Current Russian agricultural development trends

A I Borisov and S S Danilova
North-Eastern Federal University, 58 Belinsky str, Yakutsk, Republic of Sakha
(Yakutia), 677027, Russia

E-mail: tbbai@mail.ru

Abstract. In article the main questions connected with development of domestic agricultural producers are considered, in particular, the main directions of development are allocated. In article it is told about trends of development of agriculture in the conditions of the international sanctions and also development of the technological direction in means of UAVs, robots, innovative machines and the equipment. Also the main issues of development of meat production as one of the most priority directions of development of agriculture are considered in article.

1. Introduction

Everyone living on the planet eats a quantity of agricultural products such as potatoes, carrots, onions, cabbage, courgettes, eggplants, cucumbers, tomatoes, meat and meat products, milk and dairy products, fish, poultry, eggs and other products. In Russia, a huge number of people consume these types of products every day and the demand for quality and safe products is very high. Despite the large supply of products from a huge number of producers, demand is also high but it would be greater if the population understood that these products are actually grown on natural raw materials rather than being filled with pesticides and growth hormones. Today, the situation has changed due to the state support of persons engaged in agriculture and producing this or that kind of products [1].

As for the Russian agriculture, the livestock sector is one of the most widespread and developed at present. Russian agricultural organizations occupy a leading position in the production of livestock products and, in particular, cattle breeding, in this regard, therefore it is important to analyze the current dynamics of the industry with the participation of these producers. Nowadays agricultural organizations produce more than 50% of the total volume of livestock production in five large Russian economic regions located in its European part such as North-Western, Northern, Central, Central Chernozem and Volga-Vyatka. Due to the introduced sanctions, Russia declined some importers of meat and meat products, but they were replaced by other producers and the geography of producers and importers expanded.

The similar situation is observed in the country with the production of milk and dairy products. Last 2-3 years there are new and unusual types of milk such as goats and mare, which, for example, offers the manufacturer CJSC Plemzavod "Semenovsky", the Republic of Mari El as well as milk products containing, with different flavors on the market. Many small farmers in the Moscow Region and other regions offer Moscow consumers not only goat milk, for example, but also products that can be made from it, including cottage cheese, yogurt and various types of cheese from goat milk [2].

Besides the dairy industry, domestic meat producers are developing and being involved in the industry of pork, beef, veal, rabbit and other meat products that are offered to consumers as natural and...
2. Problem statement
The most acute and difficult problem for many countries, also for Russia, is meat production, which is the main factor for improving the nutrition of the world population. Russia could enter the new level of development in the field of agriculture and take a high position in the world market if Russia makes it a priority market for importing products from emerging economies such as the Near and Middle East, South and Southeast Asia, Central Africa, as well as the countries of the Eurasian Economic Union, where the purchasing power of the population is growing faster than that of the national agricultural sector.

One of the directions outlined in the State Program of Agriculture Development and Regulation of Markets of Agricultural Products, Raw Materials and Foodstuffs for 2013-2020 is to improve the competitiveness of Russian agricultural products in domestic and foreign markets on the basis of innovative development of agricultural sector. The weakest barriers to innovation development in the agricultural sector are the declining scientific potential of agricultural science as well as the low level of funding, and, consequently, the outflow of young scientists and the high risk of introducing scientific developments. The state should not save money and annually increase its volume to conduct and test innovative developments of modern agricultural scientists, which will make it possible to bring Russian agriculture to a new level of production in the future [3].

The course taken by the state for the intensification of production and import substitution allows our country to enter the world market and to assert itself as a major producer of products corresponding to the world standards and to nullify the import of raw materials and energy carriers. Our country, like no other country in the world, has a wealth of natural resources and intellectual potential, the widest domestic food market and conditions for the production of environmentally friendly and natural foods.

The potential for innovation is huge and all of this should help to accelerate development, but addressing the agricultural sector requires consideration by a number of responsible agencies. The main constraint to agricultural sector development in Russia is the reluctance of private investors to invest in agricultural sector development as high costs do not guarantee quick and high results.

The serious threat to the long-term competitiveness of the agricultural sector is unsatisfactory innovation activity against the background of weak interaction between business, education and science. Today, the innovative agricultural development has rather an inertia character. Innovation processes in the Russian food industry are not dynamic enough as there is no reason to speak about technological breakthroughs, intensive assimilation of the results of research and development, typical for the economy of the innovation type [3].

Financing of agricultural sciences is very modest and occupies one of the last places in the structure of the scientific and technical potential of the country, which does not meet the importance of the agricultural sector for the sustainable social and economic development of Russia [3]. At present, the financial situation of many organizations involved in the agricultural sciences remains miserable despite the diversity of their activities and size. Regarding the scale of support for agricultural sciences, Russia, being one of the leading agrarian powers in the world, lags far behind its global competitors, including not only the USA.

One of the most important problems of Russian agrarian science is aging of scientific personnel and deformation of their age structure. All this leads to the loss of generation succession, stopping the continuous process of transferring the necessary knowledge, skills and experience to young specialists and, ultimately, directly affects the viability of scientific teams. In 2015, the share of researchers under 39 years of age in agricultural sciences was 42.9%, it amounted to 31.5% from 40 to 59 years of age and 25.6% above 60 years of age [3]. The second most important problem is the lack of international research and publications by domestic scientists.

According to Web of Science, publications by domestic scientists (365 in 2015) account for about 0.5% of the global flow of international publications in the agricultural sciences. Russia lost 9 positions in the rating by 2015 compared to 2000. In terms of the number of scientific publications in the field of
agricultural sciences, Russia has already overtaken not only the world's leading economies (USA,
Germany, Japan, UK, Canada, France) and fast-growing China and Brazil, but also Pakistan, Saudi
Arabia and Egypt, which are not among the global scientific leaders [3].

The significant part of domestic publications in international editions of agricultural sciences is
provided by works written in international co-authorship (44% as compared to 34% in science in
general). Only a few dozen international studies in which Russian scientists would be the sole or main
authors are published per year.

The low level of global competitiveness of domestic scientists is also reflected in their level of
participation in advanced research. Currently, there are 481 areas in world agricultural science, with the
highest growth rate of publications in international scientific journals (so-called research fronts).
Russian scientists are authors of such publications in only 5 of them (1.1%) [3].

Patent activity in the field of agricultural sector had an unstable, but generally growing dynamics. In
1994-2015 the number of patent applications filed with Russian Patent in this field tripled, reaching
almost 4.9 thousand by the end of the period under consideration, and their share is approaching 11%
[3].

3. Findings

The agricultural development trend under the influence of the sanction regime shows a positive picture,
as evidenced by the statistics of Rosstat and the Ministry of Agriculture. The import substitution is a
special type of both state economic strategy and industrial policy which are aimed at increasing the role
of domestic production and protection of the domestic market by means of substitution of imported
goods with domestic ones. The sanctions regime is designed to help domestic enterprises increase their
competitiveness not only among domestic producers, but also to become more competitive at the world
level, offering quality products that meet all international requirements.

Today, one of the main agricultural development trends is the technical industry modernization.
Recently, exports of Russian agricultural machinery companies have been growing rapidly. Over the
last 5 years the geography of domestic agricultural machinery supplies has covered 47 countries abroad.
Among the main importers of Russian agricultural machinery in 2017 were CIS countries, European
Union countries, Mongolia and Canada. One of the most important reasons for the growth of export
supplies is the improvement of the domestic agricultural machinery quality and production of the newest
machinery lines.

Currently, in the age of high technologies, many technology companies have paid attention to
agriculture, learned together with partners to keep under control the full cycle of crop or livestock
production through intelligent devices that transmit and process the current parameters of each facility
and it as well as seamless communication channels between them and external partners. All this made
it possible to unite the objects into a single network, exchange and manage data on the basis of the
Internet, increase the productive capacity of computers, develop software and cloud platforms; it was
also possible to automate a significant number of agricultural processes by developing a virtual (digital)
model of the whole production cycle and interconnected links of the value chain, and form a schedule
of work with mathematical accuracy as well as take emergency measures to prevent sweat.

Today robots and drones are widely used in agriculture. Flying over fields, drones with cameras and
sensors allow farmers to see in real time what each plant looks like, how the crop matures and how the
soil color changes. One of the most important areas of agricultural development is the subsidization of
agricultural producers. The state supports greenhouse vegetable growing, pig breeding, development of
the parent herd, seed production, etc. Intensive development of greenhouse vegetable growing has
become relevant due to worsening relations with Turkey. Despite this fact, the demand in the domestic
market is insufficient [3].

In general, today the Russian agricultural sector is on the way to stable development, but at the same
time, there are a number of unresolved issues. Production indicators are growing annually, but the main
problem in 2017 was the mismatch between supply and demand. There was a decline in consumer
demand, primarily due to the decline in the solvency of the population in all markets in 2017. This may lead to market overflow and a decline in prices for agricultural products.

The Russian agricultural sector is an attractive technological market for foreign investors and manufacturers, while domestic business does not pay due attention to it. For more than twenty years there is a general tendency to decrease the share of domestic right owners in the majority of technological directions that testifies to the growing technological dependence on foreign developers. Exceptions are such segments as bakery production, veterinary medicine, production of food products and polysaccharides, in which, on the contrary, the growth of the number of patent applications filed by domestic applicants is recorded as in 2015 their shares were 86%, 100%, 90% and 86%, respectively. According to the ratio of the number of patent applications filed with Russian Patent by domestic and foreign applicants, the weakest position of domestic developers in such areas as biochemistry, production of alcoholic beverages, tobacco, vegetable and animal fats, slaughtering as in 2015 in these areas foreign residents owned from 40% to 80% of patent application.

The global competitiveness of Russian technologies for the agricultural sector remains extremely insufficient. According to the World Intellectual Property Organization (WIPO), during 1994-2014 the share of international applications of domestic applicants in the relevant areas did not exceed on average 0.2% of the global level. By 2015, patent activity in agriculture and related industries was recorded at 33 applications filed under the procedure of the Treaty on International Patent Cooperation (PCT), which is 0.13% of the total number of applications worldwide and corresponds to the level of approximately 15 years ago. This result is well below that of large and technologically advanced economies such as the United States of America, Korea, China, the United Kingdom, the Netherlands and developing countries such as India and Brazil. In terms of the share in the global flow of patent applications from the BRICS partner countries, our country outperforms only South Africa, remaining the only one of the twenty patent leaders to demonstrate its declining position as a sign of a growing technological gap. The situation with patenting developments in the agricultural sector as an internationally recognized form of protection of the results of intellectual activity with a view to their subsequent commercialization is a manifestation of an unstable innovation climate in this sector and the lack of proper incentives for the growth of scientific and technological activity [4].

Having considered the main issues of the agricultural sector development and its situation today as well as having revealed the main problems, some directions which are able to solve the problems in the sphere of agriculture will be further proposed. Both seasonal and universal crediting of the branch within the limits of state support, obligatory state insurance of agriculture (insurance of risks of death or loss of a crop and animals) can lead to positive result in development of domestic agricultural sector. For representatives of small and medium business it is desirable to establish the annual loan rate not exceeding 10%, instead of 15.95%, which is in force today when applying for a loan [4].

4. Conclusion
One of the priority directions of financing in the development of agricultural sector is renewal of the fixed assets of the enterprises of the branch. Technical modernization will make it possible to increase labour productivity and reduce the production cost. Besides, the state should invest more funds to support greenhouse cultivation of vegetables, seed production, development of the parent herd, etc. It is the modernization that can provide a stable level of development of crop and livestock production.

One of the restraining factors of agricultural market development is the dependence of domestic agricultural producers on such imported components as seeds, feed supplements, preparations for prevention of animal and plant diseases, etc. Consequently, our specialists in agrarian universities and research institutes should establish domestic developments in all areas and provide our farmers with everything they need.

Summing up the results of the undertaken research, we will make a conclusion as proposals that it is desirable to consider the State Duma and the Ministry of Agriculture and adopt a number of new laws or amendments to the existing ones, including the following [4]:

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• Simplify land registration procedure.
• Simplify the procedure of obtaining a loan and reduce the loan rate.
• Train farmers in the production of certain types of imported products to establish the production of analogues of favorite imported products that are no longer sold in Russia.
• Raise the prestige of rural life by creating transport, engineering and social infrastructure in rural areas.
• Increase the salary of all workers employed at agricultural enterprises by providing all workplaces and production facilities with the latest equipment.
• Increase the amount of federal budget subsidies provided to agricultural producers.
• Create special funds to support small businesses in the agricultural sector, investing in small agricultural enterprises.
• Offer more grants and make the procedure of their receipt easier for small forms of management with a simultaneous increase in financing of this direction.
• Allocate additional funds from the federal budget to compensate for direct costs incurred in the construction and modernization of priority facilities (dairy complexes, greenhouse complexes, wholesale distribution centers, breeding and seed breeding and genetics centers, potatoes, vegetables and fruit storage).
• Many lands are depleted, so it is necessary to give them a "rest", and look for new fields and lands that will be able to bring a high level of yield, developing new lands that previously were not intended for agriculture and conducting a number of examinations to determine the suitability of these lands for agriculture.
• Equip all agricultural enterprises, both large and small, with modern modernized equipment and technologies.
• Improve the quality of training of future specialists in agricultural universities: geneticists, breeders, IT specialists, specialists in the Internet of Things, ATV operators, etc.
• Increase investment in the development of grain and industrial crops, elite viticulture, and sugar beet cultivation in Krasnodar Region.
• Increase investment in the development of winter wheat, table and technical varieties of grapes, fruit crops such as apples, pears, heat-loving oriental fruits, increasing meat - dairy herd, breeding of thoroughbred horses, sheep breeding and specific areas related to the breeding of mulberry silkworms and bees in the Crimea.
• Increase production volumes of high-tech agricultural machinery.
• Invest and develop domestic enterprises and production facilities for growing strawberries, cucumbers, tomatoes, apples, pears, potatoes, carrots, beets, zucchini, zucchini, eggplant, cabbage, broccoli, greens, grapes, melon and other products.
• Establish in each region and province the production of import substitution for those types of products that have the greatest prospects in terms of natural climatic and geographical indicators.
• Provide enterprises with fresh water for irrigation, which is necessary for the cultivation of many types of products.
• Increase investment in new technological start-ups in agriculture related to different types of production.
• Introduce robotics everywhere.
• Create high-tech jobs.
• Ubiquitously implement the road map at all enterprises producing and processing agricultural products.
• Ubiquitously implement RFID.
• Modernize food production using resource-saving technologies, greening of the agricultural sector, and ensuring sustainable development of rural areas.
- Develop new GOSTs and manufacture high quality and safe products.
- Increase private investment in agriculture and create attractive conditions for it.
- Create favorable conditions for attracting young staff to work in the agricultural sector.
- Increase funding for R&D and development in various areas, both at higher education institutions and research institutes, and by individual specialists.
- Significantly reduce the import of finished food products and increase value added in agro-industrial sectors.

Simplify the procedures for obtaining certain certificates and carrying out various types of examinations.

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