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THE ISSUES OF PROVIDING FOOD SAFETY IN AGRICULTURE

Abstract: In this direction, strategically targeted and consistent measures are being taken in our country to provide the population with high-quality food and support agricultural producers.

Key words: HACCP, raw materials, packaging materials, identified hazards, critical control points, food safety management system, Mycotoxin patulin, toxic elements, Global GAP, Organic, Halal, risk factors.

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Introduction

Ensuring food security in our country has become one of the key areas of sustainable development of the socio-economic status of society, improving the health and life of citizens, maintaining national security and independence of the country.

Decree of the President of the Republic of Uzbekistan dated April 12, 2018 No. 2520 provides for regular supply of processing enterprises in the country, stable saturation of the labor market with fruits and

vegetables throughout the year, as well as fruits and processed fruits and vegetables that are in demand on foreign markets. A single system of their production, production and procurement was created to increase exports and diversify their products.

Currently, the main directions and objectives providing of food safety are:

- Ensuring compliance with the requirements of normative documents in the field of agricultural and food production;

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- Harmonization of local standards with international standards ISO 9001, HACCP, ISO 22000, Global G.A.P, Hallal and organic and formation of certification system on their basis;

- development of technical regulations for agricultural and food security.

In the field of agricultural food security in relation to these goals:

- Formation of a certification system for agricultural production in accordance with the requirements of Global G.A.P, Hallal and organic standards;

- It is necessary to implement ISO 22000 standards in agricultural enterprises based on the principles of HACCP.

The HACCP system, based on a systematic approach and constant food safety throughout the food chain, has proven its effectiveness and has become popular in many countries around the world for many years.

The following is the current state of affairs in the field of agricultural food safety in Uzbekistan:

2 MATERIAL AND METHODS

Development and introduction of technical regulations is important for improving the competitiveness of the products. On January 1, 2019 years, 39 technical regulations were adopted, due to the program for period of 2019-2021 an additional 42 technical regulations will be adopted and Ministries, departments have approved schedules adopting this technical regulations.

Work in this direction will be continued systematically.

Total certified area for organic farming

• Total area– 1645,4 ha

Total area that have transited to organic – 645,4 ha

Area under transition – 1000 ha

Basic crops: fruits (raisin, apricot, mulberry, almond), legumes, vegetables.

Wild plants – 5000 ha (IFOAM 2017 information): кобул.

Certification agencies:

• «CERES-Certification of Environmental Standards GmbH», Germany

• «Austvia Bio Geventie Cmd H», Austria

• ICEA (Istituto Ia Certificazione Etica ed Ambientale), Turkey

• Ecocert, Turkey

• Ekoagros, Lithuania

• CCPB, Italy

• *National legislation:* The draft law of the Republic of Uzbekistan "On organic farming and production systems" has been drafted and at the stage of review.

• The draft Decree of the President of the Republic of Uzbekistan "On further development of organic farming and food production" has been elaborated and at the stage of coordination with interested ministries and departments.

• The draft law "On Order of certification of organic farming and food production certification" has been developed and at the same time being coordinated with interested ministries and departments.

• O'z DSt 3084:2016 «Organic Agriculture and Food Products. Terms and Definitions "have been developed and approved by the Resolution of the Uzbek Agency for Standardization, Metrology and Certification (Uzstandart Agency) as of May 31, 2016, No. 05-765.

• O'z DSt 3084:2016 «Organic Agriculture and Food Products. State standard for production, transport and storage" was approved by the Resolution of the Uzbek Agency for Standardization, Metrology and Certification (Uzstandart Agency) No. 05-920 dated from January 12, 2018.

The development of organic agriculture in the Republic of Uzbekistan is also very important due to the following:

Provision of the population with quality food products;

- Reduce chemical synthesis tools that are harmful for human health and environment;

- development of small and medium enterprises;

- Increased export potential of agricultural products.

Global GAP – This is the first standard for agricultural production and is a normative document that covers all production processes, from the time of sowing crops to harvesting, from the time of production to livestock production and feeding. Global GAP Certification System provides farms with a number of benefits:

Systematic approach – accurate identification of procedures and processes has a positive impact on any type of business. It is not possible to effectively manage a farm without a comprehensive set of approaches to managing the farm.

Customer trust – Confidence in the safety and quality of the products (raw materials) received by the product supplier (processing enterprises, wholesalers and retailers). This is a long-term partnership.

Consumer confidence – Consumer confidence in the quality and safety of agricultural products has a positive impact on the development of the market sector along with retail businesses.

Risk management – promotes the improvement of the environment and hygiene of production, reducing the potential for product contamination / contamination.

Responsibility of administration – creating favorable conditions for the production and delivery of safe products.

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Effectiveness of Interaction – Agriculture and Food Security Management System will allow for greater interaction between enterprises, controllers and customers in the food industry.

Registration – Introduction of the registration system improves control over the production and facilitates communication with the supervisory authority.

Protection by law – кўпчилиқ жаҳон давлатларида GlobalGAP тизими озиқ овқат тармоқларда етиштиришни бошқариш ва хавфсиз маҳсулотни етказиб беришнинг самарали қуроли ҳисобланади.

Compliance with all Quality Management Systems - Compatibility with Global GAP Quality Management Systems: For example, BRC, IFS, ISO 9001: 2015. State standards are not contrary to national law.

Access to European markets - Many European trade centers operate with the GlobalGAP system. Promotes the sale of certified products by preventing unauthorized products from entering the market.

Profit on sales - The product certification obtained under the Global GAP system gives priority to companies competing for a strong presence in the domestic and foreign markets.

With the aim of bringing the national certification system to the international level, facilitating entry of goods into export markets:

By the decision of the Uzstandard Agency dated October 11, 2019, No. 05-1073, the State Standard of the Republic of Uzbekistan O‘z Dst 3413:2019 was adopted.

More than 10 standards have been adopted internationally, such as Global GAP, Organic and Hallal, and certification has been established in cooperation with internationally renowned French “EcoCert” and Italian “Rina”;

“Uzstandard” agency Scientific-research Institute for Standardization, Certification and Technical Regulation was admitted to Global GAP in January;

The system of issuance of certificate “VI-1” for export of wine to European countries was launched.

According to the data, today the volume of Hallal standard products worldwide is 6.4 trillion dollars. This figure is increasing year by year. In Uzbekistan, the legal framework for certification of Hallal standard has been established and all mechanisms have been developed. Uzbekistan became a member of the Institute of Standards and Metrology of Islamic Countries (SMIIC). Now, the certificate “Hallal” received in Uzbekistan is of international significance.

The main problems and obstacles in the accelerated development of standardization and certification in agriculture are the international standards “Global GAP”, “Organic” and “Hallal”:

- Low level of knowledge of farmers in the frameworks of Global GAP, Organic and Hallal

standards and lack of government training system in this area;

- Lack of permanent consultant systems for producers;

- Lack of state control systems on organic production (including authorization, equivalence assessment systems and databases) and Global GAP;

- Lack of incentives for farmers in transition;

- High interruptions between researchers and practitioners;

- Low level of interest from businesses;

- Low demand in the internal market for products produced under the international standards “Global GAP”, “Organic” and “Hallal”;

- Lack of access to international markets and lack of mergers among farmers.

The strategy of development of production in agriculture based on international standards should be as follows.

- Development of legislative and regulatory framework at the national level

- Harmonization of the national legal and regulatory framework based on documents of the International Federation of Organic Agricultural Movement (IFOAM)

- Creation of electronic database on Global GAP and Organic Production systems

- Scientific and methodological support of the production of organic products, taking into account appropriate methods used in the world practice

- Justification of national accreditation and certification systems in Global GAP and Organic Production systems

- Clarify the accounting and reporting mechanism

- Extending community consultation and communication

- Organization of training and professional development in accordance with the international standards «Global GAP», «Organic» and «Halal»

- The organization of international cooperation and assistance in the development and implementation of international standards “Global GAP”, “Organic” and “Halal”

- Creation of effective systems of state control over the production of products based on international standards “Global GAP”, “Organic” and “Halal”.

Measures on harmonization of local standards with international ISO standards and formation of their certification system have been implemented in Uzbekistan since independence. This is evidenced by the laws, regulations and decisions adopted in Uzbekistan in recent years:

- In 1992 Uzbekistan joined the International Organization for Standardization.

- Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 349 of 2004 “On measures for implementation of quality management systems in

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enterprises in accordance with international standards";

– Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 183 of 2006 “About additional measures for the introduction of quality management systems in the enterprises in accordance with international standards”;

– Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 173 of 2009 “On additional measures to expand the implementation of quality management systems in accordance with international standards at the Republic's enterprises”;

– Resolution of the Cabinet of Ministers of the Republic of Uzbekistan № 112 of 2011 “On additional measures to improve the implementation of certification procedures and quality management systems”;

– President of the Republic of Uzbekistan Resolution “On Additional Measures to Strengthen the Stimulation of Exporters and Increase the Export of Competitive Products” and others.

For reference, there are 10246 enterprises in Uzbekistan that are certified in the quality system and registered in the State Register. Of these, 9520 are ISO 9001 and 246 are ISO 22000.

The HACCP system, based on a systematic approach and continuous food safety throughout the food chain, has proven effective and has become popular in many countries around the world over the years.

Compliance with HACCP principles is compulsory in EU countries. All food producers (manufacturers) of all three CU member countries are eligible for HACCP (Customs Regulation of the Customs Union TR TS 021/2011) as of July 1, 2014. According to this regulation, all manufacturers (manufacturers) should develop, implement and maintain food safety management systems based on HACCP principles. The same requirements apply to Uzbek businesses. Enterprises that have implemented these systems in Uzbekistan will be able to export their products not only to European countries, but also to Russia, Belarus, Armenia and Kazakhstan.

ISO 22000 is based on HACCP principles and can be applied independently to other management standards. At the same time, it is integrated with ISO 9001 to simplify the creation of a unified safety and quality management system and increase the flexibility of both standards.

International standard ISO 22000 is aimed at clarifying requirements for organizations wishing to take precedence over food safety requirements. This international standard is intended for voluntary organizations in the food industry (from pre-production to consumption), as well as for organizations involved in the production (packaging materials, additives and ingredients for this industry). ISO 22000 is designed for enterprises that want to integrate integrated management systems, such as ISO

9001 and HACCP.

ISO 22000 applies to all types in the food chain: from animal feed to raw material manufacturers, food manufacturers, food and beverage storage, subcontractors, catering organizations and retailers.

The introduction of international standards ISO 22000 series has already been introduced by all European companies. Consistent introduction of new series in local practice will help improve food security in the near future.

International standard ISO 22000 has both internal and external advantages.

Internal advantages:

- Systematic approach to all stages of the technological process, including all food safety parameters;

- Promptly identify and prevent product defects immediately;

- Control parameters affecting product security;

- Determine the same responsibility for food safety;

- Reduce the total number of defects in production;

- Additional opportunities for integration with the international standard ISO 9001 and the food safety management system;

- Restrict unauthorized interference by state administratively bodies.

External benefits:

- Increasing consumer confidence in the products;

- Promotion of products to new external markets;

- Additional advantages of participating in various tenders and contests;

- Increasing the competitiveness of the products;

- Increasing investment attractiveness;

- Reduce the number of ads by ensuring product quality and safety;

- Promote the status of a good and safe food producer.

Enterprises have a number of shortcomings in the development and implementation of ISO 22000 based on HACCP principles. These include insufficient information, poor food safety legislation, and limited funding for initiatives in this regard. It is also reported that the introduction of ISO 22000 is too expensive, too complex to work, and unsuitable for Uzbekistan.

3 RESULTS ACHIEVED

Characterization of hazardous factors for wine fruit

The creation of an information basis for determining critical control points begins with the identification of potential hazards and their occurrence in the production of fruit wines. The identification of potentially dangerous factors should be based on information about the finished product, on its

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production, information from scientific and technical literature, as well as on the results of tests of production laboratories.

A hazardous factor is a biological, chemical property or condition of a food product that may pose a risk to human health. The analysis of hazardous factors includes the selection of potentially hazardous factors from among all possible for fruit wines, i.e. biological, chemical, physical [2].

Biological hazards are living organisms, including microorganisms. Microbiological hazards (microorganisms) are divided into groups of sanitary-indicative, opportunistic, pathogenic microorganisms and microorganisms spoilage.

Chemical hazards, depending on the origin, are divided into two categories: natural and artificial.

Toxic chemicals, hazardous substances of natural origin are natural components of products and not the result of environmental, agricultural, industrial or other pollution. Pesticides of artificial origin or hazardous substances are those that are intentionally or randomly added to the product. This group of chemicals may include pesticides, antibiotics, and natural and artificial food additives. This group may also include chemicals such as lubricants, cleaning products.

A physical hazard is any physical material found in a product that causes illness or harm to the person using the product. Physical hazards include various foreign materials or objects. However, foreign objects that cannot cause illness or harm are not hazards, even if they may be aesthetically distasteful to the consumer.

4 DISCUSSION

Sources of physical hazards in the finished product can be the following objects [2]:

- contaminated raw materials;
- premises designed and maintained in violation of sanitary rules and regulations, worn fixtures, equipment and containers;
- mismanagement of the process, incompetence of staff, lack of practice.

In the production of fruit wines, the following hazards can be identified:

- foreign microflora that causes damage to wine materials;
- coliform bacteria (coliforms);
- pathogenic microorganisms (microorganisms of the genus *Salmonella*);
- toxic elements, including iron;
- mycotoxin patulin;
- pesticides.

The presence of foreign microflora in wine materials indicates that the process of fermentation of juices was carried out with violations of the parameters of the technological process, or in unsatisfactory hygienic conditions, or low-quality fruit and berry raw materials were used.

Detection of *E. coli* bacteria (*Escherichia coli*) and pathogenic microorganisms (microorganisms of the genus *Salmonella*) on the surface of technological equipment, inventory or consumer packaging indicates a violation of sanitary and hygienic conditions of production, as well as non-compliance with the rules of personal hygiene by personnel.

In the Republic of Belarus, hygienic requirements for the quality and safety of food raw materials and food products define safety criteria for the following toxic elements: lead, cadmium, arsenic and mercury. For fruit wines, the iron content is additionally regulated. Contamination of fruit and berry raw materials with toxic elements is due to industrial development.

Mycotoxin patulin is a secondary metabolite of microscopic (mold) fungi of the genus *Penicillium*, which are found most often as a natural pollutant of fruit and berry raw materials. Patulin has a pronounced mutagenic, teratogenic, carcinogenic and embryotoxic effect.

Pesticides are substances of chemical and biological origin used to kill weeds, insects, rodents, pathogens of plant diseases as defoliant, desiccants and plant growth regulators. Widespread use of pesticides leads to environmental pollution. Once in the food chain, pesticides inevitably enter the human body. Pesticides have a pronounced mutagenic, teratogenic and carcinogenic effect [3].

Thus, the quality of fruit wine is characterized primarily by safety indicators. A guaranteed way to ensure the production of high-quality and safe finished products is the HACCP system, the introduction of which is relevant for food enterprises of our country, including those producing fruit wines[9].

Taking into account the above, the purpose of this work was to conduct a risk analysis and identify critical control points in the production of fruit wine at the "Mehnat agrofirmary" JSC. To achieve this goal it was necessary to solve the following tasks:

- 1) analyze all available information on products, raw materials, packaging materials and production of fruit wines;
- 2) identify potentially hazardous factors in the finished product, raw materials, packaging materials and in production;
- 3) identify hazards in raw materials, packaging materials and manufacturing process;
- 4) assess the risk of identified hazards;
- 5) define critical control points (CCTS) and set critical limits for them;
- 6) develop monitoring system documentation for established CCTS.

Existing food safety management system will be an instrument to open new markets for export.

5 CONCLUSIONS

The cost of implementing ISO 22000 based on HACCP principles depends on the specific industry,

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the facility, the building, the equipment used, the technological process, and the standards used by the enterprise for food safety. If all of these are in good condition, the introduction of ISO 22000 will be much cheaper.

One of the problems with the implementation of ISO 22000 is the "complexity of development", which

is considered one of the reasons, so we will describe of the risk factors for wine in the implementation of ISO 22000 standard for the winemaking enterprise of JSC "MEHNAT AGROFIRMASTI".

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