

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Diploma Thesis

The role of agriculture in economies - case study of Krasnodar region

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DIPLOMA THESIS ASSIGNMENT

Bc. Olga Donnachie

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Thesis title

The role of agriculture in economies – case study of Krasnodar region

Objectives of thesis

The purpose of the diploma thesis is to analyse the dynamics, problems and prospects of the development of the agro-industrial complex in Russia with a particular focus on the Krasnodar region. The subject of the thesis is the efficiency of animal husbandry and plant growing production in the Krasnodar region and prospects for their development.

Methodology

To achieve the goal of the study, the author will solve the following tasks: reveal the essence of the agro-industrial complex; analyse the state of the agro-industrial complex of modern Russia, and analyse the composition and structure in the context of animal husbandry and plant growing production of the Krasnodar region. The following research methods are used in the work: economic analysis, synthesis of research results; scientific abstraction comparative method, analysis of the regulatory framework, methods of classification and comparisons.

The proposed extent of the thesis

40 – 60 Pages

Keywords

Agro-industrial complex, agriculture, Russia, Krasnodar region

Recommended information sources

CRUMLEY, M. Sowing Market Reforms: The Internationalization of Russian Agriculture. Springer, 2013. ISBN 978-1137300805.

GOLLIN, D., PARENTE, S., ROGERSON, R. The role of agriculture in development. 2002. ISBN 978-0-89629-161-4.

PALLOT, J., NEFEDOVA, T. Russia's unknown agriculture: Household production in post-socialist rural Russia. Oxford University Press, 2007. ISBN 978-0199227419.

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Declaration

I declare that I have worked on my diploma thesis titled " The role of agriculture in economies - case study of Krasnodar region" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 06.04.2020

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Role zemědělství v ekonomice - ukázková studie Krasnodarského regionu

Abstrakt:

Tato diplomová práce zkoumá a analyzuje současný stav agroprůmyslového komplexu v Ruské federaci, a to zejména v Krasnodarském kraji, na jihu země. Strukturu osvětluje v kontextu chovu zvířat a pěstování rostlin- popisuje její složení, identifikuje problémy a neefektivnost, zároveň však zkoumá její silné stránky, vyhlídky a směr budoucího vývoje.

Teoretická část představuje obecnou analýzu a přehled struktury a složení mezinárodního agroprůmyslového komplexu a převládajících trendů v Rusku. Praktická část nabízí analýzu a přezkum stavu ruského zemědělství s cílem poukázat na dynamiku rozvoje.

Zaměření na pěstování rostlin a chov zvířat v Krasnodarském kraji zároveň vyžaduje posouzení toho, do jaké míry lze regionální podmínky považovat za mikrokosmos národní situace obecně nebo, zda jsou specifické pouze pro jižní Rusko. Na základě komplexní analýzy pěstování rostlin a chovu zvířat v Krasnodarském kraji pak studie představuje soubor kroků a podmínek požadovaných pro udržitelný rozvoj, a vyhodnocuje perspektivy a vyhlídky.

Klíčová slova: Zemědělství, Rusko, Krasnodarský kraj, agroprůmyslový komplex, pěstování rostlin, chov zvířat

The role of agriculture in economies - case study of Krasnodar region

Summary:

This Diploma thesis will interrogate and analyse the current status of the agro-industrial complex in the Russian Federation, especially the Krasnodar region, in the south of the country. We will illuminate the structure in the context of animal husbandry and plant growing, describing its composition as well as identifying problems, inefficiencies and examining its strengths, prospects and the direction of future development.

The theoretical section presents a general analysis and overview of the structure and composition of the international agro-industrial complex, as well as the prevailing winds in Russia. The practical part offers an analysis and review of the condition of the Russian agriculture sector, in order to demonstrate the dynamics of development. Our focus on plant growing and animal husbandry in the Krasnodar region necessitates consideration of the extent to which regional circumstances can be treated as a microcosm of the national situation at large, or conversely are specific to southern Russia.

Based on the comprehensive analysis of plant growing and animal husbandry in the Krasnodar region, the study introduces a set of actions and conditions required for sustainable development, evaluating perspectives and prospects.

Keywords: Agriculture, Russia, Krasnodar region, agro-industrial complex, plant growing, animal husbandry

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1. Introduction

Agriculture is a universally crucial economic sector, providing sustenance for the increasingly urbanised majority who fuel the exponential growth of a large tertiary/service sector, as well as other industries. The development and productivity of agricultural production in Russia is intrinsically linked to the general health the state's economy, the political situation, and the degree of food independence. As such, interrogation of the agricultural sector in Russia is a worthy pursuit, given that it not only sustains the wider population, but also provides direct employment to a significant part of the population and interacts with crucial foreign policy and domestic aims and objectives of the regime, vis international sanctions. The agro-industrial complex of the Krasnodar region faces a plethora of problems, ranging from environmental/climatic to persistent low wages. Broadly, agriculture in the Krasnodar region can be characterised as in crisis.

The aim of this thesis is to study the development of the agro-industrial complex in Kuban (Krasnodar region), with a focus on animal husbandry and plant growing. To achieve this goal, it is necessary to analyse accordingly:

- To consider the theoretical foundations of the global agribusiness, Russian agro-industrial complex and agro-industrial complex of the Krasnodar region;
- To identify the problems of its development;
- Conduct a comparative characteristic and analysis of animal husbandry and plant growing of the Krasnodar regions for different indicators;
- To identify promising areas for the development of animal husbandry and plant growing in the Krasnodar region.

1.1. Objectives

The primary goal of the thesis is to analyze animal husbandry and plant growing in Krasnodar region as well as agro-industrial complex.

To achieve the main goal, it is necessary to disclose sub-objectives of analysis:

- Establish a working understanding and definition of the agro-industrial complex generally.

- Compare, contrast and evaluate the status, efficiencies and prospects of the agro-industrial complex in Krasnodar against national and international practice.
- Clearly and statistically present the current status of animal husbandry and plant growing in the Krasnodar region
- Provide qualitative recommendations for the sector to overcome stubborn challenges, deficiencies and inefficiencies.

1.2. Methodology

This Diploma Thesis will analyze and interrogate the comparative advantages and development possibilities of animal husbandry and plant growing in the Krasnodar region. To achieve this, we will utilise several types of quantitative and qualitative analysis, generalization, analytical, comparative and synthesis, thereby allowing us to draw conclusions based on a variety of methods. The theoretical overview will be applied with the aim of investigating the key aspects related to the global agro-industrial complex; its role, structure and composition, and the tendencies of the agro-industrial complex in the modern, global, economy. The next section analyses the agro-industrial complex with specific reference to the Krasnodar territory, focusing on plant growing and animal husbandry. Comparative analysis will be used to contrast animal husbandry and plant growing in the Krasnodar region, identifying key indicators and efficiency. The thesis will use statistical data from authoritative and objective Russian sources. Collected data is processed into the tables and graphs for better visualization and comparison.

2. Literature Review

2.1. Theoretical aspects of the agro-industrial complex

The agro-industrial complex is a set of sectors of the national economy related to the development of agriculture, maintenance of its production and bringing agricultural products to the consumer.

The purpose of the agro-industrial complex is to increase the efficiency of agricultural production and to satiate the population's demand for sustenance as wholly as possible with produce, and that of industry with raw materials. Its effectiveness depends on the successful functioning of related industries (agricultural machinery, weather services, etc.).

The agro-industrial complex comprises 3.43% of global GDP and employs 28% of the global population, in Russia agriculture accounts for the direct employment of 6.7% of the population (World bank, 2018).

Less than in the majority of tertiary economies in the global south, however, significantly more than in the most developed economies on the world stage, for instance; Norway (2.4%), Germany (1.3%), the United Kingdom (1.1%) and the United States (1.7%). Russia in this regard is analogous to many of the nation-states of Central and Eastern Europe, for instance Lithuania (7.8%), Latvia (7.5%) and Bulgaria (6.3%), wherein agriculture is directly responsible for a significant portion of employment. The agricultural sector must bear the higher cost of produce of any sector, as well as the largest volume of necessary capital investments (UNDP, 2018).

In the 1960-70s a technological shift began in world agriculture, that of agro-industrial integration. Agro-industrial integration is a form of business combination which is defined by its intersectoral nature, i.e. an Association of enterprises of two significantly different sectors of the economy - industry and agriculture. Agro-industrial integration allows producers to overcome the challenges and limitations of under-production in the field, in particular, agriculture's age-old vulnerability to climatic factors, thus, agriculture is included and subsumed into the broader process of industrial production.

2.1.1. The concept of agro-industrial complex, its structure and composition

The world agricultural complex acts as a coordination and vertically integrated set of enterprises and industries, which to a certain extent is involved in the production and distribution of final products from agricultural raw materials. The world agricultural complex includes:

- industries that supply capital goods for agriculture and related industries, as well as carry out production and technical maintenance of agriculture;
- agriculture itself, consisting of plant and animal husbandry;
- industries involved in processing and bringing agricultural products to the consumer (harvesting, processing, storage, transportation, sale);
- domestic and foreign trade in agricultural products and their industrial products;
- branches of the industrial and social infrastructure of the agro-industrial complex (Šotskij, 1979).

A number of industries almost entirely serve the needs of the agro-industrial complex (production of agricultural machinery, fertilizers, equipment for livestock and feed production, etc.).

Other industries are only partially engaged in meeting the needs of the agro-industrial complex and are included in the functional structure of the agro-industrial complex to the extent that their products are necessary for agro-industrial production.

The primary structure of the agro-industrial complex at the micro level, which forms its basis, are various enterprises: partnerships, cooperatives, agricultural associations, agricultural firms, private subsidiary farms, peasant (farmer) farms, etc. These enterprises, having a sectoral and diversified structure, form in aggregate territorial complexes.

Agricultural production has always been crucial for the development of the national economy and the global economy as a whole.

In agriculture, there are two major sectors: plant growing and animal husbandry. In addition, forestry and fisheries are also distinguished.

The main task of the agro-industrial complex is to maximize the satisfaction of the population's needs for food and consumer goods. For example, the production of feed, seeds, etc. In agriculture, gross and marketable products are distinguished. Gross output is the entire gross yield from this field. It can be determined by the formula:

$$GP = P \times S,$$

where GP... gross product;

P... productivity;

S... the area of the field, ha.

Commercial products - this is products that are for sale (Hess, 2016).

2.1.2. Global change influence on agriculture

World agricultural production has entered a period of global change, due to a combination of myriad factors, of which the key ones are:

- Global climate change;
- Growth and change in the structure of consumption associated with an increase in population and welfare;
- The technological revolution, which over the past decades has completely changed the structure of industrial production, comes to agriculture.

AIC is becoming the focus of interests of global investors and an important instrument of international politics. Changes occur both in the market and in the organization of agricultural production, in the structure of consumption, in the system of agricultural innovation, affecting farms.

2.1.3. The role and tendencies of agro-industrial complex in the modern world economy

The main task of the agro-industrial complex in the context of the globalization of the economy is to solve one of the prevailing global problems of our time - the food problem, i.e. meeting the growing needs of the world's population for food. The role of agribusiness in the sectoral structure of the world economy is constantly growing because a number of industries serve its needs.

The role of agriculture in the economy of a country or region is determined by its structure and level of development. As indicators of the centrality of agriculture, the share of those employed among the economically active population is used, as well as the share of this industry in national GDP. These indicators are quite high in most developing countries, where

more than half of the economically active population is employed in this industry. Agriculture there continues to follow an extensive development path, that is, an increase in production is achieved by expanding cultivated areas, increasing the number of livestock, and increasing the number of people employed in agriculture. In such countries, the economies of which are predominantly agricultural, the rates of mechanisation, chemicalisation, land reclamation, etc. are low.

The main direction of international agro-industrial integration in the context of globalisation is the solution to the biggest problem of our time - the problem of meeting the growing needs of the world's population for food. The intensification of agricultural production in recent decades continues to be a determining factor in relation to the scale of agricultural production in the group of developed countries. The intensive way of developing the production of grain and other agricultural crops in the world will continue to prevail, because only this can mitigate the crisis in the supply of food in relation to exponential population growth.

Food deficits in individual countries may be covered by foreign import. The main suppliers of food products on world markets are the developed countries of the West. Producing approximately 50% of world agricultural products, they provide 70% of world agricultural exports and only 40% of imports, and over the past decade their share in exports has increased, with a concomitant decrease in imports. The United States remains the main exporter of food in the world – accounting for more than 10% of total exports. The share of developed countries in world exports of all types of food, with the exception of fish and seafood, has a tendency to increase. For dairy products, it exceeds 95%, for cereals, meat and drinks it makes up 80-90%, for fruits, vegetables, oilseeds, fish - 60% (FAO,2018).

Developing countries occupy the strongest positions in the export of tropical products - about 90% of world exports, sugar - over 50%, fish, oilseeds, fruits and vegetables - 30-35%, grain and meat -10%. In recent years, the share of developing countries in the import of most types of food has increased; whilst the share of industrialized countries has declined. The share of developed countries in the import of fish, coffee, cocoa, tea and drinks is 80-90%, fruits, vegetables, meat - 75-80%, oilseeds and dairy products - 60-65%, cereals - 43%, sugar - 25 % The main positions in the import of developing countries are grain - more than 40% of world imports, oilseeds, dairy products, sugar, meat - 20-30% (FAO,2018).

The key international organization dealing with food and agriculture globally is the Food and Agriculture Organization - FAO, established in 1945. In addition to collecting and analyzing information, the FAO is also involved in coordinating the provision of food assistance to developing countries, as well as promoting agricultural development. The organisation designs and implements a variety of technical assistance projects. Since 1967, the FAO system has been running an industrial cooperation program, in the implementation of which the largest agribusiness corporations participate (FAO,2018).

Other international organizations make a significant contribution to the development of food issues, including the World Food Council, created by the UN in 1974, which monitors the world food situation and organizes assistance to countries in need. In 1977, the International Fund for Agricultural Development - IFAD was created, it provides assistance to developing countries to improve the food situation, providing funds in the form of loans on concessional terms, and in the form of gifts (FAO,2018).

The WTO is also involved in issues of international food trade, while negotiations on the food problem between the participating countries are the most difficult.

Recently, following lobbying by developing countries, the world has significantly reduced barriers to agricultural trade, eliminated quantitative restrictions and licensing, eliminated those types of subsidies that are considered as “violating the pricing process,” and made decisions to phase out other types of subsidies.

The global economic crisis practically did not affect the agricultural sector and agriculture as a whole. Given that the planet’s population will grow steadily and increase to about 9 billion people by 2050, food is becoming an important resource and its production must be increased at least twofold.

According to the FAO, in 2008, due to high food prices, 150 million people on Earth were not sufficiently nourished, and the impending crisis could increase the number of malnourished people by another 100 million people (FAO,2018).

3. Practical Part

3.1. The place and role of the agro industrial complex in the Russian economy

The agricultural sector of Russia is one of the fundamental factors in the countries historical development and present position, providing the necessary socio-economic and material foundations for the population, and for national food independence. Its significance is all the more so since it remains the main industrial, economic and socially organizing cornerstone of the bulk of the villagers, which makes up almost a third of the Russian population. In the context of the global economic recession, Russian agriculture was one of the few industries that retained positive-growth dynamics of labour productivity.

Historically, in the structure of Russian agriculture, crop production (about 56% of production) prevails over animal husbandry (about 44 %). But, despite the large volumes of harvested and obtained livestock products, the country's agriculture is characterized by low crop yields, insufficiently high livestock productivity and low labour productivity. Therefore, modern Russia is one of the largest importers of agricultural products (Nesterova, 2018).

For a long time, the country's agriculture developed extensively. This means that the volume of production increased due to the plowing of more and more new areas and an increase in the number of livestock. Currently, it is necessary to rebuild the economy on the path of intensification. It is necessary to increase the volume of production due to additional investments in the introduction of high-yielding crops and highly productive livestock, the introduction of modern equipment and technologies. In crop production, the cultivation of cereals (wheat, rye, barley, corn) predominates, occupying the majority of arable land. Most of this is planted with wheat. The main agricultural areas are the center and south of the European part of Russia, the Volga region, the North Caucasus, the south of Western Siberia, Altai. There are favorable conditions for the cultivation of legumes, oilseeds, beets, for the development of gardening, vegetable growing and melon growing. Of industrial crops, flax, sunflower, soy, mustard, sugar beets, and tobacco are common (Nesterova, 2018).

In the coastal part of the Krasnodar Territory, tea and citrus fruits are grown. The low level of livestock development is due to poor feed availability. The leading animal husbandry

industry is cattle breeding, producing meat and dairy. The main cattle-breeding regions are the Urals, Volga region, Western Siberia, and the North Caucasus. In the North, in the tundra, reindeer husbandry is developed. Sheep and goat husbandry are present in the mountainous regions of the country (North Caucasus, Altai) and in the mountains of Buryatia and Tuva, yaks are reared. The most productive livestock sector is pig farming, developed in almost all regions of the country, focused on the delivery of produce to consumers, and therefore, it is necessarily present in suburban agribusiness. Poultry farming is also widely developed, especially in the areas of large cities, with developed grain farming (it focuses on consumers and requires a steady supply of feed). The traditional industry of Russian livestock is horse breeding. Horses are bred in the forest-steppe and steppe zones (Center, Kuban, Lower Volga, Tuva). In forest areas, fur farming and fur trade are well developed (Nesterova, 2018).

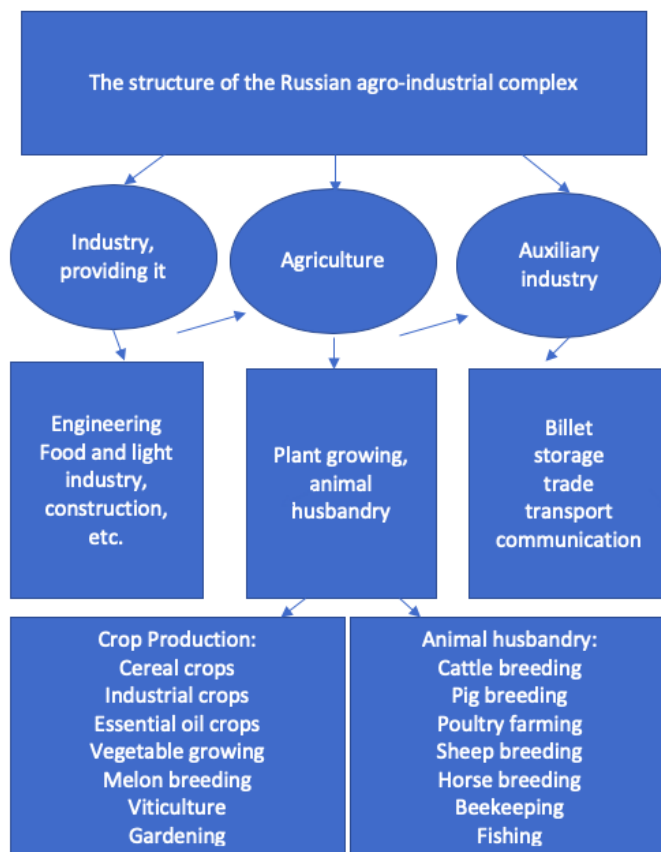
Russia maintains its export potential and has firmly established itself among the five leading world grain suppliers. According to the Russian Ministry of Agriculture, food exports exceed \$ 9 billion. And if markets in the Middle East, North Africa and Southeast Asia are explored, the scale of Russian agricultural exports, according to experts from the International Chamber of Commerce, can reach the current level of arms exports, where Russia is second only to the United States. Dynamics of exports and imports of the main types of agricultural products for 2007–2017 are shown in the figure below and characterise the country's foreign economic relations in the field of agriculture and the effectiveness of the functioning of the industry as whole (MCX, 2018). For the analysed period, the share of imports of the main types of agricultural products prevails over the share of exports (20% or 66,290million rubles) and is 80% (258,237 million rubles). Despite the fact that the share of agricultural goods, products and raw materials in the overall export structure is relatively small, but, it is clear that the dynamics of exports and imports of agricultural products in Russia has a positive relation. Over the past 10 years, their volumes have increased to 94,306 and 301,140.6 million rubles, respectively, confirming that the agricultural sector is actively developing, producing a product output quality that meets international requirements (MCX, 2018).

Analyzing the state of export of the main types of agricultural products in Russia, we can say that agricultural exports for 2007–2017 increased sevenfold, including the export of more poultry; fresh and frozen fish; sunflower oil, flour and cereals, as well as wool. On the

other hand, Russia began to export 3 times less milk, 2 times less butter, more than 5 times sugar and oilseeds, undermining the success of other sectors (MCX, 2018).

The structure of the agro-industrial complex can be represented as a figure (see Figure 1).

Figure 1: The structure of agro-industrial complex



Source: own elaboration, based on data from MCX, 2018

Consider the first sphere. It produces the means of production for agriculture itself and industries. These are feed and microbiological industry, tractor and agricultural engineering, food and light industry, the production of reclamation equipment, mineral fertilizers, rural industrial construction, infrastructure industries, etc.

The second area, including agriculture, differs from other industries for three main reasons:

1. Seasonal production, because throughout the year not only are labour resources unevenly used, but also machinery, materials and products are irregularly sold and revenue fluctuates.

2. Climatic conditions actively influence its development, economic success is dependent on them (wind, humidity, rains, droughts, frosts).
3. In agriculture, the cornerstone of labour is land. The area of Kuban is more than 7.5 million hectares of land, of which 4.75 million hectares are occupied by agriculture. Land is the most important link in the natural complex, which affects the distribution of agricultural production.

The third area of the agro-industrial complex includes the food industry, light industry sectors related to primary processing, trade and catering.

The fourth sphere itself does not create a product, it is an infrastructure block; industries that are engaged in the procurement of agricultural raw materials, transportation, storage, trade in consumer goods, training for agriculture, construction in the agricultural sector. (MCX, 2018).

3.1.1. Current agricultural problems in Russia

There is significant technical and technological lag in agricultural production of Russia as compared to the leading countries of the world for the following reasons:

- Insufficient funding to carry out deep technical and technological modernization;
- Insufficient profit volumes of agricultural producers for the implementation of modernization, which is largely the cause and effect of the technical and technological lag;
- Inconsistency of domestic equipment with modern requirements of agricultural producers;
- Lack of materials, technical, informational and other opportunities for optimizing production;
- Low investment activity associated with the low level of development of public infrastructure and the environment for the livelihoods of rural residents.

Currently, there is integration of the branches of the Russian agro-industrial complex in the world market - entry into the World Trade Organization. The emergence of sustainable demand with a significant reduction in imports stimulates the development of market relations, which have a certain impact on the industry, the importance of which remains to be assessed for

the future of agriculture and the entire Russian economy. But there are many opposing opinions on this subject. World experience shows that the largest contribution to ensuring national and international food security is made by countries that are not only producers, but also major exporters of food and agricultural products. The increase in the supply of domestic goods to the foreign market, combined with the optimization of imports, leads to a fundamentally different situation. In this case, Russia will begin to contribute to strengthening global food stabilization.

The starting conditions for Russian integration into the global economy were extremely unfavorable. Firstly, the existing structure of foreign economic relations in some cases does not create the basis for long-term economic cooperation; the volume of Western investment in the Russian economy is extremely small. Secondly, while in the world trade of developed countries, a significant proportion belongs to completed products and services representing the achievements of scientific and technical progress, a tertiary economy, Russian exports are defined primarily by the raw-materials, whilst goods and services related to satisfying consumer demand prevail in imports, stranding the economy between primary and secondary production.

Despite this, the country has the opportunity to expand export of food products, however, there is the concomitant risk that Russian enterprises will find themselves in a tougher competitive environment, which will need to adapt to global industry regulations and quality standards. Nevertheless, according to World Bank estimates, membership in the WTO in the coming years may increase the country's GDP by 3.3%. At present, Russia accounts for 2% of world trade. According to the Federal State Statistics Service, the country imports 15.9% of food products, the 3rd highest globally. Thus, the question of a deeper integration of Russia into the international division of labor in the agricultural sector is also important for food importing countries. Developed countries supplying food to the foreign market provide significant support to their exporters. Obviously, Russia also needs to create a system of export stimulation, including providing information, marketing and advisory support to exporters, harmonizing domestic and international standards, developing transport infrastructure, and unifying tariffs for transporting products (GKS, 2019).

In the coming years, Russia will be able to declare itself not only as a major buyer, but also as a promising exporter of certain types of food. At present, Russian producers are able to significantly expand supplies to the foreign market of meat and fish products, confectionery,

alcoholic and non-alcoholic drinks, cereals, sunflower oil, canned milk and yoghurts, ice cream, juices, etc., and in the future, environmentally friendly products.

Realizing the export potential of the agro-industrial complex will allow Russia to strengthen national food security and strengthen its importance in ensuring world food stability. However, the role of Russia in the world food industry in the coming years will depend on the effectiveness of state support for national producers of agricultural products, raw materials and foodstuffs, the adoption of draft federal laws proposed by the Ministry of Agriculture of Russia on agricultural development, regulation of the grain market, etc.

In conclusion, it must be said that, having a unique resource potential for the development of the national agro-industrial complex and agriculture, Russia is tentatively building a platform for its further integration into the world economic environment, a factor of its foreign economic and foreign policy significance, repositioning in the structure of the international division of labour, which should create not only additional tools to overcome the socio-economic problems of intra-economic differentiation, increase the competitiveness of regions, but also will increase the sovereignty of the country in a globalizing economy, provide alternative opportunities for its economic progress and for the stabilization of economic growth. Clearly, with any opportunity comes an element of risk, we will demonstrate that the agricultural sector in Russia is fraught with difficulties, whilst the political situation and need to adapt to higher standards are similarly challenging.

The structure of the agro-industrial complex of Russia is far from perfect. Agriculture is the main component: it produces over 48% of the complex's output, has 68% of the production fixed assets of the complex, and employs almost 67% of those working in the agricultural production sectors. In developed countries, in the creation of the final product, the primary role belongs to the tertiary sector of the agro-industrial complex (for example, in the USA, the processing and marketing sectors account for 73% of agricultural production, and agriculture accounts for only 13%) (Bunchikov, 2020).

The urgent task of the modern development of the agro-industrial complex is the balance of all its component. The lag in the development of processing industries leads to large losses of agricultural products, blighting 30% of the harvested grain, 40% of the harvested potatoes and vegetables (Bunchikov, 2020).

The acute development problem that arose in the context of economic reforms and the long crisis development of the agro-industrial complex is the underdevelopment of the capital goods market. This contributed to the progressive depreciation of equipment (in the processing industry it reaches 75%), reduced use of mineral fertilizers (in the 1990s, their application per hectare of arable land was reduced by more than 10 times), and the fleet of automobile, tractor and agricultural equipment was denigrated (for the indicated period is almost three times). Clearly, the political upheaval of the 1990s, and the shift from a centralised and planned to a market economy, significantly impacted Russian agriculture (Bunchikov, 2020).

In modern conditions, the development of the country's agricultural sector is ambiguous. On the one hand, there are positive results: there has been an increase in production in a number of sectors, and the number of enterprises operating with profit is growing. Conversely, negative processes that prevail over positive shifts are persistent and often growing, which, on the whole, means that the industry must be assessed as highly complex, often not meeting the objectives of economic development, and therefore putting at risk the prospects of Russian agriculture on global markets and national food independence.

3.2. Assessment of modern agro-industrial complex of the Krasnodar Territory and its trends

Agribusiness of the Krasnodar Territory is a major producer and supplier of agricultural products. It has its own developed network of processing, storage and sale of raw materials. Being the main link in the agricultural sector of the country, the agriculture of the Kuban (Krasnodar region) determines not only the economy, but also the level of employment and welfare of the Krasnodar Territory.

The Krasnodar Territory is one of the main regions that guarantees the food security of the country. In the Krasnodar Territory, more than 7.5% of Russia's gross agricultural output is produced. The share of products in the GDP of the agricultural complex of the Krasnodar Territory is 25%. "In 2016, agricultural production grew by more than 4%. This is an unprecedented growth. A record grain yield of 119 million tons was obtained. Positive dynamics in the production of livestock and fish products prevail." Livestock and poultry production on farms of all categories increased by 4%. In 2016, 2.8 million tons of cattle meat, 6.2 million tons

of poultry meat and 4.4 million tons of pork were produced, although again this positive picture is not unmitigated, as milk production remained at the level of 2015. Agricultural production per capita in the Southern Federal District is significantly higher than the national average and amounts to 54.7 thousand rubles, which is the highest among all districts. The poultry industry is developing steadily and dynamically, its share in the meat production-balance of the Krasnodar Territory is more than 60%. Thus, the development indicators of the agricultural sector in the Krasnodar Territory are:

- The sown area of arable land (in the Krasnodar Territory is about 674 097 ha);
- Average productivity (amounted to 62.7 centners per 1 hectare in 2016);
- Per capita meat production (90.5 kg);
- Wheat production (12% in 2016) (GKS, 2016).

The main socio-economic indicators of the Krasnodar Territory in comparison with the indicators of the Southern Federal District and the Russian Federation as a whole in 2016 are presented in the table below.

Table 1: The main socio-economic indicators of the Krasnodar region, the Southern Federal District and Russia, 2016

Indicator	Krasnodar region	Southern Federal District	Russian Federation
Total area, thousand hectares	7548,5	44782,1	1712519,1
Population, thousand people	5513,8	16428,5	146804,4
Industrial production index to the previous year, %	104,1	106,4	101,3
Agricultural output, billions of rubles	420,9	1027,4	5626,0
Agricultural production per capita, rubles	76335,7	62537,7	38323,1
Agricultural production index to the previous year, %	106,1	108,7	104,8

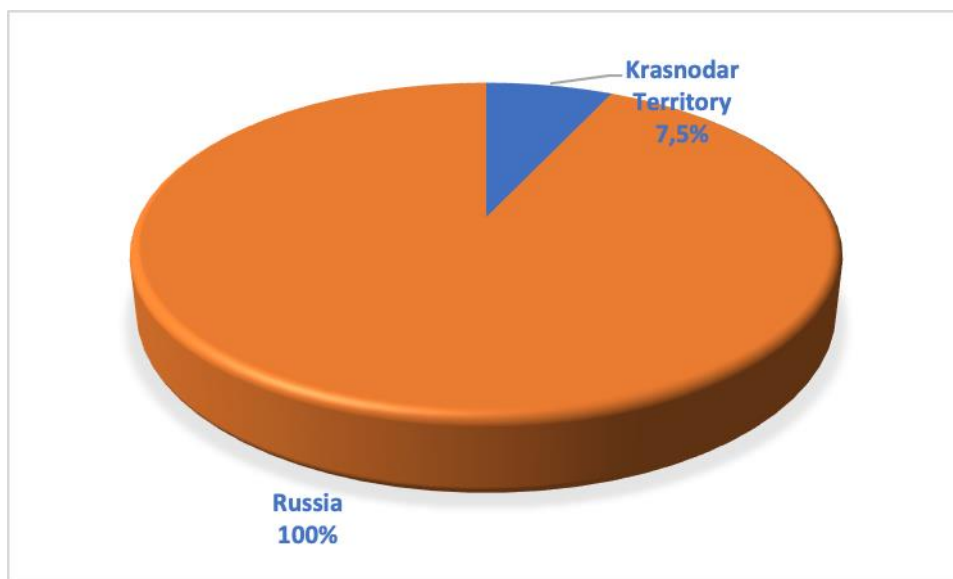
Source: own elaboration, based on data from GKS

The total area of the Krasnodar region is only 0.44% of the area of the Russian Federation and 16.86% of the area of the Southern Federal District. The total area of agricultural land in the Kuban at the beginning of 2017 reaches 4720.8 thousand ha, which occupies 62.5% of the total land area of the Krasnodar Territory. At the same time, the entire cultivated area in the Krasnodar Territory in 2016 was 3693.33 thousand ha, which makes up 48.9% of the total area (GKS, 2017).

In 2016, about 7% of the country's agricultural products were produced in the region. Kuban takes the first place in terms of agricultural production both in the Southern Federal District and in the Russian Federation, and evidently contributes more in this regarding that other regions.

The volume of agricultural production per capita in the region amounted to 76,335.7 rubles, which is 1.22 times more than in the Southern Federal District and almost 2 times higher than in the whole country (GKS, 2017).

Figure 2: The share of livestock production in the Krasnodar Territory in the total production of the Russian Federation



Source: own elaboration, based on data from Agro2B

The level of development of the agricultural sector in the Krasnodar Territory with its developing network of processing, storage and trade of products should be considered generally stable. The agro-industrial complex in the Krasnodar Territory is one of the most important sectors in the Russian economy. Currently Russia faces the problem of accelerated import

substitution; this problem can only be solved with the help of domestic industry. Krasnodar Territory is suitable for the development of agriculture, not only to improve performance in its area, but also on a national level.

Agriculture of the Krasnodar Territory consists of 7 thousand enterprises with various forms of ownership. Of these, more than six hundred are large or medium-sized organizations, and the population employed in this sector is about 400,000 people, which is only 7.33% of the total number of people living in the Krasnodar Territory (Agro2B,2017). Not only the improvement of its sectoral and territorial structure, ensuring the country's food security, but also the level of well-being of the whole region will depend on the level of development of the regional agricultural complex. The decline of the Russian economy has been ongoing for 3 years, but against the backdrop of a regression of almost all sectors, agriculture in the Krasnodar region exhibits resilient growth. The state actively supports the agro-industrial complex. Exports of grain products are a key source of income to the central treasury. In the near future plans for the construction of wholesale processing centers are define, the country will help the development of the agricultural machine-building industry and the development of processing grown products.

Almost 2.5% of all farmland in Russia is registered in the Krasnodar Territory. Of the total gross harvest of agricultural products in Russia, the region produces almost a tenth, including: 13% wheat, 25% sugar beets, 25% sunflower, 15% fruits, 54% grapes, 78% rice. Between 2005 and 2013, a 6.1% decrease in gross agricultural output in the structure of gross regional product occurred. The production of livestock products in 2013 amounted to more than 70 billion rubles, 30 billion rubles more than in 2005. crop production in 2013 amounted to more than 184 billion rubles, a threefold increase (Agro2B,2017).

Agriculture in the Kuban is diversified. More than a hundred different crops are grown in the region. Of everything that is produced in Russia, Krasnodar Territory gives the Russian consumer about 70% of rice, 27% of sugar beets, 40% of corn, 10% of grain, grapes about 50%, 20% of sunflower, almost all tea, citrus and other subtropical crops.

The Krasnodar Territory has powerful competitive advantages and good investment potential. Agriculture consists of two sectors - crop production and animal husbandry. According to the results of 2014, the total volume of livestock production in the Territory amounted to over 74 billion rubles, thereby exceeding the 2013 figures by 4 billion rubles. The

livestock industry is meat and dairy cattle, pig and poultry. The share of livestock products is 26% of GDP. In the Krasnodar Territory, about 60 organizations are registered that carry out activities in the field of livestock breeding. The number of pigs is 307 thousand head, cattle - 583 thousand head. In 2012 almost 500 thousand tons of livestock and poultry were raised in live weight and 1.3 million tons of milk were milked. As of April 1, 2014, in cattle farms of all categories, the number of cattle reached 556.5 thousand heads or 95.5% relative to the corresponding period of 2013, including cows - 223.0 thousand heads or 93.8%. The number of pigs increased to 306.8 thousand heads or 100.1% compared to the level of the 1st quarter of 2013, sheep and goats - 207.7 thousand heads or 110.1%. The number of poultry decreased slightly - 26,296.8 thousand heads or 97.2%.

According to Rosstat, in 2013, agricultural products worth 258.2 billion rubles were produced in the Krasnodar Territory, of which 190.1 billion rubles were plant products, and 68.1 billion rubles were livestock products.

The Agro-industrial complex consists of industries that are engaged in the processing of agricultural raw materials. These are sectors of light industry, food industry, industries related to the primary processing of flax, cotton, wool, leather, etc. This sector of the agro-industrial complex produces almost 48% of the final product, more than 68% of production assets and 60% of the number of employees are involved in it.

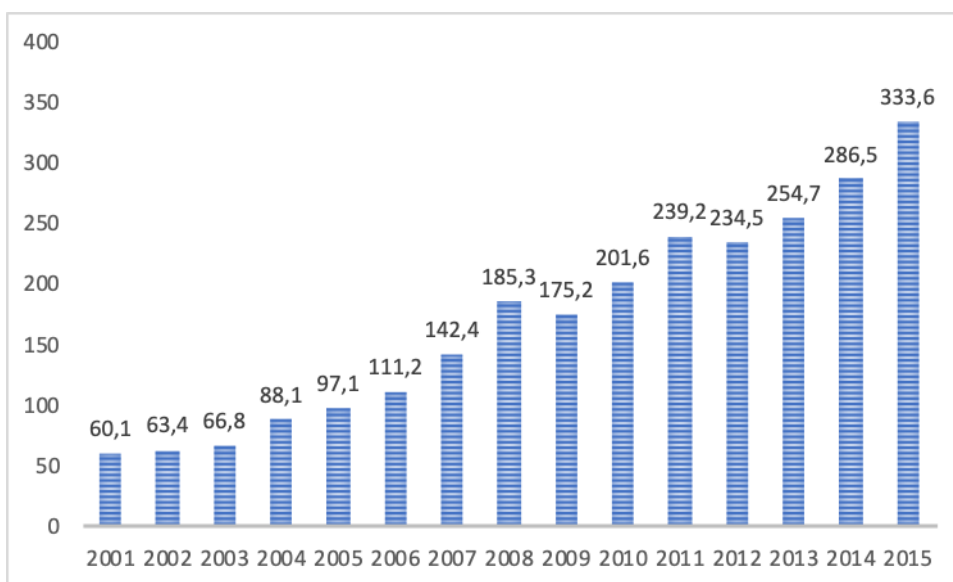
Also, agribusiness consists of industries that produce capital goods for agriculture and agricultural processing industries (agricultural machinery, tractor manufacturing, mechanical engineering, manufacturing equipment for the food and light industry, land reclamation equipment, mineral fertilizers, etc.). More than 250 tractors and 130 combines were acquired through the Rosagroleasing farms of the region, more than a thousand tractors, 400 combine harvesters and 320 trucks were overhauled and restored for a total of 2.7 billion rubles.

The agro-industrial complex also includes industries that process agricultural raw materials: the food industry, and primary processing industries for light industry. Agricultural products are processed in the region by 339 food and processing enterprises of various ownership forms: 54 - for the production of canned fruits and vegetables, 106 - for the processing of meat, over 70 - for the production of dairy products, the sugar industry is represented by 16 sugar factories, in addition, oil and fat, wine are produced -vodka and a number of other types of products.

Agricultural enterprises of the Krasnodar Territory produce more than 100 items of various agricultural machinery and equipment for the agricultural sector of the region and other regions of Russia.

The agro-industrial complex also includes sectors that provide agriculture with material resources. So, in the Krasnodar Territory, more than 700 large, medium and small enterprises producing mineral fertilizers, chemicals, etc. operate. The largest enterprise is located in Belorechensk, OJSC EuroChem - Belorechensky Mineral Fertilizers, which produces mineral fertilizers and sulfuric acid. In 2014, this enterprise increased production shipment volumes by 1.9 times and amounted to more than 3.5 billion rubles. Over 50 million rubles were transferred to the consolidated budget of the region. The complex is developing due to the presence of geothermal water and hydropower resources in the region.

Figure 3: Agricultural production in the Krasnodar region at actual prices in 2001-2015, billions of rubles



Source: own elaboration, based on data from Agro2B

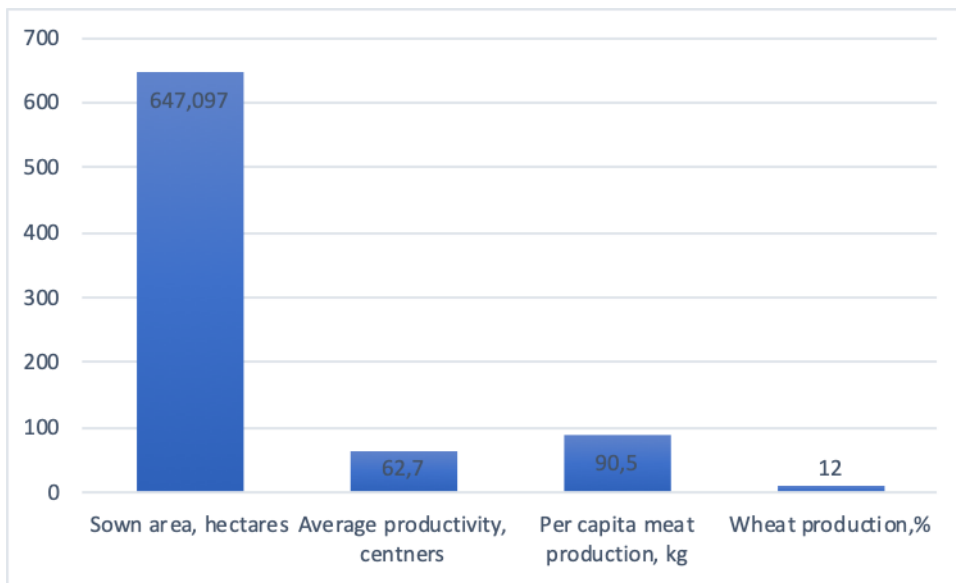
The administration of the Krasnodar Territory is actively seeking and attracting investment in the agricultural sector.

Nonetheless, the agro-industrial complex of the Krasnodar Territory remains fraught with difficulties, with several branches remaining insufficiently developed. The reasons for this are multifarious, and for each sector are individual. A simple listing of the problems, of course, will not help to eliminate them, the problems were, are and will be in the future, it is impossible

to immediately eliminate them, therefore the task at hand is to isolate, identify and remediate the most pressing:

1. Inadequate funding from the state;
2. Environmental problems of the region;
3. Incompetence and recklessness of the heads of enterprises of the agricultural sector.

Figure 4: Agro-industrial complex development indicators in the Krasnodar region, 2016



Source: own elaboration, based on data from Bunchikov

To support agricultural production in the agro-industrial complex of the Krasnodar Territory, the Department of Agriculture and Processing Products of the Krasnodar Territory provides state support measures to agricultural producers as part of the implementation of regional and departmental target programs. To solve the main problems associated with the development of the agro-industrial complex, the following is necessary:

- More effective state participation in the development of the agro-industrial complex, primarily through direct investment;
- Rethinking the content and patterns of development of economic processes related to the intensification, specialization, concentration of agricultural production and agro-industrial integration in a market economy;

- Train qualified specialists to improve the competitiveness of products and improve the function of the complex as a whole.

Although the agribusiness of the region has the ability to fully satisfy the demand of the population of the region, it is necessary to develop all sectors of the economy, because 50% of subsistence requirements are presently imported. To do this, it is essential to attract new workers and provide the economic opportunity and incentive necessary to facilitate this, it is similarly essential to do everything possible to develop small business, support it and aid its development.

The development of the agro-industrial complex has good prospects and opportunities for sustainable development. The stability of reproduction in the agro-industrial complex consists in the fact that its qualitative state is dynamically developing socio-economic and biotechnical-technological systems. While ensuring the optimal development of growth and development of the whole complex, the stability of reproduction in the agro-industrial complex reaches the highest level. The lowest limit of the stability of reproduction in the agro-industrial complex is that line at which there is a gap between resources and needs, when the productive forces of the complex are degraded. In recent years, there has been a process of development and implementation of targeted programs to support and develop the agricultural sector. These include programmes such as "Development of agriculture and regulation of agricultural products, raw materials and food markets in the Krasnodar Territory", "Social development of the village", "Development of land reclamation in the Krasnodar Territory", "Prevention of the risk of introduction, spread and elimination of outbreaks of African plague pigs in the Krasnodar Territory", "Development of small business forms in the agro-industrial complex on the territory of the Krasnodar Territory", "Support for beginner farmers in the Krasnodar Territory", "Saving and restoring soil fertility of agricultural land and agricultural land as a national heritage of Russia" and others (Chepsina,2014).

In conclusion, it can be noted that the agro-industrial complex is an important component of the country's economy, including sectors for the production of agricultural products, their processing and bringing them to the consumer, as well as providing agriculture and the processing industry with means of production. The development of agribusiness in the Krasnodar Territory is evolving, it is progressive in nature, but it needs government intervention and support, primarily through direct investment in the agribusiness sector, because in recent years such support has been insufficient or non-existent. It is also necessary to solve the

environmental problems of the complex, to develop non-waste technologies. Combining the efforts of the central authorities and regions will contribute to solving the problems of the agro-industrial complex. Developed agro-industrial support programs should help solve problems. The region needs to replace imported goods, attract residents to the region, and give them the opportunity to develop business in the Kuban.

The Government of the Russian Federation has a policy of import substitution, and this problem remains pertinent today. Import substitution refers to the partial or complete rejection of any goods by expanding national production and releasing the same or similar domestic goods within the country

Analyzing the main indicators of agriculture in the Krasnodar Territory in the context of import substitution, we can say that many indicators show positive dynamics in the development of agriculture. The sanctions have given the potential for the development of agriculture in the Krasnodar Territory. The policy of import substitution has allowed to achieve higher positions in the global market.

Therefore, there is reason to believe that the course on import substitution is a clear strategy for the long term. Enterprises need to change their strategy and choose a different development model. Therefore, a scientifically grounded national import substitution program is needed, which should cover almost all sectors of the real sector of the economy, primarily the basic industries and agriculture.

3.2.1. Economic sanctions

The US/EU sanctions against the Russian Federation introduced in 2014 had and continue to have a direct and significant impact on the development of the agro-industrial complex in the Krasnodar Territory. After the advent of the food embargo, the demand for food domestically produced in the Krasnodar Territory increased. However, the profitability of the business remained the same. Many cannot get loans for the development of their agricultural business, because the terms of obtaining a loan can reach 5 years. Banks do not show interest in lending to agriculture because of the low payback period of production and the lack of opportunities for farmers to endow pledged property. All the money of farmers is used in production, and the value of the property is not able to cover the loan (S-Kub, 2015).

The import substitution policy in the Kuban did not yield the expected results, such that even in agriculture, growth is not universal. The introduced barriers increased prices not only for imported equipment, but also for spare parts, the price of which almost doubled, and for raw materials prices rose by 10-20%. However, in general sanctions had a great positive impact on the development of the agribusiness as the state pursued a necessary policy of import substitution. We can predict however that in order to realise the full potential of the sector, it will be necessary for Russian industry to be able to freely trade on global markets, in contrast to the prevailing situation.

3.2.2. Lack of investment

Agriculture in the Krasnodar Territory is characterized by low efficiency, as a result of which physical and moral depreciation of fixed assets is common. Modernization of enterprises and equipment should be carried out as often as possible, but due to a lack of funds, this transformation does not occur. In 2015, investment in fixed assets of agriculture increased by 4.4% compared to 2014. In 2017, salaries grew by 1.7%, in 2018 - by 3.1%, which had a positive impact on consumer activity. Despite the high successes of agriculture in the Krasnodar Territory, agriculture needs investment support. In 2016, the gross output of products and services in agriculture increased by 5.5%, in crop production by 7.8%, and in livestock production by 2.7%. The main source of financing is the personal funds of enterprises. Thus, depreciation of fixed assets in the agricultural sector reaches 80%. (GKS, 2019)

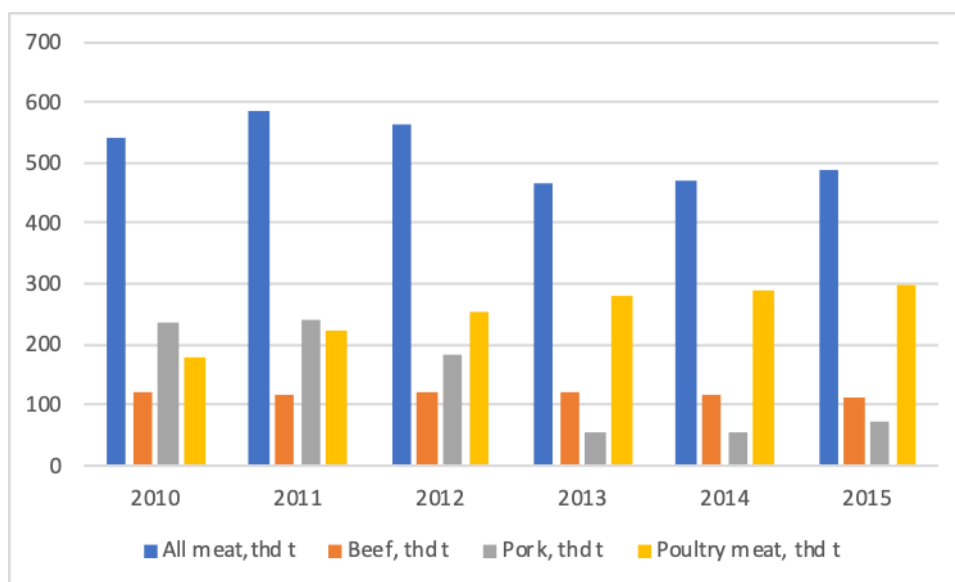
3.3. Analysis of the composition and structure in the context of animal husbandry and plant growing production of the Krasnodar Territory

Krasnodar Territory is in first place in the Russian Federation for the production of many crops, such as wheat, corn, sunflower, rice, sugar beets, beans, barley, soybeans and vegetables. In livestock production, the region ranks third in meat production, fourth in milk production and fifth in egg production.

3.3.1. Animal husbandry of Krasnodar region

Animal husbandry is the main supplier of such non-replaceable and high-value products to the population as meat, milk, eggs, animal fats, honey and others.

Figure 1: Dynamics of livestock production in the Krasnodar Territory from 2010–2015 for all categories of farms



Source: own elaboration, based on data from GKS

Table 2: Dynamics of livestock production in the Krasnodar Territory from 2010–2015 for all categories of farms

	2010	2011	2012	2013	2014	2015	2016
All meat, thd t	542,6	585	564,1	465,2	468,8	489,3	495,6
Beef, thd t	122,2	116,4	122,1	122,2	118,5	111,8	107,3
Pork, thd t	234,7	240,6	181,7	54,9	56,4	72,6	69,8
Poultry meat, thd t	180,5	222,5	254,3	282,3	287,4	298,3	301,4

Source: own elaboration, based on data from GKS

The leading area of animal husbandry in the Krasnodar region is cattle breeding. Cattle breeding is comprised of two distinct branches, dairy and meat, with occasional overlap between them.

The livestock industry is currently undergoing certain difficulties. The analysis of statistical data showed a negative trend in almost all indicators of livestock production in agricultural organizations. The only category in which positive dynamics can be traced is the production of broilers, which, having increased production by 24% compared with previous years, reached indicators of 44 thousand tons of chicken.

From 2010 to 2015 there is a decrease in the number of cattle by 27.3%, including cows by 25.1%. A tremendous reduction is observed in the number of pigs from 972 thousand heads in 2010 to 278 thousand heads in 2015, which is 71.4%. There is also a significant reduction in the number of sheep and goats from 21 to 12 thousand heads or by 42.9%. livestock costs young feed.

According to the Ministry of Agriculture of the Kuban, the Krasnodar Territory in 2015 lagged behind 2014's indicators of livestock and poultry meat production, despite the fact that the region has all the opportunities for its production in larger volumes than it is now. Milk production decreased from 891 thousand tons to 765 thousand tons. The Krasnodar Territory in production of livestock and poultry for slaughter in live weight in Russia takes 3rd place, in milk production - 4th place, in egg production - 3rd place. Kuban has unique natural capabilities and has 394 thousand hectares of natural grasslands and pastures. According to experts, they could freely contain up to 80 thousand heads of beef cattle (MCX, 2016).

Livestock and poultry productivity in agricultural organizations of the Krasnodar Territory in 2015 increased compared to 2010.

Livestock farming is an important component of agriculture, which accounts for less than half of the gross output of the industry. In recent years, poultry and pig farming in the Kuban have been increasingly developed. Cattle breeding is divided into 2 directions: dairy and meat. The table below provides a concise overview of the state of livestock farming in the Krasnodar territory, 2013-16:

Table 3: Animal husbandry in the Krasnodar region, 2013-2016

Kind of animal	Cows 2013	Pigs 2013	Sheep and goats 2013	Cattle 2013
Livestock (thousand)	226	290	180	563

	Cows 2014	Pigs 2014	Sheep and goats 2014	Cattle 2014
Livestock (thousand)	219	334	197	548,5
	Cows 2015	Pigs 2015	Sheep and goats 2015	Cattle 2015
Livestock (thousand)	218	433	208	538
	Cows 2016	Pigs 2016	Sheep and goats 2016	Cattle 2016
Livestock (thousand)	218	431	260	540

Source: own elaboration, based on data from MCX

3.3.2. Plant growing in Krasnodar region

Plant growing is the largest branch of agriculture in Krasnodar territory. The main branches of crop production include:

1. The industry for growing crops (wheat, barley, rye, corn, buckwheat, rice, sorghum, millet);
2. The industry for the cultivation of legumes (peas, beans, lentils, chickpeas);
3. The industry for the cultivation of oilseeds (sunflower, soybean, rape, saffron, mustard);
4. Sugar-bearing crops (sugar beets);
5. Potato farming;
6. Vegetable farming (open ground, protected ground);
7. Gardening;
8. Melon breeding;
9. The industry for growing spinning crops (flax, cotton, hemp), fodder crops (MCX,2017).

Plant growing has a manifest issue in the high dependence of the results on the prevailing weather conditions, the timeliness and quality of the mechanized work in the framework of the zonal agricultural technologies, the degree of their adaptation to the soil and climatic features

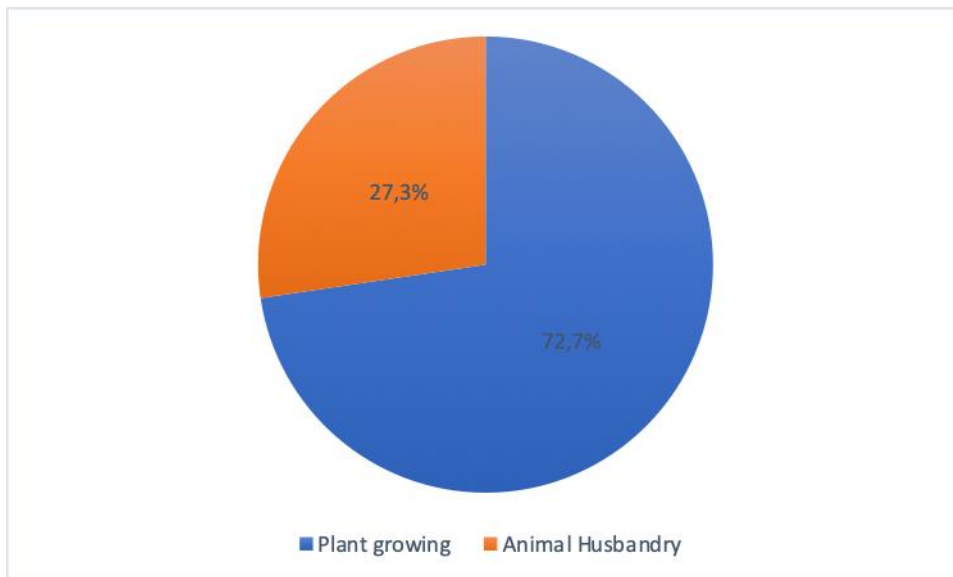
of the location. It places special demands on the quality of the technical and technological base of the industry, the basis of which is machine-tractor park of agricultural producers

In the cultivation of crops, the largest share is held by winter wheat. Winter wheat is grown in all areas of the Krasnodar Territory. Preference is given to wheat varieties that are resistant to drought and disease and have a high yield. In the Kuban, up to 10% of the gross volume of wheat is produced throughout Russia. Spring wheat in the structure of crops occupies 1-2% (Agro2B,2017).

Second place is winter barley. It is less resistant to low temperatures, but heat-resistant. About 10% is reserved for corn, which also needs care and a large amount of fertilizer.

The Krasnodar Territory is home to several unique crops which are not produced in other areas of the Russian Federation. This is a rice variety of its own, which was grown on Kuban-Dubovsky-129. Specialists use the necessary agricultural technology and artificial irrigation regime to obtain higher yields.

Figure 5: Specialization of agriculture of the Krasnodar region for 2015, %



Source: own elaboration, based on data from Agro2B

According to the schedule, in 2015, crop production accounted for 72.7%, which corresponds to 242.4 billion rubles. and livestock 27.3% to 91.1 billion rubles (Agro2B,2017).

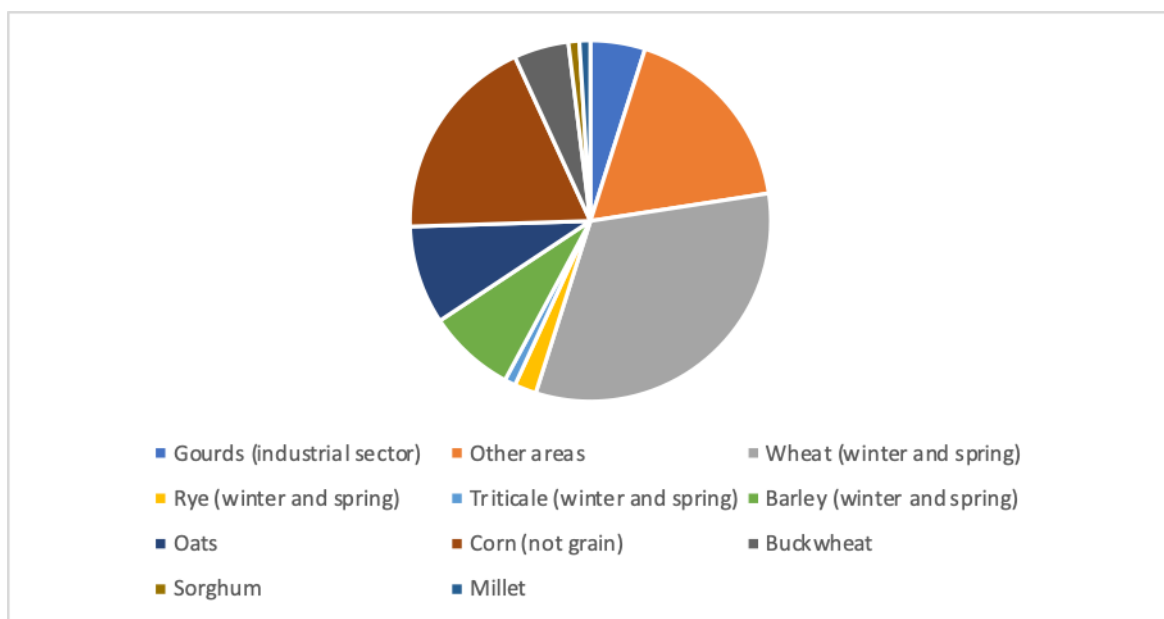
Crop production in the Krasnodar Territory dominates among the regions of Russia in terms of the volume of production in value terms.

In 2015, this figure reached 242.4 billion rubles. and amounted to 9.2% of the total value of crop production in the Russian Federation.

The total size of all sown area in the Krasnodar Territory in 2015 amounted to 3,679.0 thousand hectares - 4.6% of all sown area in Russia. Despite the fact that the region is in fifth place in terms of cultivated area in the Russian Federation due to favorable climatic conditions, the greatest return is achieved per unit area (FAO,2017).

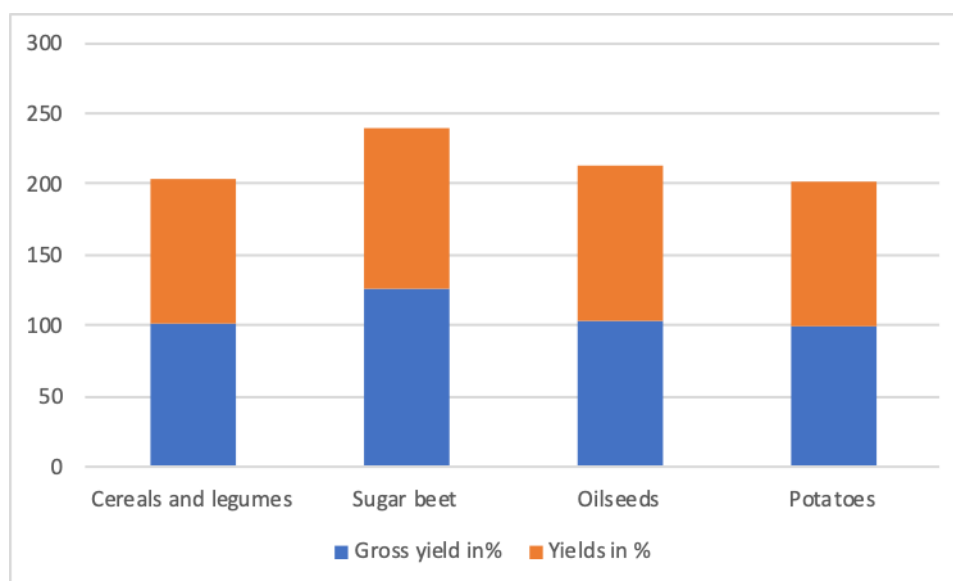
Having studied the structure of the region, we can conclude that the share of sown areas is as below:

Figure 6: Share of crops growing in Krasnodar region, 2015



Source: own elaboration, based on data from FAO

Figure 7: Share of yields in Krasnodar region 2015, %



Source: own elaboration, based on data from FAO

Table 4: Share of yields in Krasnodar region 2015, %

	Gross yield in%	Yields in %
Cereals and legumes	101,5	101,1
Sugar beet	126,7	113,3
Oilseeds	103,8	109,1
Potatoes	99,7	102,1

Source: own elaboration, based on data from FAO

According to the schedule, it can be concluded that the crops of the region are dominated by wheat cultivation, which is 40.1% of all areas, as well as corn going to grain (16.9%), sunflower (11.9%), barley (4.8%), soybeans (4.5%), sugar beets (4.2%), rice (3.6%), respectively (FAO,2017).

Gross harvests of winter and spring wheat in the Krasnodar Territory in 2015 reached 8,464.0 thousand tons and amounted to 13.7% of the national total. In wheat harvesting in the Russian Federation, the region is again in first place and only sixth in the sown area of this crop, the region has 5.5% of the sown area in Russia (FAO,2017).

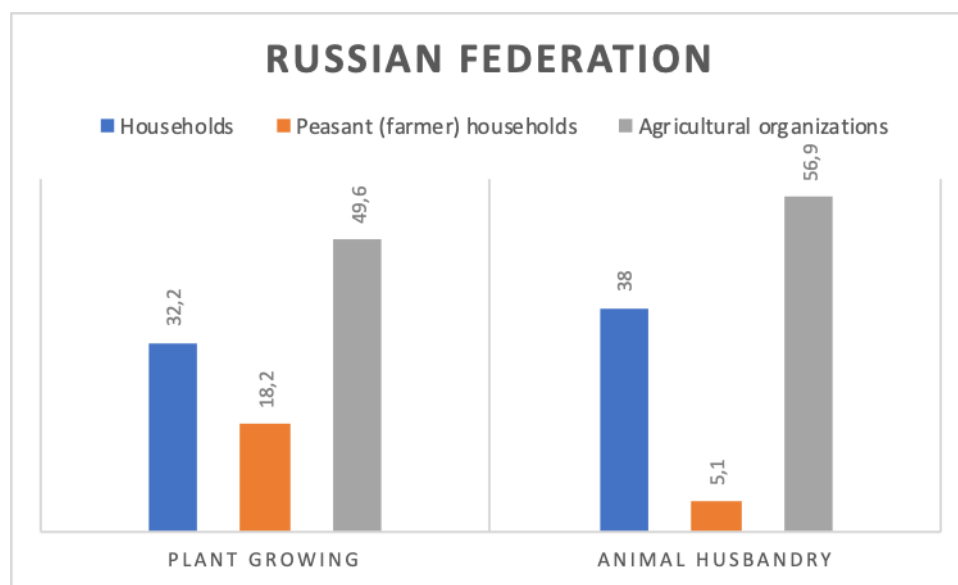
3.4. Analysis of the main indicators of animal husbandry and plant growing production in the Krasnodar territory

Let us analyze the agricultural production of the region in the context of individual industries. The role of different categories of agricultural producers varies in crop production and livestock production. Thus, agricultural organizations play a significant role in the crop sector: in 2016, they accounted for about 64% of all production. A similar indicator for peasant (farm) households does not exceed 24%.

Regional indicators significantly differ from those of the Southern Federal District and the country where a significant part of the products is produced by households (in the Southern Federal District - 19%, in the Russian Federation - 32%). At the same time, in 2016, the structure of livestock production in the region and throughout the country is almost identical. About 58% of livestock products of the analyzed region are produced by agricultural organizations. Compared to crop production, individual households play an important role (up to 39%). The share of peasant (farm) households is very small - only 3% (GKS,2017).

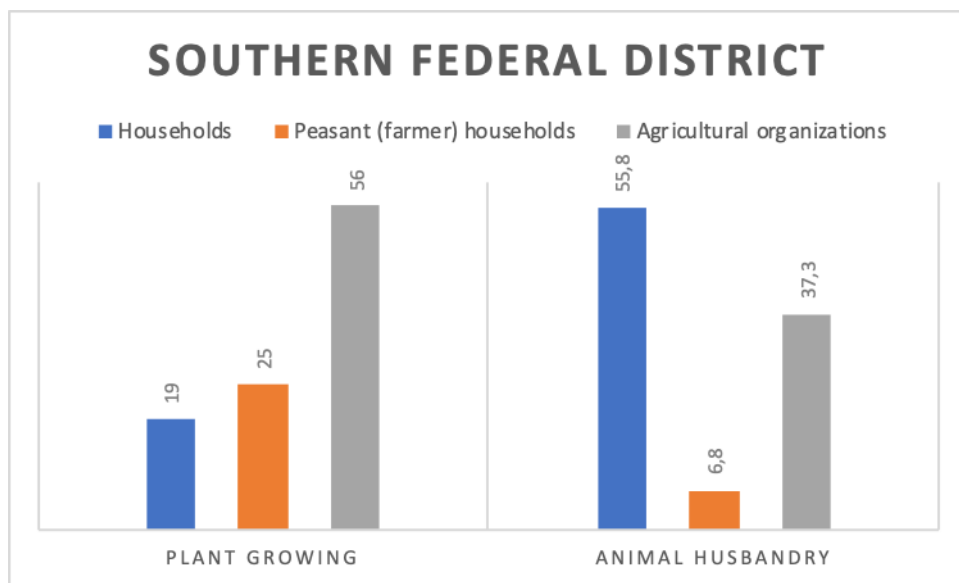
Plant growing is the basis of the agro-industrial complex of the Krasnodar region. In 2016, the share of crop production in the volume of agricultural production of the Krasnodar Territory amounted to pitchfork 77%, while the rate in the Southern Federal District reached 72% (GKS,2017).

Figure 8: The structure of agricultural production by farm categories, Russian Federation, 2016



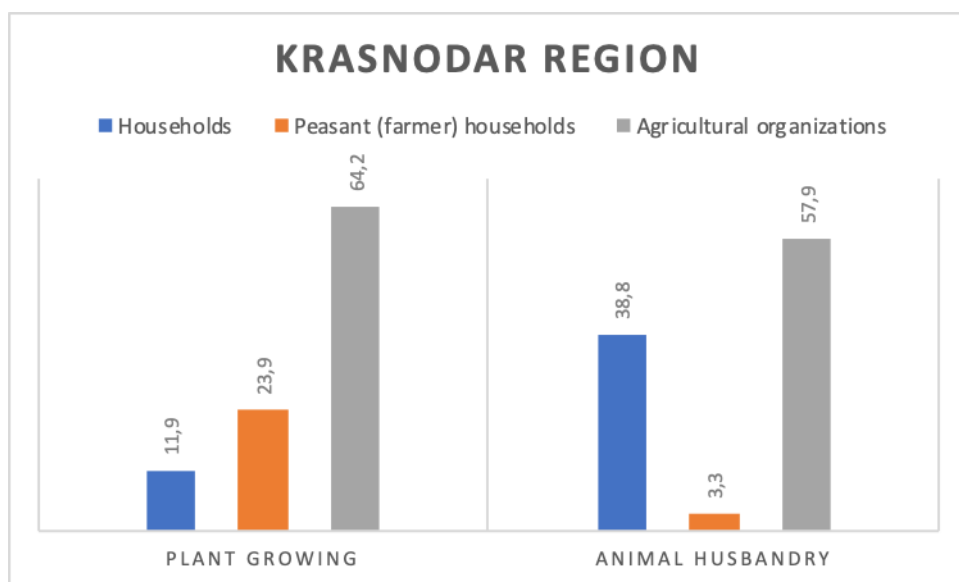
Source: own elaboration, based on data from GKS

Figure 9: The structure of agricultural production by farm categories, Southern Federal District, 2016



Source: own elaboration, based on data from GKS

Figure 10: The structure of agricultural production by farm categories, Krasnodar Region, 2016

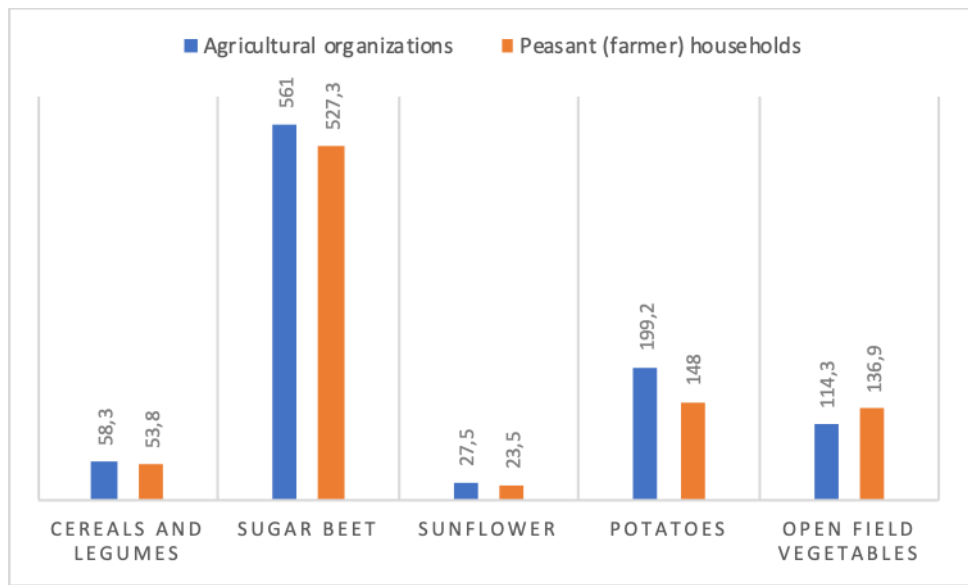


Source: own elaboration, based on data from GKS

The structure of sown areas of the most significant agricultural crops of the Krasnodar Territory in 2010 and 2016. presented in the figure above.

Since 2010, the structure of the sown areas of the Kuban has undergone some changes: the sown areas of winter and spring wheat have grown, making in 2016 39.43% of the total sown area of the region. The share of corn sown area has significantly increased - in 2010 they amounted to only 11.35%, then in 2016 - 17.59%, ahead of the sown area sunflower crops, which reduced their share to 11.56% in 2016. The share of cultivated areas of sugar beets, winter and spring barley, and other agricultural crops slightly decreased compared to 2010. Compare the yield of some crops in agricultural organizations and peasant (farmer) households countries of the Krasnodar Territory in 2016 (see Figure 11).

Figure 11: The yield of some crops in agricultural organizations and peasant farms of the Krasnodar region in 2016



Source: own elaboration, based on data from FAO

So, from the presented figure we see that by the main types of agricultural structures, the yield is higher in agricultural organizations. The only crops cultivated by peasant (farmer) households that were highly productive, were vegetables of open ground. It can be concluded that the crop production of the Krasnodar Territory is fairly stable.

The problems of plant growing in the Kuban include the deterioration of the soil cover of the region, the possibility of the beginning of soil degradation.

Against the backdrop of the continuous growth of crop production indicators, the livestock industry is not showing satisfactory results, yielding leadership in the Southern Federal District of the Republic of Kalmykia, Astrakhan and Rostov regions.

Of particular concern is pig breeding, which has still not recovered after the outbreak of swine flu in the Kuban. Compared to 2011, in 2017 the losses amounted to 156 thousand tons of live weight, which amounted to 68% of the total (AC, 2017).

Cattle, sheep and goat husbandry show slow but steady growth. The number of cattle increased from 45.8 thousand tons to 59.6. Sheep and goat husbandry from 0.4 to 0.5 thousand tons for 2007 and 2017, respectively (AC, 2017).

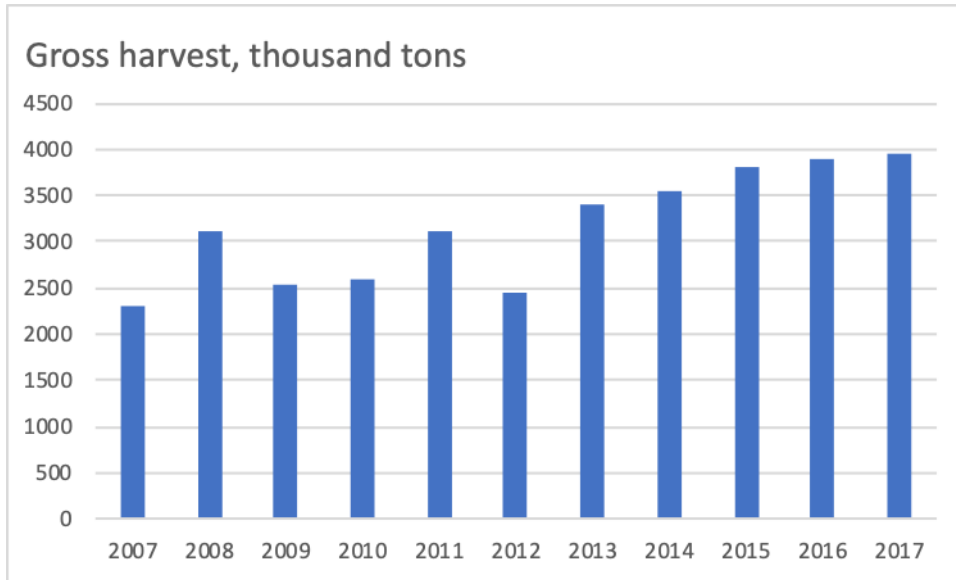
The best result was shown by poultry farming; the increase in livestock over 10 years was 300%, 1.4 thousand tons for 2007 and 4.2 for 2017

However, at the same time, the share of livestock products in the total volume of Kuban products is small. The development of the livestock industry requires an in-depth study of the most important problems and their integrated solution, which will achieve high results not only in crop production. First of all, it is necessary to reduce production costs, improve the technical equipment of farms, subsidize farms that are ready to engage in the production of the most popular products.

It is important to remember that farming in Russia is not only one of the main production forces, but also the main aspect of rural development, which plays an important role in the social policy of the state and allows a significant number of rural people to realize themselves in entrepreneurial activity. The above largely solves the problem of rural employment.

An important role in ensuring the sustainability of the development of peasant (farmer) farms is played by the rationally formed sectoral structure of production in them. Analyzing the development of industries, it becomes obvious that crop production is chosen as the priority direction of peasant farms. So, the gross harvest of grain and leguminous plants in 2017 amounted to 4023.1 thousand ha, which is almost twice as much as the harvest of similar crops in 2007 - 2314.7 thousand tons (AC, 2017).

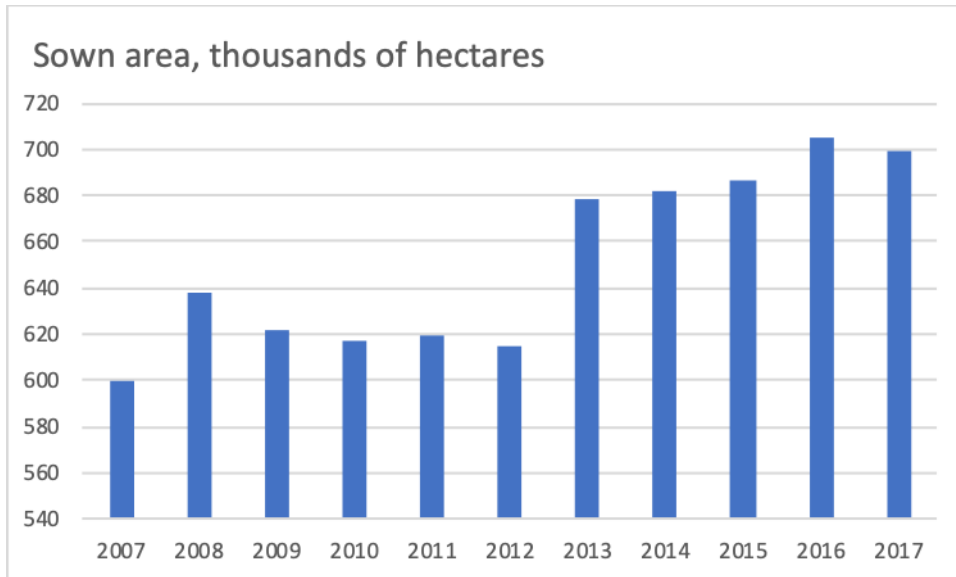
Figure 12: Gross harvest of grain and leguminous crops in the Krasnodar region, 2007-2017



Source: own elaboration, based on data from Investkuban

Such a high trajectory of crop growth was achieved to the greatest extent due to an increase in crop yields and partly an increase in sown area - from 604.3 thousand ha in 2007 to 701.7 thousand ha in 2017.

Figure 13: Sown areas of grain and leguminous crops in the Krasnodar region, 2007-2017



Source: own elaboration, based on data from Investkuban

3.4.1. Increase in the efficiency of production of animal husbandry

The economic efficiency of livestock production in agricultural organizations of the Krasnodar Territory is low.

Table 5: Economic efficiency of production of livestock industry in agricultural organizations of the Krasnodar Territory in 2016

Name	Meat			In general, In Krasnodar region
	Cattle	Pigs	Poultry	
Sales revenue, mln. Rub.	986,1	843,1	4887,2	11995,0
The total cost of sales, rubles	1385,8	833,1	4609,7	10163,6
Profit (loss), million rubles	-399,7	10,0	277,5	1831,5
Profitability level,%	-	1,20	6,02	18,02
Return on sales,%	-	1,19	5,68	15,27

Source: own elaboration, based on data from Agro2B

The profitability of pig meat production in 2016 was 1.2%, and poultry - 6.02%. The most cost-effective is the production of milk and eggs. In 2013, it amounted to 18.02% and 13.42%, respectively.

Prices for livestock products are directly dependent on their cost, which depends on the waste-levels of material and labor resources, production technology and the level of non-production costs. Analysis of the structure of the cost of production of the livestock industry in agricultural organizations of the Krasnodar Territory showed a high share of feed costs.

Thus, an increase in the efficiency of production of livestock products is possible due to the formation of a solid fodder base: rational feeding of farm animals with a complete balanced and uniform feed. This will allow the Kuban livestock enterprises to realize the high genetic potential of cattle and increase production of milk and other types of livestock products, thereby ensuring the needs of residents and guests of the region.

Table 6: Daily ration of dairy cows

Indicator	Composition		
	Kg	Feed units	%
Alfalfa Hay, kg	2,78	1,39	11,52
Corn silage, kg	13,52	3,52	29,12
Barley straw, kg	2,00	0,56	4,64
Pea straw, kg	1,00	0,21	1,74
Oat straw, kg	0,67	0,18	1,50
Sugar beet, kg	0,06	0,01	0,11
Barley, kg	2,00	2,20	18,23
Compound feed, kg	4,00	4,00	33,14
Total	-	12,07	100,00

Source: own elaboration, based on data from Agro2B

From these calculations it is clear that the largest proportion in the structure is occupied by corn silage - 29.12%, in which the largest number of feed units is followed by feed - 33.14%, barley - 18.23%, alfalfa hay - 11.52%.

The economic efficiency of the daily diet of dairy cows is presented in table below.

Table 7: The economic efficiency of the daily diet of dairy cows

Indicator	Fact.	Plan.
The cost of the diet, rub	93,5	91,2
Cost of feed. units	7,97	7,56
The cost of 1 c. milk, rub.	1515,14	1467,04
Realizing price of 1 centner of milk, rub.	1788,17	1788,17
Profit from 1 kg of milk, rub.	273,03	309,13

Source: own elaboration, based on data from Agro2B

Thus, the obtained calculations of the daily ration of feeding cows allow you to get additional profit in the amount of 36.1 rubles.

3.4.2. Problems of plant growing and animal husbandry

After studying the dynamics of animal husbandry, we can conclude that their numbers in 2016 were reduced. Whilst half the head is a milking herd, at the same time, gross milk production was also reduced as compared to 2015. In order to increase the production of meat and milk, the specialists developed the Road Map. This is an action plan to restore livestock and increase the productivity of the dairy herd.

235 companies are engaged in cattle breeding in the Krasnodar Territory. It should be noted that livestock feed has very high prices, a substantial expense for farmers. There is a shortage of breeding stocks and a lack of foreign investment in this area. Given that animal husbandry provides the population not only with meat, but also with milk, eggs, honey, animal fats, the development of this area in agriculture is essential. International sanctions have clearly been an impediment to the process of import substitution of food products, technologies and equipment for animal husbandry.

In crop production, many manufacturers create their goods and products using antiquated technologies, further compounded by the reliance of Kuban farms on imported seeds. Therefore, there is a marked decrease in sown areas and volumes of production of sugar beets, sunflowers and corn.

A further restraining effect on the production of vegetable crops is provided by seasonality, exacerbated by the relative lack of greenhouse complexes and assorted technologies, which would facilitate mastery of nature and seasons in the region. All these factors, including the lack of modern equipment for storing manufactured products, restrain the volume of vegetable products.

3.4.3. Depreciation and backwardness of agricultural machinery

Due to the lack of solvent demand, agricultural engineering is developing poorly in the Krasnodar Territory, and a deficit of machinery prevails. Not all farmers are able to bear the burden of the necessary capital expenditure that new equipment necessitates. The average price of Russian combine harvesters is 7-8 million rubles, and import - 14-17 million rubles; German and French sugar beet harvesters cost between 30 and 40 million rubles. Naturally, imported

equipment is very expensive for beginner farmers, so they often use combine rental, which is much more profitable. 75% of agricultural machines are old-style samples, which makes it difficult to harvest seasonal crops. The retirement rate of tractors exceeds the renewal rate by 5 times, of combine harvesters by 3 times, and of forage harvesters by 3.5 times. There are also problems in the provision of fuels and lubricants (fuels and lubricants) due to the financial condition of manufacturers. Accounting for fuels and lubricants is implemented in accordance with legislative acts of the Russian Federation. In the Krasnodar Territory, as of January 2016, the share of agricultural machinery wear over 10 years is:

1. Tractors-60%;
2. Combine harvesters-48%;
3. Forage harvesters-58% (Investkuban, 2017).

Leasing is a common solution to the absence of capital funds to facilitate the renewal of ageing farming equipment. Currently, leasing in the agricultural sector is increasingly popular. Leasing companies have an increased interest of farmers in domestic property, especially after the introduction of Russia's retaliatory sanctions on the supply of agricultural products.

3.4.3.1. Lack of import substitution of seeds

The Krasnodar Territory has always been based on import substitution, dependent on the supply of foreign seeds in the production of many crops, since there are not enough branded domestic seeds. The region is 92% dependent on the supply of sugar beet seeds, 70% on sunflower seeds, and 90% on vegetable seeds. This issue can be resolved by restoring experimental zones in the Krasnodar Territory. Measures are also needed to support the production of corn seeds, the need for which in the Russian Federation is 60 thousand tons per year. Krasnodar Territory is only capable of fulfilling 50% of this demand, and even fulfilling this potential will require an interventionist policy of preferential lending. According to the Ministry of Agriculture, in 2015 the Russian seed market exceeded 50 billion rubles, half of which is import. Therefore, support for breeding and seed production is directly included in the state agribusiness development program for 2013–2020. “We are especially worried about sugar beet seeds, 92% of these seeds are imported, 68% of corn seeds and 90% of vegetable seeds are also foreign. Also, the Kuban has no selection achievements for the production of cows, pigs

and birds, which is the foundation of food security. The region is now looking for reserves to provide with at least the seeds of sugar beets.

3.5. The efficiency of animal husbandry and plant growing production in the Krasnodar territory and prospects for their development

The main objective in the livestock industry is to create high volume and high quality produce, able to satiate the needs of the country's population, food standards and prices that ensure both the profitability of its production and commensurability with the size of the income of the majority of the population. If before the main task was to get as many products as possible, at almost any cost, now the main criterion has become the competitiveness and break-even of the industry; as the invisible hand of the market has replaced the very visible fist of central-planning. To successfully ensure high production, high quality and ample quantity, along with solving other problems, it is necessary to ensure a high level of herd reproduction.

The decrease in the number of cattle in recent years does not indicate a curtailment of the livestock industry. Culling of cattle, including cows, takes place in agricultural enterprises with low animal productivity and unprofitable production of livestock products. Therefore, special attention in animal husbandry is given to creating a highly productive dairy herd using decades of accumulated domestic and foreign breeding resource; as such, a decline in the number of cattle is not necessarily indicative of decline, rather, consolidation and an increase in the productive output per head.

Of particular social importance for stabilizing and serving the food market is poultry products. In livestock breeding and in other agricultural enterprises, advanced domestic and foreign technologies, machines and equipment are introduced into production, which make it possible to obtain competitive, profitable products. In order to realize the genetic potential of animals and efficient production, work is underway to strengthen the feed base, change the structure of feed and rational use, this promises to facilitate the development of more intensive poultry farming, providing an efficient and profitable business.

In general, the economic efficiency of livestock production in agricultural organizations of the Krasnodar Territory is low; the sector requires significant investment and development in order to provide adequate economic stimuli and adequately contribute to national calorific

requirements. One of the main reasons for the decline in meat and dairy products is associated with an unsatisfactory condition of the feed base, low level of feeding, and an unbalanced diet.

The efficiency of feed use has sharply decreased; the genetic capabilities of animals are half used at best.

The growth of milk and meat production can be ensured only on the basis of the rational use of production potential. Its effectiveness is due to the influence of the following main factors: economic, social, natural and biological.

Economic factors include:

- The intensification of agriculture. The solution to this problem is possible based on the achievements of scientific and technological progress, the introduction of intensive technologies and rational forms of organization of production.
- Accelerated scientific and technological progress, development of production infrastructure. In solving the food problem, priority should be given to the areas of procurement, storage and sale of products. Improving production efficiency and achieving high final results largely depends on a radical improvement in road traffic in rural areas.
- The development of specialization and concentration on the basis of agricultural cooperation and agro-industrial integration.

Improving economic relations and working conditions in agriculture:

- industry management and planning;
- blank system;
- pricing;
- material incentives for improving the quality of work and products; responsibility for the results of economic and financial activities.

Improving the relationship between agricultural, industrial and procurement enterprises of all sectors that are part of the agro-industrial complex, increasing their mutual responsibility for increasing the output of the final product and reducing the cost of its production.

Strict adherence to the saving regime, reducing the cost of production, improving its quality.

The main direction of increasing the economic efficiency of production is the growth of animal productivity with the economical use of material and monetary funds for raising animals. The productivity of cows in the future should be increased by 1.3-1.5 times, and the average daily increase in live weight of cattle must be brought up to 600-700 grams instead of 420 grams at present. The development of animal husbandry is based on well-balanced diets and proper animal care. In this regard, paramount importance should be given to the accelerated development of the feed. Improving the economic efficiency of animal husbandry is unthinkable without a further increase in the level of comprehensive mechanization of all technological processes. It is necessary to completely mechanize the distribution of feed and the cleaning of manure on farms, milking cows and water supply. With the complex mechanization of labor-intensive processes, labor costs per unit of livestock production can be reduced by 35-40% (Pallot,2007).

A large reserve to increase the profitability of livestock products is to improve product quality. This applies not only to milk, but also to cattle and poultry meat and other types of products.

It is similarly important in improving the economic efficiency of livestock products to improving the forms of organization and material stimulation of labour.

In a number of farms, due to the rational organization of production, this method of keeping and milking cows provides milk yield of more than 8000 kilograms. Active integration of agricultural producers with milk processing enterprises and financial support from the latter contribute to the modernization of the dairy industry in Kuban.

It is necessary to mechanize the distribution of feed on all farms, where the width of the aisles allows, by mobile feeders. The organization of labor must be a team or brigade-unit, a two-shift mode of operation is established.

The brigades should mainly be specialized - in the production of milk, the cultivation of pedigree and dairy young animals, the harvesting and transportation of organic fertilizers, the care of pastures and more.

4. Conclusion

In conclusion, it is clear that the dynamics of development in Russian agriculture are positive, with the sector trending towards integration with international standards and greater productivity. Over the decade, output in plant-growing and animal husbandry has increased to 94,306 and 301,140.6 million rubles, respectively. Confirming that the agricultural sector is actively developing.

From 2007 to 2017, agricultural exports in Russia increased sevenfold, in sub-sectors including poultry, fresh and frozen fish, sunflower oil, flour, cereals and wool. That said, this growth is not unmitigated; during the same period milk exports declined threefold, butter twofold and sugar and oilseeds fivefold; undermining success in other areas. As such, it is clear that the challenges that Russian agriculture faces are multifaceted and complex; there can be no homogenous approach and no homogenous analysis of the sector. Nonetheless, we have succeeded in elucidating the essence of the agro-industrial complex in Russia, highlighting key areas of success and proposing recourse, for instance enhanced support from central government in terms of investment in the sector and job creation, and prioritizing opening global markets to Russian agriculture

Thus, our analysis shows that the Krasnodar region has significant potential for further growth and development in agricultural production, especially in plant growing, however, this potential is constrained by several factors, on a structural level, as well as specific issues within the industry itself.

When solving the identified problems of agricultural production in the Krasnodar Territory, the region can ensure an increase in the level of food security not only at the regional, but also at the general federal level.

The below actions are proposed to solve the problems which restrain the Kuban from realizing the full potential of agricultural production:

- A more activist state in relation the economic development and support of the agro-industrial complex, a Keynesian approach to sphere;
- Reconsideration of development patterns and economic processes related to the intensification, specialization and concentration of agricultural production and agro-industrial integration in a market economy;

- Priorities the training and hiring of qualified specialists in the agricultural sector, ensure that the sector is an attractive option in the job-market, create jobs and promote growth.

Also, we examined the agro-industrial complex of the Krasnodar Territory, studied the problems of its development and identified ways to solve these problems. We conclude that this industry is widely developed and requires special attention, because without it there would not have been many crops, vegetables, fruits, meat, poultry, milk. Almost all types of food products are grown by agriculture.

The agro-industrial complex in Russia, and specifically in the Krasnodar Territory cannot be analyzed in isolation, with particular reference to the international community's sanctions on Russia; which followed aggression against Ukraine and the annexation of Crimea. Following the food embargo, the demand for domestic food increased; however, the international exports declined significantly meaning that profitability was stagnant. Against a backdrop of economic sanctions, government investment support is imperative. In 2016, gross output in the Krasnodar Region increased by 5.5%, with an increase of 7.8% in crop production and 2.7% increase in livestock production; however, this growth has not been sufficient to offset the negative effects of economic sanctions, and growth has primarily been fueled by private investment capital. Fixed assets in the agricultural sector have depreciated by roughly 80%.

Thus, whilst agribusiness in the Krasnodar region certainly has the potential to fulfill the food demands of the region's population, realizing this potential will require accelerated development across the complex, given that 50% of the requirements are presently imported. It is essential that new workers are attracted and retained by the sector, whilst small businesses must also benefit from interventionist government policy.

It must be said that the path of improving the region will not be realized in a year or two, rather it will take at least 5 years to begin to address core issues, without mentioning extraneous factors. Currently, the development of the agricultural sector is uneven. Firstly, we can highlight the positive results of development: production growth in a number of industries, an increase in the number of enterprises operating with profit. Secondly, we must not forget about the negative aspects that prevail over the positive.

In the agro-industrial complex of the Krasnodar Territory, one can single out the main promising ways of developing the agriculture of the region: the development of industries that occupy a leading position, for example, wheat production. If the Krasnodar Territory was fully

engaged in its production, then it could provide most of the countries of the world with this grain crop.

Analyzing the primary indices of animal husbandry and crop production in the region; we find that crop production in the Krasnodar territory is predominant in relation the rest of the Russian Federation. The totality of the sown area in the Kuban in 2015 amounted to 3679.0 thousand hectares, just under 5% of all sown areas in Russia.

Dominant within the Krasnodar region is wheat cultivation, accounting for 40.1% of all sown areas, whilst corn (16.9%), sunflower (11.9%), barley (4.8%), soybeans (4.5%) sugar beets (4.2%) and rice (3.6%) make up significant portions of the remainder. Whilst plant-growing continues to develop apace, the livestock industry is showing unsatisfactory results. Particularly concerning is the breeding of swine, which has still not recovered after an outbreak of H1N1/09 (Swine Flu) in the Kuban. From 2011 to 2017, 156 thousand tonnes of live-weight was lost in the region, amounting for 68% of the total herd. Poultry farming does show improvement, increasing by 300% in the previous decade, 1.4 thousand tonnes in 2007 and 4.2 thousand tonnes in 2017.

Animal-husbandry in the Krasnodar region faces a plethora of challenges, which this thesis has addressed in detail. For the success of plant-growing to be mirrored it will firstly be necessary to reduce the cost of production, which are currently too high to facilitate the growth necessary. This can be achieved by improving and expanding the use of technology on farms, and by government subsidies of the farms which are already engaged in the production of high potential and high popularity products, particularly poultry.

It is also important to improve product quality, particularly given the centrality of integrating Russia's produce into the global economy in helping the agro-industrial complex to reach its full potential. This applies to dairy produce, as well as to all spheres of meat production. The efficiency of the division of labour must also be improved if strong results are to be achieved, for which it is important to recruit and retain specialists in agricultural management, a task that will require government intervention to make domestic employment as attractive as employment abroad for the brightest minds of the Russian Federation, presently notorious for suffering from a 'brain-drain'. Production dropped significantly after Russia moved from a centrally managed to a market economy; whilst the prospects of a return to the former are slim,

and with good reason, a middle ground between the two paths would be hugely beneficial to the prospect of agricultural development in the Kuban.

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6. Appendix

Table 8: Gross harvest of the main crop plants in the Krasnodar Territory, thousands of tons

Name of culture	2010	2011	2012	2013	2014	2015	Place and share of the region in 2015	
							Place among the regions of the Russian Federation	Share in the Russian Federation as a whole, %
Wheat (winter and spring)	6 353,0	7218,2	4519,8	6967,8	7651,6	8464,0	1	13.7
Rye (winter and spring)	2,4	5,1	1,2	3,0	0,2	1,4	49	0.2
Triticale (winter and spring)	8,9	11,5	12,9	13,6	14,5	13,5	13	2,4
Barley (winter and spring)	1063	1009	563,6	930,8	979,1	938,5	4	5,3
Oats	28,5	37,5	44,4	36,0	30,5	37,8	32	0,8
Corn (for grain)	1354,9	2241,3	2752,7	3292,8	3309,8	3327,3	1	25,1
Sorghum	-	1,5	2,5	3,7	0,8	1,7	8	0,9

Millet	4,5	4,1	2,1	1,3	2,2	2,0	15	0,4
Buckwheat	0,3	0,3	1,5	1,1	0,2	0,2	43	0,0
Rice	828,3	823,6	856,8	727,5	822,7	845,4	1	76,2
Legumes	74,4	95,6	81,9	60,1	59,3	78,7	11	3,3
Including								
Peas	71,8	92,3	79,3	55,1	55,1	75,4	9	4,4
Beans	-	1	1,2	1,3	1,4	1,5	1	20,1
Sugar beet	7095,4	9283,2	8178,5	6717,3	6745,9	7174,2	1	18,4
Sunflower seeds	1028,8	1055,7	1100,1	1165,8	1057,9	1016,9	1	11,0
Soya beans	213,3	244,9	312,8	313,8	268,1	254,9	4	9,4
Rapeseed seeds (spring and winter)	51,5	54,2	55,3	89,4	84,0	40,9	8	4,0
Camelina seeds	-	-	-	0,3	0,5	1,0	12	1,1
Mustard seeds	0,4	0,6	0,4	0,3	0,7	0,3	28	0,5
Potato (industrial sector)	73,2	94,7	88,1	60,4	71,5	80,5	29	1,1
Vegetables open and protected ground	277,7	342,1	320,0	216,2	318,2	268,1	3	7,9
Open field vegetables	252,9	314,2	275,8	236,3	266,4	346,9	4	7,6

Protected Ground Vegetables	24,8	27,9	44,1	50	51,8	70,3	2	9,4
Gourds	58,7	56,3	74	72,7	57,6	55,6	5	8,1

Source: own elaboration, based on data from Ab-centre