TRACEABILITY AS A NEW APPROACH TO MEAT PRODUCTS SAFETY MONITORING IN RUSSIA

Lisitsyn, A.B., Kalinova Yu.E., Tchernoukha, I.M.

GNU V.M. Gorbatov Meat Research Institute

In the past five years a great change from the economy of decline to the economy of recovery has been occurring in Russia. In general, the situation is changing to better, and now one can say that it is a sustained trend. Nevertheless, the situation in such an important sector of national economy of Russia as agriculture and especially in production of animal husbandry products remains complicated.

In 2000 – 2003 sufficiently large growth of production volumes of the main meat products was achieved, and this was done without significant modernization of production, with stable volumes of processing of cattle and poultry, mainly owing to more deep, complex use of raw materials, rational utilization of secondary materials, reduction of losses using intensive refrigeration technologies, implementing new advanced resources-saving technologies. During this period, production of meat and by-products of the first grade increased by 45%, sausage products – 71%, meat semi-finished products – 2.3 times. This is connected, among other things, with the large volumes of imported meat raw materials, increase of demand in meat and meat products of the Russian population. The structure of nutrition of Russian population is presented in Fig. 1.

The more dynamic development of the market for meat and meat products in Russia is constrained first of all by shortages of meat raw materials. Meat industry enterprises work under the conditions of deficiency of domestic animal raw materials. A minor growth of domestic raw material resources along with significant volumes of imported raw materials has led to some increase in production of meat and meat products in recent years. However, in spite of positive trends in the meat industry development in these past years, the level of dependence from the import in this segment of the food market remains sufficiently high: in 2003 the share of import in forming of meat and meat products resources in Russia was 30.2%, though this figure is lower than that for 2002 (34%) (Fig. 2).

The unavoidable entry of Russia into the World Trade Organization in the near future, in the opinion of meat producers, is connected with many problems in the agroindustrial complex of the country. The active participation in the international trade requires that all the restrictions on the access of foreign foods to the interior market should be removed and customs barriers eliminated.

Along with this, the concern about the safety of foods was never as high as now. Recent crises in food production in Europe cast doubt in the conscious of consumers and gave rise to distrust with regards to the products supplied to the market. During these years mass media paid much attention to such problems as BSE, avian influenza, Listeriosis, dioxins, pesticides, etc.

Great changes in society and trade taking part during last 30 years necessitated more integrated approach to safety of foods. The integrated approach comprises all the components that can have impact on safety of foods on each level of the food chain “from farm to fork”. This approach demands the interaction of all the participants of food chain from feeds producer to individual consumer.

Safety of foods became the main priority for the chain of meat supply. However, it should be noted that it is difficult to separate such notions as safety and quality. Depending on the degree of environment pollution with one or other types of contaminants, they can lead to ecological stress, or ecological crisis with the result of violation of all the cycle of production of safe and quality products.

In our institute we have developed the concept of production of guaranteed safe meat products that contains a complex system of provision of quality and safety of protein products based on the use of hurdle technologies, predictive microbiology, critical control points, principles of production management, system of traceability of safety and quality of the product along the whole technological chain of its production, transportation and selling. All that the soil contains goes to plants, all that plants contain goes to the organism of the animal and then to products of animal husbandry and then to foods.

Under the conditions of increased anthropogenic contamination of the biosphere, production of ecologically pure animal products is a great challenge. The range of chemicals used in agriculture and animal husbandry is very large and contains a lot of preparations which can have a threat to health of people. The content of xenobiotics of chemical and biological origin in foods is the main threat to human organism. The group of xenobiotics of chemical nature contains toxic elements (lead, cadmium, mercury, arsenic), pesticides, radioactive isotopes, etc. According to FAO/WHO, toxic elements have pronounced carcinogenic and mutagenic effect and are of the first priority in the list of chemical substances, dangerous for the environment and health of people.

How it occurs, how the chemical composition of the product undergoes modifications and what is the effect of all this on the safety of the products? To answer these questions combined efforts are required, therefore, at the present time we are more actively cooperating with the related agricultural Institutes to create the common system of monitoring. It should be noted that introduction of the system of quality managing at an enterprise is a continuous and complicated process involving all the services, all personnel. It is not limited to drawing up documentation and doing the activities imitating the order. Our approaches to solving this problem implicate deep penetration into the occurring processes. To introduce the quality managing system it is necessary to teach specialists of the working group and persons responsible for operative control, correction of technological documentation. The system of traceability being effective by its impact and cost, as distinguished from the simple identification of the general commodity group, is able to indicate the any problem with regards to food safety, related to specific geographical origin, equipment for primary and technological processing, the chain of supply, to the farm or even to the specific animal.

The necessity of introduction of the system of traceability in Russia is connected with requirements of the federal laws “About technical regulation”, “About quality and safety of food products”. The main task of the law “About technical regulation” − elimination of technical barriers and production of safe products. The law is aimed at production of safe

products − the State declares it, and producers themselves must provide proper quality in their competition for preferences of the consumer.

GNU V.M. Gorbatov Meat Research Institute of the Russian Academy of Agriculture carries out work to get the enterprises prepared to certification in the systems ISO HACCP. The organ on certification HACCP- MEAT is accredited in the Institute. And this field of activity as well as efficient use of all the components of technical regulation is the pledge of successful solution of many important problems in this country, the problem of production safety among them.

A certified system of quality and safety management is the proof of fulfillment of producers' obligations in satisfying the requirements of the consumer and achieving the desired quality. But it is impossible to raise the quality without changing relation to the notion of the quality per se on all the levels. The calls to increase the quality won't be realized, if the executives of different levels don't consider the quality as a style of life. Of no small importance is the fact that during introduction of the systems of quality ensuring a change in the psychology of the workers of the enterprise occurs. They realize of importance of stable quality and begin to understand what should be the management of the modern organization, ensuring best results of its activities. Therefore, the investments pay back quickly, because at the enterprise appears a harmonious system, allowing not only to guarantee quality and safety of the products, but also to optimize production due to detection and reduction of unjustified expenses.

According to European legislation, traceability is not only the possibility to trace back movement, location and origin of foods, feeds, animals and components of animal origin designed of supposed for use as food products, on all the stages of production, processing and distribution.

From the point of view of management of informational processes, introduction of traceability system in the production chain of meat products requires systematic combination of the physical flow of raw materials, semi-finished products and prepared products with the informational flow from all the involved partners. To guarantee continuous informational flow every participant of the production chain should exchange certain data necessary for organization of the system of traceability, with the next participant of the chain, thus presenting the opportunity to further use all the principles of traceability. The ability to obtain data quickly and exactly along the whole production chain is the basis for creating the system of traceability. To do this it is necessary to manage the consecutive bond between the components of all what is produced, packed, stored and shipped on the whole chain of supply (step-by-step: one step up, one step down along the chain).

The most important aspect of the program of safety of food products during production of meat, fish, eggs, and milk is the systematic control of substances which can appear in the products as a result of use of antibiotics, hormones, pesticides, contamination of the environment or non-observance of technological conditions.

The national program of control should provide the possibility of identification and evaluation of substances, corresponding to the class of the product; introduction of corresponding national standards, harmonized with the international ones, based on the data about the residues of harmful substances, exceeding the established limits; collection of data and reports about the obtained results.

In general, the importance of the program of control for toxic substances implies not only collection of information, but also, owing to the principle of traceability – ensuring the protection of population health through the ban to direct meat raw materials, containing residues of toxic substances exceeding limit values to trade or processing.

Russian Federation needs the efficient and agreed program of control of the level of toxic substances residues, to ensure protection of health of population and to participate in the International trade of foods. Traceability as the main principle of the control program, that will prevent (in case of exceeding the established limit concentration) getting animals and primary products of animal husbandry into the food chain, will make a large contribution to production of safe products for human consumption.

References

Jackson P. The role of traceability in foods safety. Materials of the 7th International scientific conference devoted to memory of V.M.Gorbatov "Adaptation to the conditions of APK of RF of common methodology of traceability and integrated quality control and safety of meat products" 26–27 May 2004, Moscow: VNIIMP Publisher pp. 3 –27.

Leonova T.N., Simakova L.V. Market for meat and meat products in 2004. All about meat. Published in VNIIMP, №1, 2005, 10–14.

Smith G.C.et al. Traceback, traceability and source verification in the U.S. beef industry. Materials of XXI World Buiatrics Congress, December 5, 2000, Punta del Este. Uruguay.

Traceability of Beef. Application of EAN-UCC Standards in Implementing Regulation (EC) 1760/2000.

Turubatovic L. et al. Traceability as the basic principle of the residue monitoring program. Materials of the 7th International scientific conference devoted to memory of V.M. Gorbatov "Adaptation to the conditions of APK RF of common methodology of traceability and integrated quality control and safety of meat products" 26–27 May 2004, Moscow: VNIIMP Publisher, pp. 28–36.

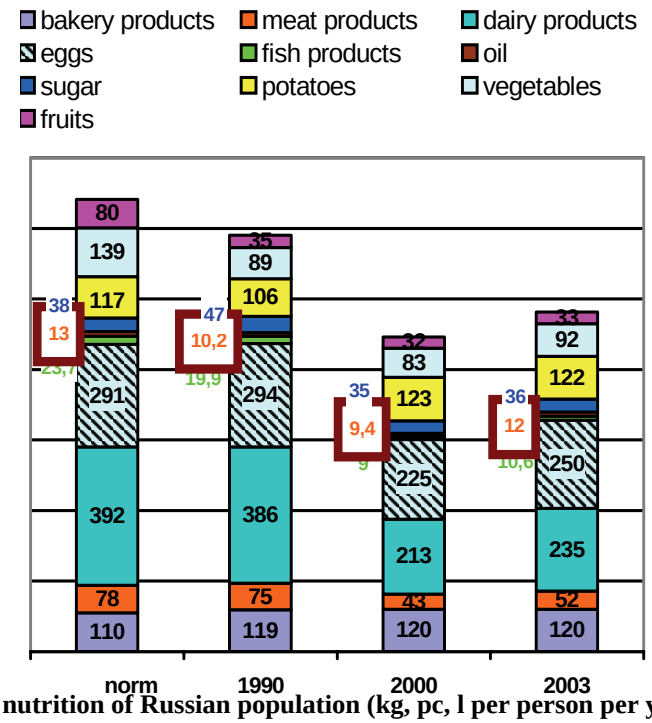

Fig. 1. Structure of nutrition of Russian population (kg, pc, l per person per year)

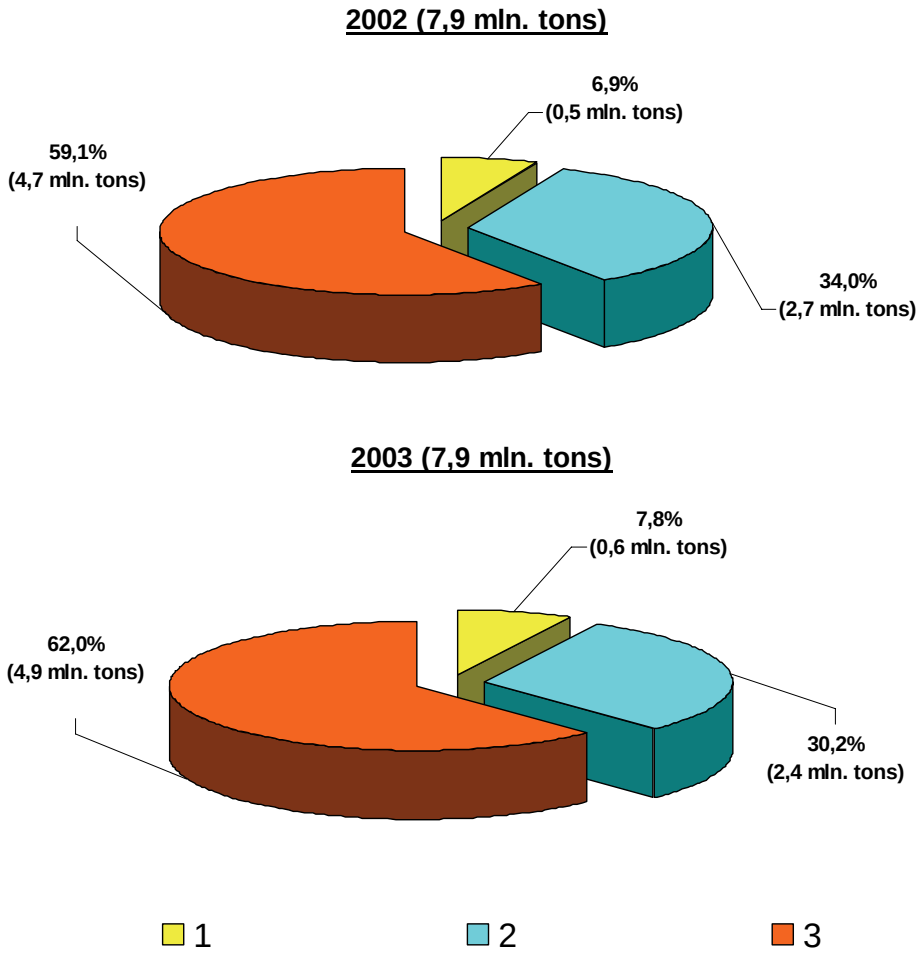

Fig. 2. Structure of formation of resources of meat and meat products in Russia in 2002 and 2003: 1 – Reserves in the beginning of the year; 2 – Import; 3 – Produced