system. The main characteristics of the HACCP concept are: scientific base, inhibition, application of risk assessment as a tool, a systematic, documented and verifiable. HACCP concept is able to accept changes such as improving production equipment, production process and technical development (Sevic, 2005). Advantages of HACCP concept are:
- Effective and efficient work of the company
- increase the competitiveness of companies in the world market
- removing barriers to international trade
- reducing the number of confirmation batch, and
- increase profits

Application of the HACCP concept is widespread in developed economies, while in the countries of European Union is required by Council Directive 93/43/EEC. EU food imports from countries that are not its members, is caused by applying the HACCP concept.

In Serbia, laws (Law on Veterinary Medicine, „Official Gazette RS, no. 91/2005” and Law on Food Safety, “Official Gazette. Gazette RS, no. 41/2009”) provides for mandatory introduction and implementation of the HACCP concept.

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Recognizing the strategic importance of introducing the HACCP concept to the overall competitiveness of our economy, support of the Serbian government enterprises that wish to introduce HACCP is not missed. Serbian government make bidding for the provision of incentive funding to small and medium firms that opt for the introduction of HACCP concept since 2006. According to the Ministry of Agriculture, more than 800 companies applied for certification, and about 450 received the HACCP certificate.

**Introduction of the HACCP concept in primary agricultural production**

HACCP concept can be introduced with the help of external collaborators, i.e. consultants, and can be implemented by internal experts with a critical role of the management in the organization. Without commitment and support of responsible managers HACCP cannot even be applied or used.

Although the entities involved in primary food production, are not mandatory, according to the Law on Food Safety, to introduce and apply the HACCP concept, the management of the “some” company in Vojvodina think that its application will contribute to competitiveness in domestic, and in the future, international market. After making an official decision on the introduction of this concept the HACCP team is formed, whose members were experts in the relevant field of primary plant production. In agricultural crop production of the HACCP team agronomist must be represented, who track the production and all stages of growing a particular crop culture. Protective agronomist, which is responsible for the implementation of appropriate agro-technical measures (Mijajlović et al., 2009) also, has to be represented. For help in introducing the concept, a team of consultants must be involved.

The economic “some” company has introduced HACCP concept for the following crops: corn, corn Mercantile, sugar beet, winter barley, consume peas, cucumber pickles, soy, onion and carrot. Since the beginning of the introduction to the moment of application for certification, required documentation was created, according to the HACCP concept, as in the stage of formulating procedures, instructions and forms, as well as during regular, daily monitoring of production. It was documented through the records.

HACCP documentation includes, above all, the HACCP system rules as the highest document, as it is unifying the form of all activities related to the introduction of the HACCP concept.

The system and production procedures are organized. Manufacturing procedures are relating to all stages of production of all these cultures. The system procedures are:
- Procedures for managing documents and records;
- the procedure for training;
- the procedure for the implementation of sanitary-hygienic measures;
- the procedure for the preparation of HACCP plans;
- the procedure for machinery and maintenance;
- the procedure for preventive measures;
- Procedures for monitoring;
- the procedure for corrective measures;
- the procedure for verification.

All procedures were done in accordance with the procedures for managing documents and records. Manufacturing procedures include: subject, the area of application, the connection with other document, terms and definitions, responsibilities, procedures and flow attachment. As part of the production procedures required it is, also, included: risk analysis and critical control points, the determination and validation of critical limits, production flow chart, identifying the product, HACCP plan. Hazard Analysis is based on the first and second principles of the HACCP concept encompassing all stages of production, biological, chemical and physical risks, risk analysis, control measures and critical control points. All hazards are listed, whose appearance could be expected at any stage of production and transport (product is not stored in the company, but the bulk, directly from the field, is transported to the processing industry). On the basis of risk analysis and decision tree, critical control points were determined. For each CCP it is provided a suitable control measures to be carried out ensuring configuration control process and preventing the break of critical limits.

The following critical points were determined: CPP1 - at the stage of crop care is possible to detect sickness due to the action of the skin disease viruses, pathogenic bacteria and pathogenic fungi; CPP2 - at the stage of crop care, biological risks is represented in the appearance of weeds and CPP3 - at the stage of harvesting bad weather conditions and unprepared machinery are possible. Determination and validation of critical limits include limits for critical control points established and defined in accordance with applicable references (regulations, etc.). Diagram flow of production is clear, schematic view of a particular culture of production flow. It gradually displays all operations during all phases of the production in accordance with relevant documents, based on the data phase, or based on the indication of the persons responsible for certain production operations. For the purpose of illustration a flow chart of sweet corn production is shown. Identification of the product is very important document, because it contains all relevant information about the culture as follows: variety, serial number of parties seeds, growing year, area, growers, village, municipality, cadastre, sowing date, harvesting date, sweet corn produced features and purpose. HACCP plan summary represents all relevant data of importance in the production of sweet corn, and based on the seven HACCP principles. According to the principle 1- it shows the risks, and the way how to prevent occurrence of conflicts, on the basis of principle 2- the critical control points are given, based on the principle 3- the critical limits are shown, based on principle 4- the monitoring of critical control points (what, where,
how, where, who), is defined, according to the principle 5 - ways to avoid the above conflict are presented, the principle 6 - is giving the basis for verification and on the basis of 7th - principle all the needed / used records are listed.

Verification: - Evaluation of the system in terms of methods, procedures, tests, controls which confirm that the system operates in accordance with HACCP plan represents a very important phase of implementation of the HACCP concept. The frequency of verification is determined depending on the need to verify the effectiveness of the HACCP concept to implementation. Verification includes: overview of the HACCP program and all records, review of possible deviations from optimal production, removal of non conformity product testing and certification that the CCP under control, that is below the critical limit. After the verification of Company “some” minor deviations were found in the application procedures for the production of sweet corn, which was immediately removed and documented in recordings.

HACCP certificate by independent certification company accredited for that purpose by the Accreditation Body of Serbia-ATS and the European Cooperation for Accreditation-EA. The resulting certificate is valid for 3 years from the date of issuance. The duration of the annual certificate required supervisory checks. Recertification represents detailed review of documentation and evaluation of introduced and applied HACCP concept.

Some food producers are capable of based on a professional team who have been based on already existing good producing practices to perform their own quality system and standards of food safety guided his team, which of course leads to the production process, and are knowing all the peculiarities and problems of registration date. In the production companies where this was not the case of consulting activities that can help lead to a goal, and that the certification of a given producing process.

The introduction of the program entails certain costs, which is due to its importance quickly returned. If these costs are followed by some help from outside, such as budgets, grants, etc., then the user of the program must be introduced. Without that assistance, the burden falls on the user. “Some” company in the process of introducing HACCP program, among others, has filed about 500 thousand dinars for the engagement of consultants from the side (the Institute) and about 200 thousand for the certification program, conducted by authorized organizations. Checks that are conducted twice a year cost about 50 thousand dinars per check. It is important to emphasize that in this enterprise, the “some” company had substantial financial support from the Ministry of Agriculture, Forestry and Water Management in the amount of 562 thousand dinars, which covers expenses for consulting services and certification programs at a height of about 80%. So, this company has significantly relieved their resources by introducing the program, and providing market share with better positioning.
As between the introduction and implementation a bit of time elapsed, it is not possible to overview tangible results of its application. However, this company expect that the introduction of the program will be provided along with its further development, through increased production, which will reduce the individual costs, increasing competitiveness, increasing sales in the domestic, and prospects on the international market. This will enable further investment to improve production and professional qualifications of personnel employed, increasing labour productivity and significant economic benefits.

**Conclusion**

There is great interest among producers in the primary and in the processor industry for the adoption and implementation of legislation passed legislation in the field of production of food. At governmental of Serbia level, a number of years for calling tenders for the allocation of resources stimulation specially spending for the introduction of standards on food safety and many producers are due to them very successfully introduced and delivered their certificates. The importance of this segment of life is not necessary to speak, but given the experiences that were very negative and the incidents that took on the world scale happen related to food. It is very important to the area of food the government line that is based on established, accepted the agreed standards. Safe food is vital for all population groups within the human species and respect established standards are the way to this goal is achieved, and to ensure healthy generations.

This segment of economic activity is of great importance to expansion of the European perspective of Serbia and facilitating its way into the European Union. The European Union as a future goal of Serbia and sets certain requirements that must be met in order to give the goal. Serbia in terms of quality food products that must meet the requirements of world standards set. Given the production potential of Serbia in terms of food production is, the goals are unrealistic and unattainable. Setting standards on food safety is of great importance in the process of European integration of Serbia. Continuous education and upgrading of already acquired knowledge in the field of food production is of great importance in improving both the producing process and in improving the final product and the sustainable development of the area.

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