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## **Innovations and Support for Quality in Agriculture: A Case Study**

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T.A. Skvortsova<sup>1</sup>, I.P. Denisova<sup>2</sup>, N.G. Romanenko<sup>3</sup>, A.V. Sukhovenko<sup>4</sup>

**Abstract:**

*The aim of the article is to investigate the economic and legal aspects of integrating innovations in agriculture and supporting the quality of agricultural products in the context of modern Russia.*

*Throughout the process of research, the authors analyzed the directions of agricultural sector development, mechanisms of quality and safety support, as well as customer rights protection.*

*As a result the authors have agreed on, the need to integrate cluster models in the agricultural sector, notably in the bee-keeping, seed production (including financing of this activity), as well as legislative stimulus to shift towards «green» biotechnology in the domestic agriculture.*

*Based on the research conducted, the authors have proposed mechanisms to improve the current Russian legislation in the spheres of innovation development and support for quality and safety of agricultural production.*

**Keywords:** *Innovation, agriculture, quality and safety, «green» biotechnology.*

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<sup>1</sup>Associate Professor, Ph.D., in Law, Rostov State University of Economics, Rostov-on-Don, [tas242@yandex.ru](mailto:tas242@yandex.ru)

<sup>2</sup>Professor, Doctor of Economics, Rostov State University of Economics, Rostov-on-Don, [rudenis8663@mail.ru](mailto:rudenis8663@mail.ru)

<sup>3</sup>Professor, Ph.D., of Law, Rostov State University of Economics, Rostov-on-Don, [nikolajromanenko@yandex.ru](mailto:nikolajromanenko@yandex.ru)

<sup>4</sup>Associate Professor, Ph.D., of Economics Rostov State University of Economics, Rostov-on-Don, [annasuhovenko@gmail.com](mailto:annasuhovenko@gmail.com)

## **1. Introduction**

Innovation development of agricultural sector, in the light of global trends to shift towards technology-intensive production, has become a separate branch of scientific research. Development of innovation-orientated economy is of primary importance for economic growth of Russian government. In order to ensure sustainable development of the Russian economy it is not sufficient to boost production volumes, as new level of production quality is required. Thus, the Strategy for Scientific and Technological Development of the Russian Federation highlights, that *«scientific and technological development of the Russian Federation is considered one of the main priorities in government policy»* (Executive Order of the President of the Russian Federation, as of 01.12.2016 № 642).

Nevertheless, according to Rosstat, innovation activity within organizations has been continuously deteriorating since 2013, which in turn resulted in decreasing share of innovative goods and services in the total share of exports (Table 1). The tendency to introduce innovative technologies is particularly weak within the Russian agricultural sector (Epifanova *et al.*, 2017).

Furthermore, the problems of safety of agricultural production has become more actual in the modern context. According to scientific literature, the problems related to the global safety of agricultural products have become more actual (Chernova and Buryak, 2014). Given this, integration of some innovative technology into the agricultural processes can actually reduce the level of safety of the final product. Thus the relevance of the topic of the study conducted is supported by both, the significance of innovation technology as a driver of agricultural sector growth, given the framework that creates conditions where best quality and safety of the product is guaranteed for the consumer (Chernysheva and Shepelenko, 2017).

The study pursues the aim to investigate the mechanisms of integration of innovative technologies into the Russian agricultural production, as well as the mechanisms ensuring quality and safety of such production. In order to achieve the stated target, the following problems must be resolved; definition of the path of innovational development in agriculture, consideration of the ways to improve quality and safety of agricultural products. The subjects of the study are the legal norms, that formulate the legal framework for innovations within the agricultural sector, ensuring the quality and safety of the products for consumers, as well as implementation of these norms.

## **2. Literature review**

Definition of «innovation» was offered in the beginning of the 20th century, by an Austrian scientist Joseph Schumpeter, who defined it as commercialization of all new combinations, based on implementation of new materials and components, introduction of new processes, discovery of new markets and integration of new

forms of organization. At the moment, the most developed economies in the world have announced the path towards innovation-orientated economic development (Cantamessa and Montagna, 2015). Integration of innovations allows business-structures to retain competitiveness and market position (Furnari, 2015). Small innovative business structures are in need of investment attraction (Ermakova *et al.*, 2016; Zobov *et al.*, 2017).

The government of Russian Federation has taken its course towards innovation development, yet the legislative basis is not suitable. Regulation is very specific, with different approaches towards terminology and innovative processes in general. Modern legislation of the Russian Federation is not sufficiently developed, and does not suit the needs of subjects of innovative activity in our country (Gribanov, 2016). One of the main global tendencies is the growth of demand for food. Demand pressure causes a significant growth in technological intensity of agricultural sector, as well as makes the global food chain more sensitive towards systemic faults (Ivanov *et al.*, 2016).

At the moment, the solution of the problem of food safety partly boils down to the policy of import-substitution, as the dependency on exported agricultural production is one of the actual problems in Russian Federation (Selivanova, 2016). First of all, food safety implies the provision of products by domestic producers, which has not been fully resolved yet (Eliseev, 2016). In order to solve the following problem, integration of innovative processes into the agricultural sector is required (Selivanova, 2016). Legal support for economic security in Russia needs to be improved (Romanenko and Epifanova, 2017).

Food safety, as an important aspect of national security implies normal functioning of a complex biological structure as a human body, to rely on domestic production to satisfy physical norms, national protection from undesired food products and domestic market protection from excess supply and imported dumping practices. This requires the establishment of reserves, insurance stockpiles and conditions for domestic producers to enter foreign markets (Dadalko, 2014). After carrying out the literature review, it can be concluded, that the level of understanding of the problem is quite high. Nevertheless, there are no complex legal-economic investigations of innovation activity in agriculture, that cover the problems of quality and safety of production. The majority of studies investigate a narrow circle of public relations, which does not allow to fully investigate the matter and hence acts as a prerequisite for the following study.

### **3. Methodology**

The basis of the research consists of common scientific logical methods (analysis, synthesis, induction, deduction and etc.), as well as specific scientific methods; systemic, structural, legal-comparative. Logical method is required to analyze the legislation regulating innovation activity and supporting quality and safety of

agricultural production. Legal-comparative method is used to conduct comparative analysis of Russian legislative norms in the sphere of interest.

#### **4. Results**

##### *1. Characteristics of agricultural sector innovation path:*

Under the modern conditions of ensuring national security, the key component is the safety of food products. The necessity to ensure food safety arises from global tendencies of rising demand for food, caused by population growth. Thus, according to Food and Agriculture Organization (FAO), agricultural production is expected to double by 2050, in order to close the demand gap (Ivanov *et al.*, 2016).

In Russia, despite a relatively slow population growth, agricultural products consumption is growing year on year (Table 2). Furthermore, there is a tendency to shift towards a greater consumption of vegetables, fruits and berries, meat and seafood, milk and dairy products, while no changes occur in consumption of bread and potatoes (bread and flour containing products). Ensuring food safety requires not only increasing the volumes of current food production, but also innovation. Thus, Executive Order as of 30.01.2010 №120 «*About the Doctrine of Food Safety in Russian Federation*» establishes the necessary measures in the sphere of food production, as well as in turnover of agricultural and fish production, aiming to «*optimize inter-segmental economic relations, that would stimulate production growth, attract investment and integrate innovations in agricultural and fish production*» (Executive Order by the President of the Russian Federation as of 30.01.2010 №120).

We have to agree with the research opinion that «*in order to implement the import-substitution policy in the agricultural sector, innovational instruments that have proven themselves abroad are required. This will allow to introduce measures to rebuild the domestic agricultural production*» (Selivanova, 2016). Amongst such instruments, we should point out integration of the agricultural cluster system, that improves competitiveness and economic stability of enterprises within the cluster. SMEs that are the members of the cluster are undoubtedly winning from cooperating with a larger business structure, improving their economic stability. Despite this, the cluster may contain innovative enterprises, developing cutting-edge technologies for the agricultural sector, scientific and educational organizations, that are not only conducting research, but are also preparing qualified workers for the industry.

Thus, a wine territorial cluster has been set up in the Rostov region in 2015. «Don Valley» is a collaboration of leading scientific, educational, production, engineering and innovative organizations and enterprises in the Rostov region, that are engaged in wine-making, viticulture, development of gastro-tourism, development of trade infrastructure, production of details for the wine-making industry. The establishment of the distribution network under the framework of the cluster includes, branded «Don Valley» shops in Taganrog, Novocherkassk, two in Volgodonsk and two in

Rostov-on-Don. The wine-making faculty at DSTU, that is a member of the cluster, has started to prepare wine specialists. The strategy has been prepared and three road maps have been created. There is also a wine tour, including four wine producers. The expertise obtained while creating a wine cluster, can be applied further to create a bee-keeping cluster. Global experience of setting up bee-keeping clusters (India, China, Argentina) proves that such form of business organization in honey production is successful.

Currently, the bee-keeping industry in Russia, is mainly formed by separate individuals and small farms. Out of 5,3 million bee families, 95% belong to individual farms, and 5% in the state sector (Sokolenko, 2008). Thus, the following sector of agriculture is very dispersed and requires innovation mechanisms for better organization. Bee-keeping cluster will result in increasing productivity of labor, increased honey production and other bee-keeping products, greater supply of qualified workers, integration of quality management system to create globally certified production, establishment of global distribution network.

We suppose that such cluster can also include organizations engaged in industrial floriculture. Bees are natural pollinators, while floriculture creates conditions necessary for honey collection. It is also important to point out that currently, domestic agricultural industry is highly dependent on imported seeds, technology and other necessary components for agricultural production. Therefore government support for seed-growing industry development and creation of agricultural technology is necessary. We suppose that a special program of such support, including state funding is required.

## *2. Improving safety and quality of food:*

Agricultural innovations are aimed to solve both organizational problems, as well as the matters of improving the quality and safety of food products. In fact, the State Order as of 25.10.2010 № 1873 has approved the Basic Criteria of State Policy in the Russian Federation regarding healthy nutrition up until 2020 (State Order as of 25.10.2010 № 1873). One of the main targets of government policy is the development and integration of innovation technologies into the agricultural and food production, including bio- and nano-technology. Ensuring the quality and safety of food products is of equal priority.

Global agricultural policy has earned wide recognition after introduction of GMO technology. Federal Law as of 05.07.1996 № 86-FL «Regarding State Regulation of GMO activity» defines transgenic organisms: as «animals, plants, microorganisms, viruses, which genetic code has been altered using genetic engineering». Russian legislation doesn't impose any restrictions on the production and distribution of genetically modified products, however it implies measures of government control over the mentioned procedures. According to Article 11 of the considered Law *«production, that has been obtained while using genetic engineering, should comply with compulsory measures regarding environment preservation, pharmacological*

*standards, sanitary requirements or other compulsory measures in Russian legislation. Regarding productions, that was obtained while using GMO is subject to compulsory certification and declaration which is regulated by Russian legislation about technical regulation».*

At the moment, the following GMO production is allowed in the Russian Federation: 8 types of corn, 2 types of potatoes, 3 types of soya, 1 type of rice and beetroot. Moreover imported GMO products are also allowed. Furthermore, scientific literature points out that *«in the context of modern Russia, where control of food market is not on a high standard, wide-spread use of GMO can lead to significant deterioration of health of the population»* (Vorontsova, 2009). We believe that Russian Federation should only introduce such innovation technology in the spheres of agricultural production, that doesn't cause harm to the citizens' health.

Russian measures, that preserve safety of production for the health of the consumer, environment, as well as prevent harmful effects for the consumer, are compulsory and are enforced by the law. Minimal safety requirements for agricultural production are set out by technical regulations. According to Article 2 of the Federal Law *«Regarding Technical Regulations»* *«technical regulation - is a document, that has been accepted by the international agreement of the Russian Federation, which is ratified by the order, set out by the current Russian legislation, Executive Order of the President, State Order or by the normative-legal act of the federal executive authority regarding objects of technical regulation»*. Technical regulations account for the level of harm risk, and establish minimum requirements, that provide for:

- safe emanation;
- biological safety;
- explosive safety;
- mechanical safety;
- fire safety;
- production safety (technical machinery);
- thermal safety, chemical safety;
- electrical safety;
- radiation safety;
- electromagnetic compatibility in order to ensure safety of machines and equipment;
- unified measurement;
- other safety requirements;

At the same time, according to Article 7 of the Federal Law *«Regarding Technical Regulations»* *«technical regulations cannot contain requirements for production,*

*that causes harm for citizens' health, which accumulates as the product is being used for longer, such factors make it difficult to estimate the risk*». In such cases, technical regulations can inly contain measures, that have to inform the consumer about the potential harm and factors upon which it depends on.

We suppose that the given statement, does not allow customer the right to consume safe food products. Thus, foods that contain palm oil, food preservatives, GMO do not harm human health instantly, however can cause severe diseases in the future. Given this, rising health-related concerns make us think about the quality of agricultural production.

In September 2015, State Duma has passed the Federal Law № 886392-6, that allows to ban the use of palm oil, GMO and food preservatives in food production. However the Government of the Russian Federation has rejected the proposal, stating that according to the Eurasian Economic Union, the requirements regarding food products are set out at the Union level and Russia cannot approve additional requirements on its territory.

We believe that the approval of such document is necessary. Supposing that normative-legal regulation in the sphere of GMO production should be stimulated to take the path towards using «green» bio-technology in the domestic agricultural sector. In order to achieve this it is necessary to create conditions, that oppose imports of GMO production, simultaneously stimulating agricultural producers in the Russian Federation to produce ecologically clean products.

## **5. Discussion**

Results suggest the importance of application and integration of innovation technologies in the agricultural sector. One of the main directions of development in the agricultural sector is to create innovative agricultural clusters. We should only follow innovations that allow to integrate «green» technologies, improve quality and safety of food products, as well as provide for ecologically clean production.

As it has been shown already, the current legislation does not impose restrictions on imported products, that can potentially cause harm solely by accumulating in the human organism. This creates the situation where consumer is not protected. We therefore believe, that it is necessary to adopt a normative-legal act, that bans the sale of products containing palm oil, harmful food preservatives and GMO from the Russian market.

## **6. Conclusion**

Results show the need for a transition towards the innovative development path of the agricultural sector, in order to ensure food safety on the territory of the Russian Federation.

It is necessary to improve the current normative-legal regulations in the sphere of innovation development in the agricultural sector, and provision of quality and safety of agricultural production. This requires to adopt the federal state program of development of domestic seed production and development of high-tech basis for agricultural sector, which implies government funding business structures, which carry out the following activity. This will contribute towards the creation of prerequisites for gradual development of Russian agriculture. A ban on usage of palm oil, harmful food preservatives and GMO should be imposed at Federal level. This will allow to improve the quality and safety of agricultural production, as well as the life and health of citizens.

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