

REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

**TERRITORIAL ORGANISATION AND OPTIMISATION
WAYS OF AGRICULTURE DURING AGRARIAN REFORMS
IN THE SHAKI-ZAGATALA ECONOMIC REGION**

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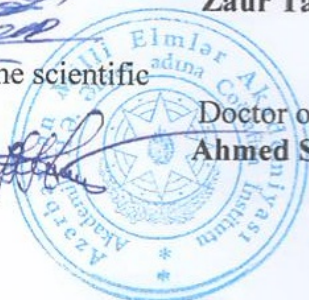
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GENERAL CHARACTERISTIC OF THE WORK

Actuality and level of research on the topic. Along with occupying a significant place in the economic structure of regions, agriculture plays a pivotal role in ensuring food security and employing the rural population. This area constitutes the economic basis of villages where a majority of the country's population is settled.

It is a fact that economic reforms carried out during the years of independence have led to serious changes in the sectoral and territorial structure of agriculture. As a consequence of this, a role of areas diminished or leaked away that they were factored in primary specialization areas, played a significant role in the employment of population and forming incomes for many years in the region. These areas have been replaced with others that can meet a daily demand and bring money in a short span of time. As a result of this, the serious challenges have indicated themselves in the operation of enterprises of food and clothing industries based on the manufacturing of agricultural products.

The low productivity level of crops in agriculture has culminated in the small amount of harvested products, as well as, it has not met the demand for some agricultural products. Even though there is great potential in the exportation of these products, these opportunities have not been used. This means that for this moment the financial–technical basis of the area is insufficient, there are substantial problems with the supply of mineral fertilizers and pesticides, and the potential of specialized employees has not been exploited in full in all areas. To address these problems along with the creation of a legislative framework, it is necessitated the financial–technical support of the government, and taking measures in places and development of their scientific–theoretical bases.

It is necessary to advance the results of carrying out reforms in agriculture, improve spheres with much profitable and much fertile in every area and implement scientific researches for providing effective territorial organization.

Shaki–Zagatala economic region, which is located northwestern part of Azerbaijan and stretching along the southern slope of the Greater Caucasus mountains, is one of the essential agricultural regions of the country. The total area of the region is 8,84 thousand km², and the population is 630,4 thousand (01.01.2021). This region constitutes 10,2% of the country's territory, and 6,2% of the country's population are settled in this region. The economic region includes the Balakan, Gakh, Gabala, Oghuz, Shaki and Zagatala administrative districts.

There is a favourable condition for the cultivation of nut products, tobacco and cereals in the region. Additionally, the region has played a starring role in the cultivation of essential oilseeds and tea being the second humid subtropical region of the country. However, implementing economic reforms has caused a serious crisis in the harvesting of tobacco, tea and oilseeds. The cereals are responsible the most significant part of the crops. This tendency, in turn, has seriously affected the employment of population and has harmed the effective usage of soil resources. Determination of effective territorial organisation ways of the agriculture, the organisation of cultivation of strategic products, such as tobacco, tea, nut products and the other plants complying with the natural–climatic condition and fertile soils of the region and having higher productivity, acquisition and planting of their productive species, development of scientific–theoretical bases of these measures are the important tasks in the region.

Moreover, livestock, the second most important sector of agriculture plays an outstanding role in ensuring food security, as well. The presence of pastures and winter pastures, large areas of cereals and forage crops have a magnificent impact on creating a fodder basis for livestock in Shaki–Zagatala. In addition to this, the investigation of the issues of increasing the number of productive animal breeds, the improvement of pasture–stable type husbandry, the territorial organisation of companies engaged in the processing of animal–based products remain relevant. This is the reason that the investigation of the territorial organisation of agriculture in the

Shaki–Zagatala region is of considerable scientific–theoretical and practical importance.

It is an undeniable fact that the study of agriculture takes an important place in economic–geographical research. After the second half of the twentieth century, researches have been conducted in the direction of both agriculture and its distinctive areas in the republic. In these researches, the natural–geographical condition affecting the advancement of agriculture was assessed, the distribution of specialized areas across the region and the development directions of its areas, implemented an analysis in the area of convenient territorial organisation and revenue generation was assessed. In recent times, special attention has been paid to research in the field of studying the economic–geographical issues of agriculture by economic regions.

The alteration of land ownership, the distribution and transfer of lands to private ownership during the years of independence makes it an important task to develop a scientific–theoretical basis for their usage. Undoubtedly, it is essential to determine the ways of effective usage of soils, increase crop productivity, the necessity of establishing of irrigation and drainage system, identification the increasing ways of agricultural production and conduct research in these areas.

Purpose and missions of the investigation. The **purpose** of the study is to search the changes in the sectoral and territorial structure of agriculture after the agrarian reforms from the scientific–theoretical point of view and to prepare suggestions in this direction in Shaki–Zagatala economic region. To achieve this aim, the following tasks have been identified:

- Identification of effective usage ways from the natural–geographical condition and socioeconomic basis building a foundation for the development of agriculture in the economic region;

- Determination of the importance of agriculture in ensuring food safety, studying the challenges in these areas and developing the solutions to figure them out;

- Determining the alterations in the sectoral and territorial structure of agriculture during the agrarian reforms processes, and

their effects on the fabrication of agricultural products, the negative trends in this area and the ways to eliminate them;

- Substantiation of application of intensive methods to increase agricultural production, extending the usage of fertile plants and animal breeds, determining the ways to improve product fabrication;

- Substantiation of the role of agriculture in the development of rural settlement and formation of the economic system in the economic region, studying the boost ways of the fruitfulness of these products and earnings of the population;

- Demonstration the importance of legislative acts and state support in the enhancement of agriculture, its effective territorial organisation and improvement of the region in this direction, substantiation of enlarging the activity in this direction;

- Substantiating the role of agriculture in the development of the clothing and food industry areas, which are the essential part of the Agro–Industrial Complex (AIC), determining the substantiality of these areas in the manufacture of agricultural products.

Methods of investigation. In the research process, historical–geographical and systematic approach, statistical analysis, comparison, cartographic, field research, zoning, mathematical analysis and other methods were used.

The primary provision of the defence:

1. The changes in the structure of agriculture after the agrarian reforms and their impacts on the production of agricultural products and employment of the population, and annihilating ways of emerging problems in this area;

2. identification of ways to increase the role of agriculture in ensuring food safety of the state, improve the legislative framework in this area and expand state support;

3. Influence of the natural–geographical condition and socioeconomic the basis on the formation of the sectoral and territorial structure of agriculture in Shaki–Zagatala economic region, and determination of primary directions of their effective use;

4. The essential ways of using productive seed types and animal breeds to increase the production of agricultural products in the

Shaki–Zagatala the economic region, the issues of obtaining suitable species for local conditions.

Scientific innovation of investigation:

- Studying position of the agriculture in the economic–geographical researches was determined, the effective usage ways from the natural–geographical condition and economic basis was substantiated for the enhancement of this field, and it is concluded that they have a convenient potential for the development of this area;

- During the years of independence, the changes in the agricultural structure in the Shaki–Zagatala economic region were analysed economically and geographically. It is deduced that the distribution of lands, their subdivision, and the weak the financial–technical base of farms has paved the way for a reduction in the role of specialisation;

- It was determined that implemented agrarian reforms have led to the serious alterations in the structure of agriculture in the economic region, the strategic areas such as tobacco farming, silkworm breeding, planting of oilseeds has condescended, and these crops have been replaced with the cereal and potato crops;

- The role of adopted “State Programs” providing food security, developing agriculture and increasing crop production was studied, and the necessary measures in this direction were developed;

- The importance of using productive plant species in increasing agricultural production and the necessity of obtaining them from proper species for the local condition was substantiated. The comparative analyses indicate that the organisation of agro–parks in the region creates opportunities to establish relations for conducting novel economy, improving productivity and rising product manufacture.

The theoretical and practical significance of the research. Treatises and their scientific and theoretical provisions of Azerbaijani and foreign scholars researching the field of agricultural geography, rural settlement, soil science were widely utilised in the dissertation. At the same time, the provisions in the laws, decisions

and orders in the field of development of agriculture in the country were adopted as a methodological basis.

The results, recommendations and suggestions implemented in the dissertation are necessary for the development of measures in the direction of enhancement of agriculture in the Shaki–Zagatala economic region. The conclusions of fulfilled research and used methods can be used as a basis to study the territorial organisation of agriculture in other economic regions of the state.

The collected materials and obtained outcomes serve as an essential source for teaching in universities, as well as for study in the field of agriculture.

Approbation of the research. The primary provisions of performed investigation during the preparation of the dissertation were discussed in the following conferences and seminars:

Conference on the topic of “Geography: theory, practice and innovation”. Baku, 2015, (In Azerbaijani); International scientific–practical conference on the topic of “Innovative development of agrarian science and education”. October 23–24 2015, Ganja, Azerbaijan (In Azerbaijani); Republic scientific–practical conference on the topic of “Geographical problems of the regions of Azerbaijan”. 2016, Baku, Azerbaijan (In Azerbaijani); Scientific conference on the topic of “Demographic development in the Republic of Azerbaijan: the perspective of population settlement and regional challenges”. Geographical Society of Azerbaijan. 2016, Baku, Azerbaijan (In Azerbaijani); VIII International Scientific and Practical Conference on the topic of “Service and Tourism–innovative development”. March 25, 2016, St.Petersburg, Russia (In Russian); XI International Scientific and Practical Conference on the topic of “Geography and geocology at the service of science and innovative education”, Krasnoyarsk State Pedagogical University. April 22, 2016, Krasnoyarsk, Russia (In Russian); International Scientific–Practical Conference on the topic of “Water resources, hydro–technical structures and environment”. March 15–16, 2017, Baku, Azerbaijan (In Azerbaijani); Conference on the topic of “Land management in the condition of market economy: achievement and contemporary invitation”. State Committee on Property Issues of the

Republic of Azerbaijan, Institute of Geography of the National Academy of Sciences of Azerbaijan. 2018, Baku, Azerbaijan, (In Azerbaijani); International scientific conference on the topic of “Actual problems of the contemporary nature and economy sciences”. 2019, Baku, Azerbaijan, (In Azerbaijani).

Generally, 16 scientific articles and 1 monography were published on the subject of the research.

The name of the organisation where dissertation was implemented. The dissertation was carried out at the Institute of Geography named after acad. H.A.Aliyev, National Academy of Sciences of Azerbaijan.

Structure of the dissertation. The dissertation consists of introduction–6 pages; 4 chapters, including I chapter–34 pages, II chapter–42 pages, III chapter–36 pages, IV chapter–26 pages; results–3 pages and references 8 pages. There are 6 pictures, 29 tables, 106 references. The volume of the dissertation is 156 computer pages. It consists of 34773 signs without tables, graphs, pictures and references.

PRIMARY CONTENT OF THE RESEARCH

The introduction provides actuality of the topic and its research level, purpose and mission, methods, the essential provisions of the defence, scientific innovations, the theoretical and practical importance of the research, approbation and application.

The first chapter of the dissertation was devoted to “**The theoretical–methodical basis of the study of agriculture**”. In this chapter, first and foremost, *the principal directions of the development of agriculture in the years of independency* was studied. The agrarian reforms fulfilled in the end of XX century had a negative effect on the sectoral structure of the agriculture and crop production, especially, there had a condescension in several areas, including cotton growing, grapery, tobacco farming, silkworm breeding and other serious areas. Instead, the cultivation of grain, trucks and vegetables, and potato has been significantly expanded.

The products manufactured in the family farms and farms created during the agrarian reforms could not provide manufacturing enterprises of the clothing and food industries with raw products. This is the reason why the majority of manufacturing companies shut down. In 2018, there had been 1666 agricultural establishments compared to farms that their numbers were around 910 in the country¹.

After performing agrarian reforms, the arable lands have been divided among small family–peasant farms. As a consequence of this, agriculture with consumer featured has formed in the country. The products produced in this area have especially been expanded to meet the domestic demand. For this reason, in the dissertation, the distribution of crops by primary agricultural areas, the dynamics of harvesting, and their comparison by regions were analysed. It is indicated that currently, more than half of currently cultivated areas are accounted by grain crops. Nonetheless, it is needed to import some products since collected ones cannot meet the domestic need totally.

However, there have been experienced progress in the livestock farms of the country. This area is completely based on private farms, and the number of cattle and sheep has increased markedly. As a result of this, in recent years, livestock has ranked on the leader position in the production of agricultural products. The novel complexes are being set up for the production of meat and milk, which are the product of this industry, and the production rate is rising. Especially, purchasing fertile animal breeds provide an opportunity to swell production in this area.

In this section of the dissertation, *the importance of the study of agriculture and its position in economic–geographical surveys* was explored. It is a fact that the continuous investigation of the improved ways of agriculture is necessary because of the existence of conditions with insufficient land and water resources. In this research, using of soil–climate resources dominating in the plain and

¹ Agriculture of Azerbaijan – 2019. Baku: State Statistical Committee, 2020, p. 67., (In Azerbaijani).

low mountain areas and the potential opportunities of natural–geographical condition was determined, and growing condition for more lucrative plants was surveyed. In this case, the usage of seed sorts and animal breeds, which are appropriate to local conditions, is undoubtedly more effective. It is required to train a qualified person and create scientific centres equipped with technical devices and state–of–the–art equipment to obtain these sorts. While studying the territorial structure of agriculture, it is substantial to determine the regional differences of the natural–climatic condition and the distribution of soil. By taking into account these factors, it is possible to organize the specialisation of agriculture, boost productivity and use the natural–economic potential.

When studying agriculture, it is also essential to designate ways of improving supply with a financial–technical basis. Along with being one of the essential factors intensifying the area, this factor plays a pivotal role in cultivating, serving agro–technical maintenance to them, and their harvesting and transportation. It also enables high agricultural productivity, which means that the products can be grown, harvested and transported with a few labour forces. In the dissertation, fulfilling work for the provision of agricultural producers with vehicles and equipment was analysed. The analyses demonstrate that although the provision of agriculture in this area goes up, the comparative indicators are relatively lower. For example, in recent years, the number of vehicles for 1000 hectares of the crop has been swelling whereas this figure is comparatively lower than that of the figure in the 1990s. In 1990, there had been 26,7 tractors, 8,0 combines for grain, 28,0 combines for maize, 13,9 cotton pickers for 1000 hectare–crops. However, these indicators were 20,4; 3,7; 0,2; 4,8 respectively, in the year 2019².

Presently, the provision of mineral fertilizers, which are one of the primary factors of intensive development of agriculture, is relatively lower. Nevertheless, the work done in this sector has been expanding. It is an upsetting fact that the exportation potential of

² Agriculture of Azerbaijan – 2019. Baku: State Statistical Committee, 2020, p. 70., (In Azerbaijani).

agricultural products is weak at the present moment. Therefore, the total exportation share by country is 4,7% while this figure for importation is 9,7%³.

It still necessitates producing large quantities of wheat, rice, beef and chicken, fish products, butter, tea, tobacco, sausages and other products to meet the food demand of the population. Owing to the low level of domestic production and the weak purchasing ability of population, the per capita consumption index indicates that the consumption of meat, meat products, trucks and vegetables, egg, sugar and vegetable oil is lower in Azerbaijan.

The study of agriculture, one of the leading sectors of the economy, *occupies an important place in economic–geographical investigations*. Depending on the natural geographical conditions, various areas of agriculture develop in all populated areas and measures are being taken to study this area. The researches in the field of agricultural studies have constantly been conducting in Azerbaijan. The most authoritative source in the study of economic spheres in the early twentieth–century is the “Azerbaijan” treatise written by M.Baharli (1921). Moreover, extensive researches have been conducted in the study of the country’s region in this direction. These works cover both the whole country and specific regions. The works of some scientists such as A.M.Hajizade, A.A.Nadirov, B.T.Nazirova, A.A.Gurbanzade, Z.N.Eminov, N.A.Pashayev, N.N.Allahverdiyev, N.H.Ayyubov, Z.T.Imrani and the others belong to the first group, however, R.H.Mammadov, Z.T.Zakiryayeva and I.Gasimov’s scientific works are devoted to study of the territorial organisation of economy and population in Shaki–Zagatala economic region.

Additionally, it is necessary to perform the research in the direction of the primary results of agrarian reforms carried out during the years of independence, the role of manufacturing of the agricultural products in the sectoral and territorial structure changes, the determination of essential directions of profitable territorial

³ Azerbaijan in figures – 2020, Baku: State Statistical Committee, 2021, p. 175., (In Azerbaijani).

organisation of this area by regions, the challenges ahead to increase yieldance, the importance of creating agro–parks and specialized economies to raise production and the other directions. In this direction, the investigates were implemented in the Shaki–Zagatala economic region in the dissertation.

The second chapter of the dissertation was dedicated to **the study of natural–geographical and socioeconomic bases of the development of agriculture. *The natural–geographical condition plays a leading role in the advancement of agriculture*** and it determines its specialisation directions. Here, the condition of relief and agro–climatic resources require importance. The primary orographic units in the economic region’s territory are the southern slopes of the Greater Caucasus, Ganikh–Ayrichay valley, Dashuz and Amirvan series, Acinohur plain. The absolute height of the area changes from 600–700 metres in Ganikh–Ayrichay valley to the highest areas of the Greater Caucasus⁴.

The more favourable areas for the development of the economy are located in the Ganikh–Ayrichay valley. This area is the essential settlement and agriculture zone, and the fertile lands are used in cropping. There are enough water resources for the irrigation of areas located on the alluvium of rivers, and the area is embarked on completely.

The rainy and hot **climate** in summer in Shaki–Zagatala creates favourable conditions for agricultural activities. The average annual temperature in the Ganikh–Ayrichay valley is 10–14°C, the average daily temperature above 10°C, and the total daily temperatures are 3800–4500°C, the amount of annual precipitation is up to from 600 mm to 1000 mm. As the mountains rise along the slopes, the number of precipitation increases, whereas it decreases to 300–400 mm. in Acinohur⁵.

⁴Geography of the Republic of Azerbaijan. I volume. Physical geography. Baku, 2015, 530 p., (In Azerbaijani).

⁵ Climate of Azerbaijan. Ed. E.M.Shykhlinisky and A.A. Madatzade. Baku: ANAS. 1968, 342 p., (In Russian).

Abundant precipitation and the existence of higher mountainous areas have an immense impact on the density of the river network. Availability of rainy summer and snow cover provides an opportunity for the rivers to have plenty of water and meeting the water needs for agriculture, as well as, there are a plethora of underground waters and they are used in agriculture, as well. Unfortunately, destructive floods are experienced frequently in these rivers. Especially, these floods are more often than not witnessed some rivers such as Kish, Shin, Katekh, Kurmuk, Damiraparan and they wreak havoc on the economic objects, crops and population⁶.

Soils constitute the basis of agricultural activities. The essential soil types in the region are alluvial–meadow, meadow–forest in Ganikh–Ayrichay valley, grey, chestnut, mountain–brown in Acinohur plain and low mountains, black soils in Ayrichay estuary, brown and brown mountain–forest in middle and high mountain areas, mountain–meadow soils are more above than those⁷.

Rational use of soil resources is important in the development of agriculture and is in the range of one of the outstanding tasks. In the economic region, agricultural lands are unevenly distributed among the administrative districts. This is seriously affected by the area of the regions, the distribution of landforms, natural and geographical conditions (Figure 1).

⁶ Rustamov S.G., Gashgay R.M. Water resources in Azerbaijan SSR. Baku: 1978, 184 p., (In Azerbaijani).

⁷ Geography of the Republic of Azerbaijan. I volume. Physical geography. Baku, 2015, 530 p., (In Azerbaijani).

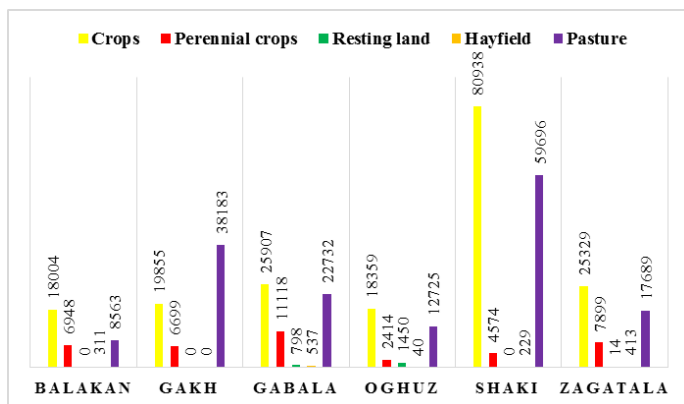


Figure 1. Use of the arable lands for agriculture

The arable lands cover 391,4 hectares in the region⁸. It accounts for 43,5% of the area. Crops constitute 20,9% of the agricultural lands, these ratios for perennial crops and pastures are 4,4 % and 17,7%, respectively. Although forests cover 30,2% of the region's areas, this percentage for unsuitable areas for agriculture is 23,9%⁹.

Socioeconomic factors have a serious influence on the improvement directions of agriculture. Development of clothing and food industries included Agro-Industrial Complex increase continuously the demand for agricultural products. It is a fact that the Fruit-Vegetable Conserve Plants play a crucial role in the advancement of agriculture. They are operated in Gabala and Balakan regions, wine production in Gabala and Shaki, hazelnut processing in Gabala, Zagatala, Gakh, meat and dairy processing in Shaki, Gabala, and Zagatala districts.

The number of population in the economic region is 630,4 thousand people, including 455,2 thousand people of them are rural population. 6,23% of the total population and 9,56% of the rural population are populated in this region. They are settled in 6 cities, 7 small towns and 336 villages¹⁰. There are 55 villages with up to 200

⁸ State Land and Cartography Committee, 2013, (In Azerbaijani).

⁹ State Land and Cartography Committee, 2013, (In Azerbaijani).

¹⁰ Population of Azerbaijan –2020, Baku: SSC, 2021, p. 71, 76, (In Azerbaijani).

people, 151 villages with 200–1000 people, and 69 villages with 1000–2000 people. The villages with a population up to 2000 are of special importance in population settlement. Interestingly, there are 12 rural settlements with a population of more than 5000 and 81,6 thousand person live in this area¹¹. It is estimated that they may be turned into small towns in the near future and they have a great economic and demographic potential for the construction of enterprises producing agricultural products.

The third chapter of the dissertation was devoted to **the changes in the state-of-the-art territorial organisation and sectoral structure of agriculture in the economic region**. 8,5% of the agricultural productions, including 9,3% of cropping and 7,8 % of livestock production fall to the region's share, and the cropping constitutes a majority of them (50,1 %). 15,3% of cereal products, 12,7 of fruit and berries, 5,5% of potatoes, 5,2% of vegetables and 4,2% of trucks by country are harvested in the region¹².

The analyses demonstrate that at the present moment, the sectoral structure of the crops is dominated by cereals crops and legumes, including wheat, potatoes, vegetables, orchards and berries. Nonetheless, the products of these spheres just can only meet domestic demand, for this reason, the opportunities for the establishment of processing enterprises are limited. Agriculture cannot has a role in the economic base of rural settlements. This is the reason that, although the rural population is growing at a slow pace, the migration rate is comparatively higher.

Grain growing ranks the leading position among crops, and a majority of them are constituted by wheat. Nevertheless, the financial–technical base in this area is insufficient, the usage of mineral fertilizers are relatively lower, and high–yielding seed varieties are not obtained. Hence, productivity is inadequate and the harvested product does not meet domestic demand (Table 1).

¹¹ 2009 census material of population of the Republic of Azerbaijan. I volume. Number of population, settlement, sex, age composition and marital status. Baku: SSC, 2010, 629 p., (In Azerbaijani).

¹² Regions of Azerbaijan –2019. Baku: SSC, 2020, 828 p., (In Azerbaijani).

Table 1

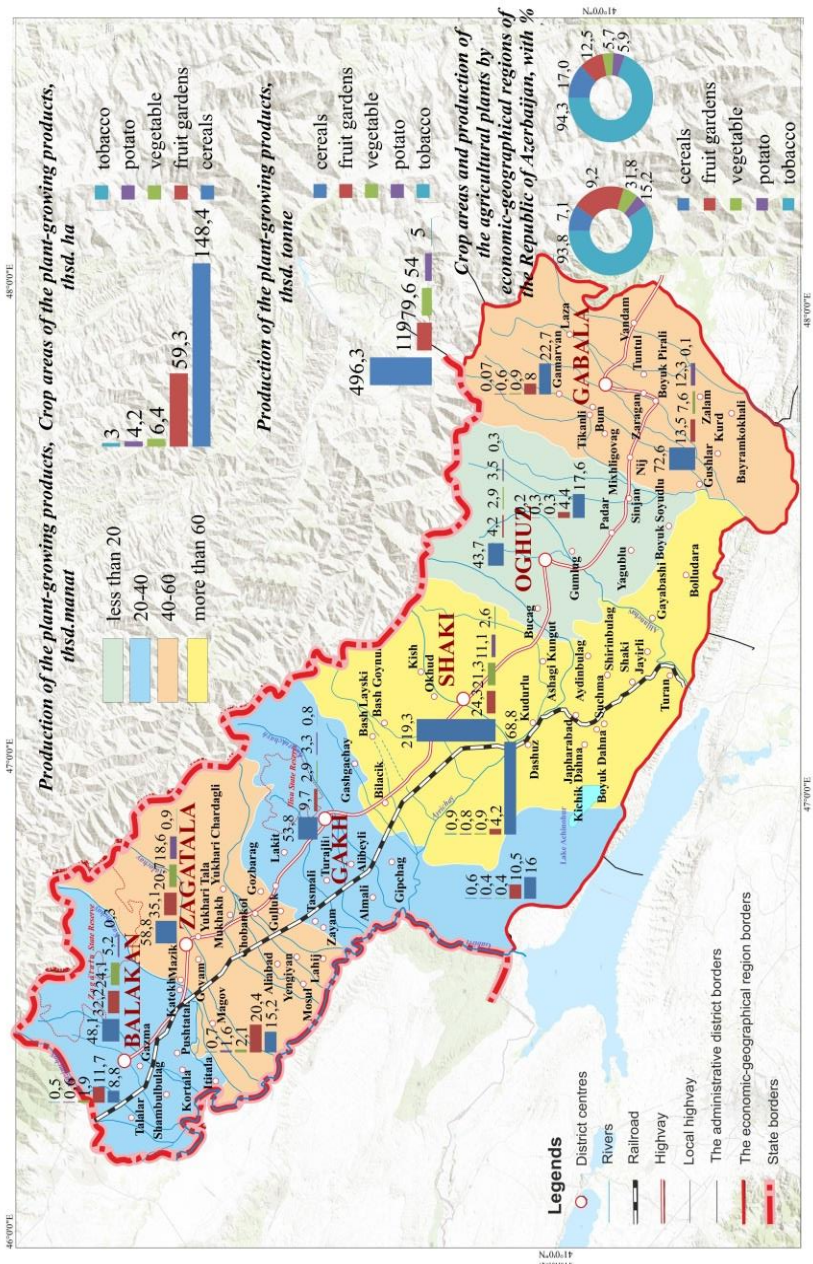
Production of agricultural products, with tonne

| Products | Years | | | | | |
|---------------------|-------|-------|-------|-------|-------|-------|
| | 2000 | 2005 | 2010 | 2013 | 2015 | 2019 |
| Cereal and legume | 173,0 | 271,2 | 318,3 | 479,4 | 459,2 | 521,0 |
| Wheat | 109,8 | 162,2 | 185,4 | 272,0 | 230,8 | 309,5 |
| Maize for grain | 20,2 | 54,3 | 62,3 | 94,4 | 90,9 | 86,6 |
| Tobacco | 16,9 | 7,1 | 3,3 | 3,5 | 3,5 | 5,6 |
| Sugar beet | – | – | – | 2,5 | 0,8 | 3,6 |
| Sunflower for grain | 0,5 | 0,4 | 0,4 | 0,6 | 1,0 | 0,4 |
| Potato | 16,3 | 39,6 | 44,9 | 45,5 | 57,0 | 46,1 |
| Vegetable | 43,6 | 71,9 | 75,5 | 78,3 | 87,1 | 82,3 |
| Truck | 15,5 | 23,4 | 24,4 | 20,4 | 20,0 | 17,4 |
| Fruit and berries | 503,1 | 76,9 | 95,7 | 107,6 | 106,8 | 133,6 |
| Grape | 4,0 | 5,5 | 8,9 | 15,5 | 12,8 | 10,7 |
| Tea | – | 0,05 | 0,07 | 0,05 | 0,05 | 0,06 |

Source: Regions of Azerbaijan –2013. Baku, SSC, 2014, p. 241–242, (In Azerbaijani). Agriculture of Azerbaijan – 2019. Baku: SSC, 2020, p.369–429.

However, the economic region takes an important place in the growth of cereal products. The majority of its cropping is located in the Shaki district. 13,7% of cereal and legume crops fall to the region's share. They constitute 79,9% of crop areas by region, this means that the total area of crops under cereal and legume plants is 146,9 thousand hectares. 93,6 thousand hectares or 63,7% of these areas are used for wheat, 36,9 thousand hectares or 25,1% of these for barley, 13,6 thousand hectares or 9,2% of these for maize (map–scheme 1)¹³.

¹³ Agriculture of Azerbaijan – 2019. Baku: SSC, 2020, p.189–193., (In Azerbaijani).



Map-scheme 1. Production of plant-based products in the economic region

Fruit growing – is one of the specialised areas of the economic region. Agro-climatic resources and fertile soils of the region are convenient to grow apple and pear trees along with hazelnut, walnut, and chestnut. Unfortunately, the region suffers from the devoid of storage chambers and freight vehicles, in addition to this, the level of implemented work in the direction of the acquisition of prolific sorts is insufficient. It is notable to note that this region forms 32,7% of the total fruit crops and 12,2% of the harvests by country. The total area of crops under fruit trees and berries is approximately 68,8 thousand hectares. Including, the essential part of the fruit and berry crops are located in the Zagatala (22,5 thousand hectares), Balakan (13,4 thousand hectares), Gakh (12 thousand hectares) and Gabala (8,8 thousand hectares) administrative districts. Interestingly, after 2015, the fruit plantation has been rising more than 32,6 thousand hectares¹⁴. Noticeable, the majority of novel crops are constituted by hazelnut orchards. This is because the demand for this product is comparatively higher, along with this, to produce this product the production enterprises have been building, and most importantly, the prices for this product are appropriate.

Sunflower, corn and vegetable crops also occupy a large area in the economic region. However, they just can merely meet local demand.

It is an irrefutable fact that there is a favourable condition for *the development of livestock*, which is the second most important sector of agriculture. It is no doubt that it plays an important role in the economic structure of the regions. During the years of independence, this area of agriculture is absolutely based on the private farms, and primary areas of which are cattle breeding, sheep breeding, silkworm breeding, and beekeeping.

The economic region accounts for 9,7% of beef cattle, 9,4% of sheep and goats, 44,8% of pigs, and 19,5% of bee families¹⁵. Once

¹⁴ Agriculture of Azerbaijan – 2019. Baku: SSC, 2020, p. 259., (In Azerbaijani).

¹⁵ Agriculture of Azerbaijan – 2019. Baku: SSC, 2020, p. 608–636., (In Azerbaijani).

upon a time, the region was one of the most important buffalo breeding and silkworm breeding zones of the republic. However, after 2015, the number of beef cattle, sheep and goats has experienced a decline. The root causes underlining this tendency has been related to the low level of provision prices and revenues, and there have been challenges with the supply of forage. This is because the share of livestock is relatively lower than crop production. To discuss this matter to a certain extend, establishing specialized livestock complexes may enable the improvement of the product produced in the region.

The priority directions of the development of agriculture were determined in the fourth chapter of the dissertation. It is an undeniable fact that applied *State Programs* have a major role in the advancement of the agriculture of the region. During the period of economic reforms, plenty of work have been done for the improvement of silkworm breeding, grain growing, fruit growing, tobacco growing and livestock. Especially, to develop silkworm breeding, mulberry orchards are being planted, and it is intended to reach its production of 35–40 thousand tonnes. These measures, undoubtedly, will provide an opportunity for “Shaki–Silk” OJSC (Open Joint Stock Company) to be provided with raw material. Within the framework of the state programs, to improve the production rate, the livestock complexes and pedigree economies have been established, and the work has been done in the direction of artificial insemination. Additionally, fruit and vegetable factories are operating in Shaki, Balakan and Gabala districts, tobacco and hazelnut plantations are being expanded, and enterprises for their processing are being established.

Work continued on the development of livestock in the region under the second State Program covering 2009–2013. Along with the import of productive animals from abroad, new breeds are being purchased and veterinary stations are being established. Work in this direction is also carried out in crop production, special seed farms are organized. The increase in agricultural production necessitates the establishment of new processing enterprises. In this area, the activity

of the rose oil production enterprise was restored in the Zagatala district, and the maize factory was established in the Oghuz district.

Factoring in the leading role of agriculture in food production, the ***“State Program on Reliable Food Supply of the Population in the Republic of Azerbaijan”*** adopted in 2008 (2008–2015) identifies measures for the development of this sector¹⁶. The purpose of its adoption is to provide the population with food products in accordance with the norms, to increase the share of domestic production in this area. This requires a turnaround in agricultural production. During the implementation of the State Program, a lot of work has been done in the field of land use, supply of arable land with freshwater, increase of cultivated agricultural products, improvement of material and technical supply, provision of mineral fertilizers.

The tasks set in the State Program for the development of crop production include increasing the productivity of grain, potato, vegetable, fruit, viticulture, establishing seed farms, giving preference to the cultivation of more productive and local varieties, establishing a network of processing enterprises.

To provide the population with fresh vegetables throughout the year, it is necessary to create greenhouses and constantly expand their network. For this purpose, along with the allocation of land, lending, meeting domestic demand for products, export opportunities must be studied. The establishment of an infrastructure network, construction of storage rooms and cold storage, organization of logistics services are important factors for providing the population with quality food products throughout the year. Owing to the lack of storage facilities in the regions, they deteriorate and often have to be transported from other areas. Measures should be taken to establish a reserve fund in their regions.

The production of livestock products is also important in ensuring food safety. Increasing the volume of products produced by these areas, increasing the number of productive animal breeds,

¹⁶ State Program on Reliable Food Supply of the Population in the Republic of Azerbaijan (2008–2015). Baku, 2008, 51 p., (In Azerbaijani).

artificial insemination, the use of livestock obtained in this way, the expansion of fodder crops have been identified as the main directions of development. However, despite the expiration of the State Program, several of the tasks remain unresolved. They can be figured out by implementing Strategic Roadmaps.

The problems of effective territorial organization of agriculture and their solutions are studied in a special section in the dissertation. It is noted that agriculture plays an important role in the socio–economic development of the regions, using their natural and economic potential. This area, along with rural settlements, extends to most parts of the country. Therefore, it is a field of employment and a source of income for innumerable people.

An important issue in the process of effective territorial organisation of agriculture is the effective usage of the soils. Due to the limited opportunities for intensive development of existing peasant farms, the crop production is increased by extensive methods, as well as, because of the open irrigation and lower level of technical provision the erosion and salinisation–related processes are inevitable and as a consequence of this, the crops become unusable. Taking into account all mentioned, it is substantial to use low mountainous and foothill areas of Ajinohur plain, Khojashen and Dashuz range of the economic region. For this purpose, it necessitates building the irrigation networks in these areas.

One of the essential directions of the effective usage of soils is the preservation of arable lands for agriculture, their usage in designation and prevention of their usage for non–agricultural purposes. One of the primary directions of the development of agriculture is the creation of specialised production organisations. Such farms are being established in some regions in the fields of grain, livestock and vegetables, and they operate in the form of agro–parks. Moreover, it is a fact that thanks to using qualified human resource potential, sowing area of new seed varieties, increasing the number of animals such farms achieve to obtain full productivity. It is possible to organize agro–parks in the economic region in the fields of fruit growing, tobacco growing, silkworm breeding, tea

growing. They can be organized by uniting the existence peasants' farms.

Increasing productivity is one of the major duties in the development of agriculture. For this purpose, first and foremost, it is necessary to purchase species that are suitable for local conditions. To fulfil this task, special seed farms are established in crop production. In 2009–2013, 56 such farms were established in the country, 29 of which are in the Shaki–Zagatala economic region. In 2014–2018, their number was just more than 15.

In animal husbandry, along with the import of productive breeds of animals, artificial insemination is carried out, special farms are organized. Implementation of the recently adopted State Programs on the development of agriculture, such as tobacco, tea, cocoons and paddy, is an important step towards increasing the region's share in the country's economic development.

RESULTS AND SUGGESTIONS

Based on the study of contemporary territorial organization of agriculture in the Shaki–Zagatala economic region, the following results can be noted:

1. During the first years of independence and the reforms in agriculture in the region, there were significant changes in its sectoral structure. As a consequence, the role of strategically important industries with export potential, such as tobacco, tea, and cocoons, animal husbandry, which helped to establish processing enterprises, has declined. The distribution of land to the population in the form of small shares creates difficulties in the application of advanced methods, cultivation of crops in accordance with agro–technical rules, the use of productive seeds and animal breeds. Hence, productivity in this area is still rather low, the role of agriculture in the income of the population is relatively small, the needs of the population for most products are unable to meet [1, 9].

2. Most of the missions in the specified State Programs to provide the food security is staying unimplemented. It is necessitated to establish specified economies on grain growing, grapery, tea

growing, sugar beet growing, oilseeds growing, as well as animal husbandry and applying fertile breeds and sorts to carry out this mission [3, 12].

3. Given that the economic region is one of the most important fruit-growing regions of the country, perennial crops occupy a large area. In the economic region, perennial crops cover 10.1% of the total arable lands. It is important to take agro-technical measures to increase productivity in this area, to carry out proper irrigation work, to protect soils from erosion and degradation. The organization of supply and processing enterprises in agriculture is substantial for increasing the economic potential of the region [7].

4. The industry is underdeveloped, this is the reason why the share of clothing and food industries, which are the essential areas of industrial structure, is comparatively lower. Despite the fact that there is a rich raw material basis for the production of sericulture, sewing, leather products, these opportunities are poorly used. The companies are operated by various areas in the food industry, however, the number of workplaces in these enterprises is inadequate, and the majority of them is seasonal. For this reason, it is necessary to build a novel network of companies and to supply them with raw materials increasing productivity in agriculture in order to advance the spheres of clothing and food industries included in the agro-industrial complex. These measures create a convenient condition for the formation of the economic basis of cities, small towns and villages, the provision of food safety of the population, the improvement of the economic region's role in the economic development of the country [13].

5. During the agrarian reforms, the financial-technical basis of the agriculture of the republic was wreaked havoc on, their technical provision was devastated, and the service life of most of them expired. In later periods, the agricultural machinery, equipment and mineral fertilizers were purchased at the expense of state funds. Nonetheless, their numbers are comparatively lower than the previous years, and they lag behind the current demand. Hence, to sort out the problems it is important to sell purchased machinery, equipment and other technical means to farmers on preferential

terms, establish their collection enterprises, organise the manufacture of mineral fertilizers.

6. In recent times, it is required to raise the number of agrobusiness centres, which have a rising role in the advancement of agriculture. Along with the cultivation of agricultural products in this type of farm, the organization of storage, transportation and processing also increases the importance of the development of the sector. Therefore, it is possible to attract public and private funds for the establishment of agribusiness farms in the region.

7. Livestock in the economic region occupies an important place in the agricultural structure. There are favourable conditions for the development of the areas included in the area. However, in recent years the number of cattle, sheep and goats has been declining. In the past, the region was one of the primary centres of buffalo breeding in the country. Nonetheless, during the years of independence, their number has decreased several times. The same situation applies to pig breeding. For this reason, in order to increase the role of buffalo in the production of meat and dairy products, it is necessary to increase their number and create conditions for the development of this sector in private farms.

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