ANNOTATION

Oraz Gulzat Taerkyzy's dissertation work on the topic "Development and implementation of an effective quality system for beef production and classification taking into account the requirements of international standards", submitted for the degree of Doctor of Philosophy (PhD) specialty 6D073200-"Standardization and certification"

Relevance of the research topic.
The State program for the development of the agro-industrial complex of the Republic of Kazakhstan for 2017-2021 is aimed not only at meeting the domestic needs of the population for demanded types of agricultural products, but also at determining a targeted export policy. A specific task has been set for domestic food producers - to increase labor productivity and export of processed agricultural products by 2.5 times by 2022.

The main economic instrument for the development of international trade, increasing the competitiveness of domestic products and expanding the list of countries-markets is the compliance of product quality with the requirements of international standards. The application of international standards in combination with the provisions of TR CU 021/ 2011, which establishes safety requirements, creates a basis for improving the competitiveness of domestic products and opens up extensive opportunities for Kazakhstani enterprises to enter the international market.

The export of meat, which can give agricultural producers an additional margin, is becoming more and more interesting for business and therefore it is important to solve the problems of safety of domestic products.

New technological solutions in the food industry are characterized by the use of an increasing number of new types of raw materials, materials, various ingredients, packaging materials. In addition, animals raised in various conditions (personal subsidiary farms, farms and industrial complexes) are processed, the meat of which has differences in quality indicators. For stable production of products standardized in terms of quality, it is very important to study the quality of raw materials. In many countries of the world, management systems are being developed and implemented that would ensure the safety of products for the consumer, as well as guarantee their stable quality.

Ensuring the quality and safety of food products is influenced by the activities of all participants in the food chain, since dangerous factors may arise at each stage, leading to further destabilization of the system and the risk of inconsistencies. WHO has adopted the "farm-to-table" principle in order to focus on those stages of the food production chain at which it is most likely either food contamination or prevention of such contamination.

In 2020, the EAEU countries exported almost a billion dollars worth of meat and edible meat offal to foreign markets, which is 1.5 times more than a year earlier. Distribution of "meat" export shares among the EAEU countries: 78.2% for Russia, 18.6% for Belarus and 3.1% for Kazakhstan. In monetary terms,

Kazakhstan's contribution to the export of meat from the EAEU is only about $30 million.

The potential available in the Republic of Kazakhstan: the availability of pastures and arable land, water resources and other factors will allow exporting meat and meat products in the long term while developing and implementing an effective quality system for food production, taking into account the requirements of international standards.

The global cattle meat market is characterized by a relatively stable level of consumption: for the period 2014-2020, the average annual growth rate was 0.4%. China, Brazil, the USA and the EU remain the most capacious markets, but demand growth is mainly due to China.

China is a promising market for Kazakh beef and its export has begun since 2019. To increase beef exports to China, it is necessary to introduce effective quality management systems at meat processing enterprises of the Republic of Kazakhstan.

The world experience of countries shows that the quality management of meat products should begin with the cultivation of an animal. The realization of this fact led to an understanding of the need to implement a system of food safety management.

Recent trends in global food production, processing, and preparation significantly increase the requirements for scientific research in the field of food quality and safety. In this regard, it is necessary, taking into account the Kazakh specifics of raising cattle for slaughter and obtaining meat products from it, to analyze the chain, identify and differentiate critical stages affecting the quality and safety of beef products. Therefore, research aimed at developing practical solutions for the identification, systematization, control and management of hazardous factors of beef production throughout the food chain from the field to the counter is necessary.

Certain aspects of improving the quality and competitiveness of products, including by means of standardization, were considered in the works of domestic and foreign scientists. Standardization issues are widely discussed by leading experts and scientists of the food industries: Chomanov U.Ch., Iztaev A.I., Uzakov Ya.M., Alimardanova M. K., Ospanov A.B., Taeva A.M., Dunchenko N.I., Kalinin A.Ya., Kanter V.M., Kochetov B.C., etc.

However, there are practically no scientific papers devoted to ensuring the competitiveness of beef meat products. The significance of the problem under consideration and its insufficient development for the economy of the Republic of Kazakhstan, its industries and enterprises determine the relevance of the research topic.

The purpose of the dissertation research is to develop and implement an effective quality system of beef production and classification to obtain export-oriented products.

Research objectives:
- to conduct an analytical review of domestic and foreign literature, regulatory documents in the field of beef production and quality assessment;

- to conduct a comparative analysis of the national and international legislative and regulatory framework for the requirements for the supply and quality control of beef;

- to study the quality indicators and functional and technological characteristics of meat raw materials coming for industrial processing from industrial complexes (PCs), personal subsidiary (LPH) and farms (FH), and to give a comparative assessment of them from the point of view of production sustainability;

- structuring of all stages and operations of the trophological chain of beef production;

- conducting a step-by-step causal analysis, identification, description and systematization of dangerous factors;

- determination of critical control points "from the field to the counter";

- evaluate the costs of developing and implementing a hazard management system and its effectiveness along the chain from the field to the counter.

Substantiation of the novelty and practical significance of the results obtained.

Scientific novelty. An effective beef quality management system and meat classification is proposed, ensuring competitiveness in the domestic and international markets. The meat was evaluated according to the UNECE standards, control critical points for the production of chilled beef were determined, ensuring the production of beef taking into account its quality for sale and industrial processing (UNECE).

The regularities of the formation of quality characteristics of meat products at all stages of the trophological chain in the form of systems of interrelated chemical and biochemical processes with all the attributes of a systematic approach are studied.

As a result of a systematic analysis of factors affecting the safety and quality of meat products, the risks arising during the production of meat products along the chain from the field to the counter, in relation to each growing system, have been identified and scientifically substantiated. Using the IDFO methodology, an algorithm has been developed in which all stages of the trophological chain are presented sequentially with a detailed analysis of incoming and outgoing data.

Based on the FMEA methodology, an analysis of the types, consequences and causes of inconsistencies arising at each stage of the trophological chain of beef production depending on the animal rearing system was carried out.

The management theory was further developed in relation to the system of cattle rearing for slaughter.

Practical significance. A list of typical critical control points of the trophological chain of meat products production from the field to the consumer is proposed, their characteristics are presented and a system for their determination is developed. A methodology for analyzing vulnerable stages in the production of beef "from field to counter" has been developed. Recommendations have been developed for the identification of hazardous factors in the production of beef and

products from it, and the identification of critical control points "from the field to the counter".

The author's personal contribution consists in setting the necessary tasks, planning and conducting experiments, statistical processing of the results obtained and their publication, conducting industrial testing of the developed model; development of regulatory documentation.

Compliance with the directions of science development or state programs:

Separate stages of the work were carried out within the framework of the research work funded by the Ministry of Agriculture of the Republic of Kazakhstan on PCF No. BR062449227 "Development of innovative technologies for processing and storage of livestock products" on the topic "Development of technology for cutting and deboning cattle carcasses in accordance with international standards".

Scientific provisions submitted for protection:

- beef production and classification quality system;
- control critical points for the production of chilled beef;
- risks arising in the production of meat products along the chain from the field to the counter, in relation to each growing system.

Approbation of the work.

The results of the studies have been tested in laboratory as well as industrial conditions.

Standard and modern methods of statistical data processing were used, which show the reliability of the results of the work.

A patent has been obtained for a method of cutting beef half carcass for export.

The results of the study were presented in scientific journals at international scientific and practical conferences.

Description of the doctoral student's contribution to the preparation of each publication:

All the results and conclusions given in the dissertation were obtained and formulated with the direct participation of the applicant in accordance with the results of the study. The doctoral student mastered the research methodology, took an active part in the discussion and publication of the results obtained, preparation and registration in domestic and foreign scientific journals.

Publications. The main results of the dissertation work have been published in 12 scientific papers, 2 of which are in journals included in the Scopus database with non-zero impact factors Journal of Hygienic Engineering and Design, 2020, 18% and OnLine Journal of Biological Sciences 2022, 41%. In the publications recommended by the Committee for Control in the Field of Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan, 4 and 6 works in international scientific and practical conferences of the CIS and the EU.

The structure and scope of the dissertation. The dissertation consists of an introduction, four sections, a conclusion, a list of used sources from 154 titles and

appendices. The text of the dissertation is presented on 100 pages and contains 22 tables, 32 figures.