REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

ECONOMIC-GEOGRAPHICAL RESEARCH OF THE TERRITORIAL ORGANIZATION OF PLANT GROWING IN LANKARAN-ASTARA ECONOMIC-GEOGRAPHICAL REGION

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Field of Science:	Geography
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GENERAL CHARACTERISTICS OF WORK

Relevance of the topic and degree of development. After the Republic of Azerbaijan gained independence, several important studies related to the agrarian reforms and their results were carried out in the field of the structure of the agricultural territory, the influence of the economic and socio-demographic potential of the natural-geographical conditions on the development of its area and territorial structure. Within these studies, important issues such as classification between areas, changes in public areas and financial development of agriculture were analyzed in detail.

Despite all this, the development of agriculture in the Republic is of great importance in order to meet the population's demand for food products and eliminate poverty. In the geographical division of labor of the Republic, each region attracts attention with its unique agricultural differences, specialization advantages, as well as with its problems. After the Republic of Azerbaijan gained independence dozens of decisions were made by the State regarding reconstruction, restoration and territorial organization of the agrarian field, and considerable progress was made in this field. The dynamics of the agricultural development of the Republic for the five-year stages of each of the four State Programs adopted by the President is particularly noteworthy. In this context, the agriculture of the Lankaran-Astara economic region is of special importance in the geographical division of labor of our country, and the study of its plant growing field in the economic-geographical aspect is of great scientific and experimental importance. According to the natural resource potential of the region and each of its administrative districts, a unique horticultural agriculture has been formed, and the future development prospects of those areas are great. In the study, planting and cultivation of plants specific to the local natural and climatic conditions of the region, efficient territorial organization of production, supply, storage and sale of the product, investigating and researching the development prospects and problems of these areas in the economic geographical aspect are of great scientific relevance. For this purpose, relevant primary and final materials related to the region and its districts have been collected, the trends of implementation of appropriate

measures on the specialization of crop production, strengthening the material and technical base of the agricultural division and creating new structures that will operate based on market principles have been identified taking into account the natural and climatic conditions of each region.

The object and subject of the research. The research object includes Lankaran, Astara, Jalilabad, Masalli, Lerik and Yardimli administrative districts, which are parts of the Lankaran-Astara economic-geographical region. The subject of the research is the territorial organization of plant growing in the administrative regions included in the Lankaran-Astara economic-geographical region and ensuring the food security of the population, increasing the productivity of this field and determining and investigating in detail the objective solutions to the problems.

Aims and objectives of the research. The purpose of the research work is to determine the economic-geographical problems of territorial organization and their solutions, taking into account the natural and economic development characteristics of various prospective territories of plant growing in Lankaran-Astara economic-geographical region. To achieve this goal, it is necessary to solve the following tasks:

- justification of the scientific-theoretical approach in the territorial organization of plant growing;
- analyzing the modern state of territorial organization of plant growing and its historical development paths, and determining the role of plant growing in providing the country's population with food products;
- determination of perspective areas of plant growing in the studied economic-geographical region and drawing up maps.

Research methods. Comparison, statistical, mathematical analysis, survey, systematic approach, analysis, synthesis and field research methods were used during the research. At the same time, a survey was conducted in the farm fields and necessary materials for the research were collected taking into account the natural conditions and geographical location of the villages dominated by the population engaged in plant growing.

Basic theses for defense.

- Determination and research of the theoretical-methodological foundations of organizing the territory of plant cultivation in the Lankaran-Astara economic-geographical region;

- Investigation of the modern development trends of plant cultivation organization in the region;

- Identification of the development prospects of plant cultivation.

Scientific novelty of the research. The following innovations have been obtained and scientifically substantiated in the comprehensive study of the economic-geographical problems of the territorial organization of plant growing in the Lankaran-Astara economic region:

- a comprehensive analysis of the territorial organization of various areas of plant growing from an economic-geographic point of view has been carried out;

- newly established agricultural areas and the existing possibilities and future prospects of plant varieties adapted to the soil and climate conditions of the region have been determined;

- various plant varieties have been analyzed and appropriate planting locations and conditions have been determined for maximum economic efficiency, and prospective development directions have been determined.

Theoretical and practical significance of the research. As a result of the research, the characteristics of the economic-geographical development of the territorial organization of plant growing in the Lankaran-Astara economic region, changes in the field of plant growing in historical periods and innovations and development directions that occurred in the economic-geographical region during the years of independence, the role of perspective fields of horticulture in improving the socio-economic status of the local population, the ways of development of various fields of plant growing have been determined.

The materials of the dissertation work can be used in the preparation of State Programs, in higher (bachelor's and master's) and secondary schools, including in the teaching of "Economic and Social Geography of Azerbaijan" and "Agricultural Geography" subjects.

Approbation and application of research work. The content and results of the dissertation were presented at the scientific conference dedicated to the "880th anniversary of Nizami Ganjavi" (Baku, 2021),

the "Third International Scientific and Practical Conference" (Minsk, 2022), "The impact of the application of modern learning technologies on the quality of education" scientific-practical conference (Lankaran, 2019). 9 scientific articles have been published on the subject of the research work.

The name of the institution where the dissertation work was performed. Lankaran State University, Department of "Geography and its teaching methodology".

The structure and overall scope of the dissertation work. The dissertation consists of an introduction (6485 characters), 3 chapters (Chapter I - 43603 characters, Chapter II - 108359 characters, Chapter III - 50061 characters), conclusions and proposals (7365 characters), and a literature list in Azerbaijani, Russian, English, and Turkish languages. The computer-written dissertation comprises 143 pages, including 28 tables, 9 figures (maps-schemes), 4 diagrams, and an additional bibliography of 93 sources. The total volume of the dissertation, excluding the list of used literature, consists of 215,774 characters.

THE MAIN CONTENT OF THE DISSERTATION

In the "Introduction" part of the dissertation, the relevance and degree of development of the topic were discussed, the object and subject, aims and objectives, methods of the research were determined, the basic theses for defense were indicated, and the scientific novelty, theoretical and practical importance of the dissertation were justified.

Chapter I, which is titled **"The scientific-methodological basis of the economic-geographical reseach of the territorial organization of plant growing in Lankaran-Astara economic-geographical region".** In this chapter, the scientific and methodological foundations of economic-geographical research on the territorial organization of agriculture, as well as its historical development stages and the role of natural and economic factors influencing its development in the studied region, are explored.

I.P. Boyko, who deals with the problems of agricultural production, has developed a measurement method in terms of increasing

the economic efficiency in order to achieve sustainable development.[1] During the research on citrus fruit cultivation, vineyards, tea cultivation, and vegetable farming in the Lankaran-Astara economic-geographical region, we have resorted to the historical method. N.A.Pashayev, N.H.Ayyubov and Z.N.Eminov studied the formation of the territory of the Republic of Azerbaijan in a chronological order and analyzed its economic-geographical position, the regularities of the location of settlements by altitude zones based on population census data, and at the same time, they analyzed the agricultural geography of Azerbaijan in detail by studying the strategic and geopolitical necessity of population settlement regulation.[2] Investigating the modern problems of the geography of Azerbaijan agriculture A.T. Zeynalli successfully conducted his geographical research on the importance of studying agroclimatic resources and considering them in agriculture as well an economic-geographical study of existing labor resources and labor productivity.[3] Studying agro-climate and climate resources of Azerbaijan A.C.Ayyubov notes that there are conditions to significantly increase the area of existing tea plantations in the Lankaran zone.[4] In his research, M.S. Hasanov utilized several methods and conducted complex meteorological analyses. When investigating the impact of global climate change on agriculture development in the Lankaran-Astara economic-geographical region, we also resorted to this method by combining and thoroughly analyzing various meteorological data.

For the first time, several amateur farmers, including M. O. Novoselov, engaged in tea cultivation in Lankaran territory. In 1896, he built the first tea plantation 12 km from the city of Lankaran. Later, the landowner L.A. Karpovich engaged in tea planting for for testing

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[1] Boyko I.P. Problems of sustainability of agricultural production / I.P.Boyko - Leningrad: LGU, 1986, p.169.

[2] Pashayev N.A. - Economic, social and political geography of the Republic of Azerbaijan. Monograph. / N.A Pashayev, N.H. Ayyubov and Z.N. Eminov - Baku, 2010. p 416.

[3] Zeynalli A.T. - Modern problems of agricultural geography of Azerbaijan / A.T. Zeynalli - Baku "Elm" publishing house, 2005,p.392.

[4] Ayyubov, A.J. Reserves of agroclimatic resources in the Azerbaijan SSR and their use in agriculture / A.J. Ayyubov - Baku: 1984, "Azerbaijan State Publishing", - p.79

purposes.[5]

Starting from the 70s of the XX century, the agrarian policy implemented during the republican leadership of the national leader H. Aliyev showed itself in the rapid development of agriculture. As a result of the request of the great leader and his concern for this area, the Lankaran-Astara region was able to become a rainfed vegetable cultivation base.

In this chapter, land resources, water resources, agro-climatic resources and a number of economic factors of the economic region have been reviewed.

The total area of riverine lands in the economic district is 30,394.2 hectares, of which 53.5% is high quality riverine lands.[6] In the economic-geographical region, the Astara, Lankaran and Masalli administrative regions have favorable soil and climate conditions for tea cultivation.

In Jalilabad and Masalli administrative regions, the soil and climate conditions of the plains, foothills and low-mountain areas are considered favorable for viticulture. In 19 economic-geographical regions approximately 65% of the total 85616.96 hectares of land are considered high-quality lands suitable for grape growing.[6]

Among the agroclimatic indicators, positive temperatures are also considered an important indicator, and the number of days with average daily temperature above 5°C in Lankaran plain is 320 days, in areas up to 1000 m, this indicator is 230-255 days, and in 2000 m, 170-190 days. The total of temperatures above 5°C up to 4500-5000°C are only in Talysh mountains with the areas up to an altitude of 500-600 m.[7]

The water supply of irrigation and agriculture in the economic-geographical region was increased due to the increase of cultivated areas and the increase in the water demand of agriculture. Lerik and Yardimli districts lag behind in the supply of irrigation water in the economic-geographic region. Especially in the administrative region of Lerik, the

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[5] Daraselia M.K., Tea culture in the USSR. / M.K. Daraselia, V.V.Vorontsov, V.P. Gvasalia, V.P.Tsanava -Tbilisi: "Metsniereba", 1989, p.560.

[6] Mammadova, Z.S. Ecological Assessment and Monitoring of the Soils of the Lankaran Region of Azerbaijan / Z.S. Mammadova – Baku: 'Elm', - 2006. – p. 372

[7] Geography of the Republic of Azerbaijan. Volume I: Physical Geography. / M. Mammadov - Baku: Europe, 2014, p.530.

lack of water during potato and grain plantings had a negative impact on productivity.

Frost is one of the natural disasters that seriously damages crops, especially perennial crops, in the economic-geographical region. In 2005 and 2011, the frosts that occurred in January-February in the economic-geographic region destroyed more than 10,000 lemon and orange trees in 2,000 hectares of citrus orchards in Astara alone.[8] In January and February 2021, nearly 100 hectares of citrus orchards were seriously damaged in the territory of Shaglaser village of Lankaran administrative district.[9]

The process of erosion is one of the natural factors that strongly damages the soil fund in Lankaran-Astara economic-geographic region. Water erosion is observed in Yardimli, Lerik, Astara and Jalilabad administrative regions.[10]

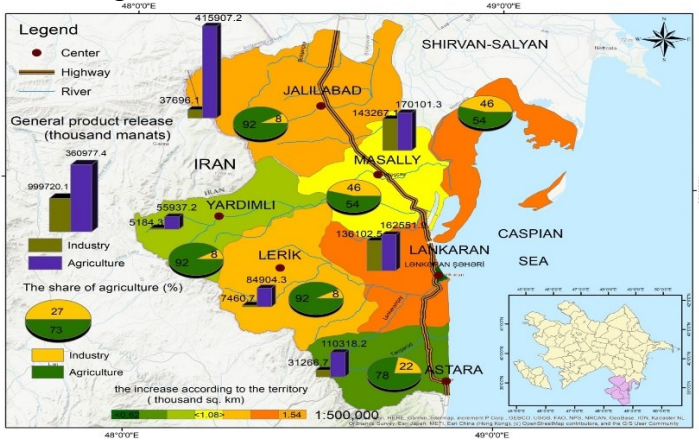

Figure 1. Total output in Lankaran-Astara economic region (thousand manats) and share of agriculture by administrative regions (in %), 2022.

[8] Pashayev N.A. Economic-geographic assessment of the impact of natural disasters on the economy in the Republic of Azerbaijan / N.A Pashayev - Baku "Europe" publishing house-2018, p.372.

[9] Aleskerzada, I.I. Citrus farming in the Lankaran and Astara districts of the Republic of Azerbaijan // Moscow: Bulletin of Moscow University. Number: 6, - 2022 (Pashayev N.A.)

[10] Aliyev B.H. "Some problems of agriculture in Azerbaijan and their solutions" / B.H.Aliyev, I.N.Aliyev – Baku, "Ziya-Nurlan" 2004, p.572.

One of the factors affecting the development of the economy is the extent to which the region is provided with transport network and transport lines. The length of highways in Lankaran-Astara economic-geographical region is total 1979 km, of which 12% of the total roads in the republic. The total volume of cargo turnover by road transport for 2022 was 728.3 million ton-km, the average of the last 10 years (2011-2021) was 1091 million ton-km, which means a decrease of 33.2%.

The location of the economic-geographic region on the north-south transport corridor, as well as the presence of a railway and an airport, facilitates the export of manufactured products. The total length of the railway within the region is 100.5 km.

Chapter II, titled **"Regional development of the territorial organization of plant growing in Lankaran-Astara economic-geographic region under modern conditions"**. information is provided about the area, population, and employment indicators of the researched region. The chapter also discusses the share of agriculture in crop production in rural areas and provides information on various prospective areas of agriculture.

Lankaran-Astara economic-geographic region is 7% of the territory of the republic or 6.07 thousand km^2, and 9.4% of the republic's population or 930.6 thousand people live here. There are 664 settlements in the economic-geographic region, of which 96% or 638 are rural settlements. 73.7% or 681.2 thousand people of 930.6 thousand total population are rural population.[11]

According to the statistical indicators of 2023, the total population of the studied economic-geographic region was 930.6 thousand people, of which 437.4 thousand people or 47% are employed. 247.9 thousand people or 56.67% of the total employed population are engaged in agriculture. A total of 247,900 people engaged in agriculture by administrative regions was distributed as follows. [12]

[11] Azerbaijan Population. Statistical Yearbook // State Statistics Committee of the Republic of Azerbaijan. – Baku: - 2023, - p 138

[12] Labor Market of Azerbaijan. Statistical Yearbook // State Statistics Committee of the Republic of Azerbaijan. – Baku: - 2023. - p 193

Lankaran-Astara economic-geographic region provides 10.1% of the total crop production in the republic. 56% of the total agricultural product produced in the economic-geographical region belongs to plant growing and 44% to animal husbandry (figure 1).

13.7% of the total citrus fruit plantations in the economic-geographic region in 2019 were oranges, 15.2% lemons and 71.1% tangerines.

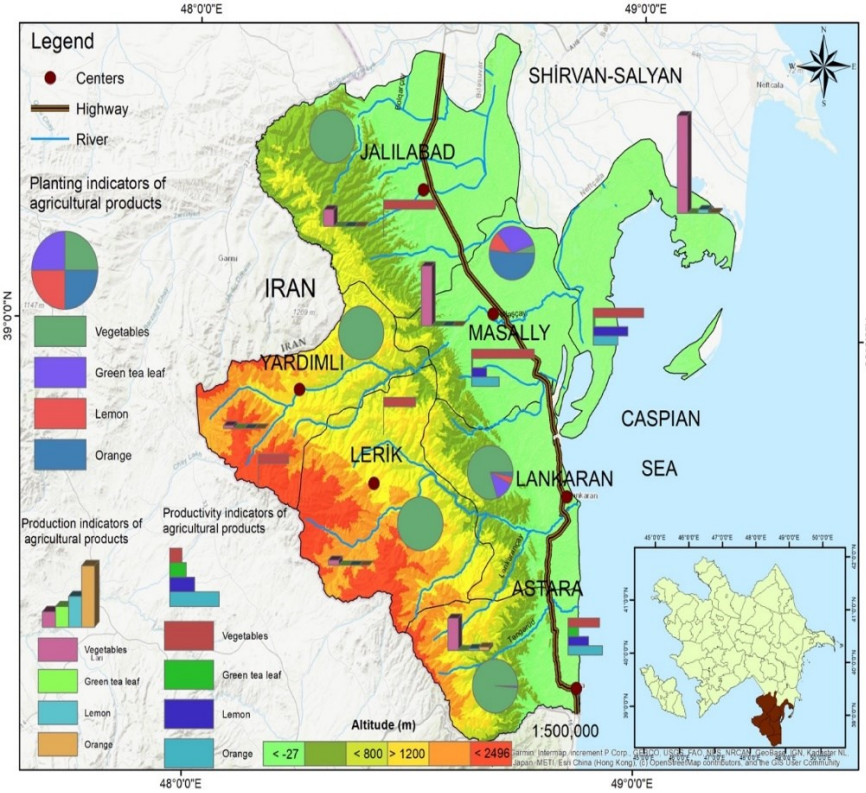

Figure 2. Complex map-scheme of various areas of agriculture in the Lankaran-Astara economic-geographical region.

We can see that the productivity of tangerine plant in Astara administrative region is higher than that of Lankaran administrative region. One of the main reasons for this is that while the citrus orchards on the collective farms and state farms in the Astara administrative region built during the Soviet Union have

been preserved, some of the citrus orchards on the collective farms and state farms in the Lankaran administrative region, mainly Babek, Aurora and other citrus orchards, have been destroyed. The main reason is that citrus trees were preserved in the southern and foothill areas of the Astara administrative region, which were not exposed to strong frosts, only in 2008 in the Lankaran administrative region, even the citrus trees under the protective cover were seriously damaged by frost. As a result, the abundance of citrus trees in Astara that are at full reproductive age has been reflected in the productivity index (figure 2).

The level of groundwater in the Lankaran natural region is 2.5-5 m in the foothill zone, and 0.2-0.5 m in the coastal zone.[13] Another factor affecting productivity and product quality is the level of groundwater. So, when the groundwater is close to the surface, it prevents the nutrition of the root system of a citrus plant. For this reason, the commercial quality and productivity of citrus plants increases as the altitude rises above the sea level in the economic-geographical region. For this reason, the research was carried out by taking two farms with the same planting distance and tangerine variety. On the farm area of Mamusta village, which is located at -20 m above sea level, the average productivity of a dwarf mandarin plant planted with a planting distance of 3x3 m is 30 kg/tree, while the average productivity of a dwarf mandarin plant planted with the same planting distance in the village of Lovay, located at an altitude of 140 m above sea level, is 80-150 kg. It would be appropriate if this observation and experiment were carried out on a larger scale, taking into account other factors affecting productivity. Based on the observation materials, it was concluded that the productivity index is higher in the gardens located mainly at 10-30 m above sea level, where the planting location, distance and planting order are correctly determined, and agrotechnical rules are followed correctly.

[13] Geography of the Republic of Azerbaijan "Regional geography" Volume III. Monograph.// Tanrıverdiyev X. K., Qashqay R. M., Xalilov H. A., Eminov Z. N., Hasanov M. S., -Baku, 2015.p. 400.

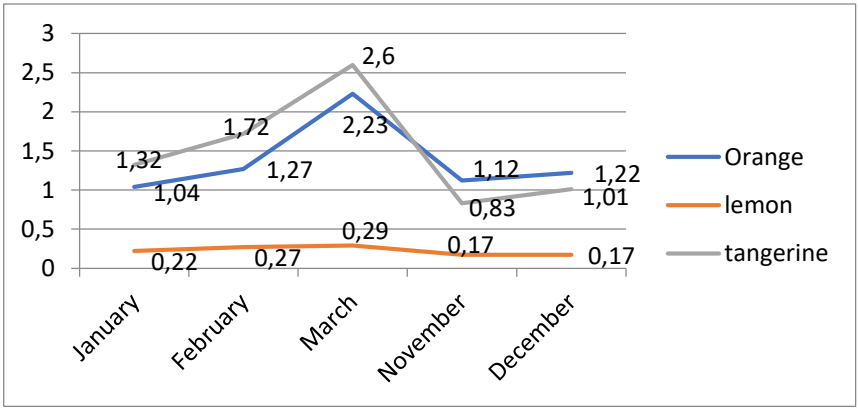

Chart Dynamics of wholesale prices of citrus fruits by month in 2020 (kg/azn)[14]

Additionally, the list and range of pests and diseases encountered in citrus orchards in the studied region were identified and recorded.

Surveys were conducted with owners of lemon orchards in villages with different natural conditions within the administrative regions of Lankaran and Astara. The surveys and observations were carried out not only on large farms but also on small family farms.

Based on survey results, it was determined that the local variety of lemon and the Meyer (thornless) variety have high productivity indicators and stand out from others in terms of income generated from sales. It would be appropriate to prioritize these varieties in citrus plantings in the economic-geographical region due to their productivity and quality indicators. Unlike other citrus fruits, lemons have a high consumption capacity throughout the year, resulting in high demand across the country. The lack of citrus fruit processing facilities in the region and the simultaneous market entry of the product create certain difficulties for producer farmers, leading some farmers to be unable to remove the product from the orchards. The main reason is that the simultaneous market entry lowers wholesale prices and makes it difficult to achieve profits. Therefore, it is advisable to increase the number of

[14] Reference on the production of citrus fruits in Azerbaijan // Agrarian Research Center under the Ministry of Agriculture, Baku, 2021, p.10

processing facilities, increase the number of warehouses in the main production regions of Lankaran and Astara administrative regions, or use the method of parity prices.

Upon examining the yearly dynamics of the wholesale prices indicated, it is observed that the price of the product fluctuates. The price sharply drops only after local produce enters the market (see Chart).

While familiarizing with the mechanism of operation of the processing enterprises of "Gilan" canning plant and "Lankaran canning plant" operating in the territory of the economic-geographical region, it was determined that these enterprises have vertical integration relationships and include areas such as industry, agriculture, service and marketing.

Planting of the tomato plant, which is widely consumed and distinguished by the variety of processing products, is also preferable in the Lankaran-Astara economic-geographical region. In the economic-geographical region, preference is given to the cultivation of local tomato varieties "Khazar", "Nuru", "Zarrabi", "Ilkin" and "Elim". The indicated varieties are adapted to local conditions and differ in their productivity[15] (Table 1).

Table 1

Productivity indicator of modern tomato varieties in the economic-geographic region (for 2020)

Names of varieties	Total product Cent/ha	Commodity product		Mass of fruit, grams
		Cent/ha	Indicator in %	
Elim	500,8	455	90,8	70-115
Nuru	500,1	450	89,9	70-110
Khazar	500	453	90,6	80-118
Zarrabi	500	451	90,2	75-110

Source: According to the first reports and materials of the Lankaran Experimental Station of the Scientific Research Institute of Horticulture.

[15] Alaskarzada, I.I. Territorial organization of vegetable growing in the Lankaran-Astara economic-geographical region of the Republic of Azerbaijan // Belgorod: Regional Geosystems. Number: 4., - 2023

Despite the decrease in general vegetable planting and harvesting in the economic region, planting the eggplant, which is in high demand in the foreign market, is still high. High purchasing power in the markets of the Russian Federation, which is one of the main countries where vegetables are exported from our country, provides the basis for this. Eggplant production in the economic region is 29,314 tons, the main part of which is provided by Lankaran and Masalli administrative regions. Its wide use in canned food production also increases its sales potential.

Grape yield has increased over the years in the economic-geographical region. In 2004, the average productivity was 27.5 centners/ha, in 2009, this figure was 30.3 centners/ha, and ten years later, for 2019, it increased 5 times compared to 2009 and reached 153.2 centners/ha.[16]

Vineyards have been planted on 200 hectares of land in Narimanabad settlement, of which 118 hectares are trees of fruiting age. "Isabella", a technical grape variety, is planted here, and this variety is better adapted to the local humid climate and is also less susceptible to fungal diseases. The product obtained from the vineyards is pre-processed for the production of wine-cognac products by the Lankaran regional branch of "Agroinvest MMC".

According to the statistical data of 2019, grape fields in Jalilabad administrative region amounted to 1401 hectares. In this administrative district, 11.5% of grape fields are located below sea level, 69.6% are located at 1-200 m above sea level, and 18.9% are located at 201-500 m above sea level. In the administrative region, there are large vineyards mainly in the villages of Alar, Karazanjir, Uzuntepe, Privolnoye, Guneshli and Uchtepe, and they are grown mainly in greenhouses.

A part of the technical grape harvest collected in Jalilabad administrative region is sent to Goychay, Kurdamir and Baku for processing. A part of the collected grape harvest is sent to the "Jalilabad Wine-2" factory established in 2007.

In the study region, the area of tea plantations increased by 288 ha or 28% and green tea leaf production increased by 493 tons or 56%

[16] Agriculture of Azerbaijan. Statistical collection // State Statistical Committee of the Republic of Azerbaijan. - Baku: - 2023, - 709 p.

respectively in the last ten years. Also, the yield has tripled compared to 2019, when it was 5 centners/ha, and reached 15 centners/ha (table 2).[17]

Table 2

Total planted area (ha), harvest (tons) and yield (cents/ha) of the economic region's tea plantations, 2010-2022

Territorial units		Green tea leaf		
		ha	ton	cent/ha
Azerbaijan Republic	2022	977,2	**1000,9**	12,2
Lankaran-Astara economic district	2010	527	**478,5**	9,2
	2015	949	**525**	13
	2020	1007,2	**875,5**	15,6
	2022	917,2	**943,9**	12,4
Difference in Lankaran-Astara economic region in 2010-2022, % or times		74% (increase)	97,2% (increase)	34,8% (increase)
Share of the Republic in production (tons) for 2022, %		**94,3 %**		

In the economic region in 2004-2008, we see a decrease in the cultivated areas under tea bushes, which is due to the preference of the population for vegetable, rice and potato crops during the indicated period. The high cost of selling the collected green tea leaves led to its replacement by other crops that are more profitable and have a higher purchasing power. However, the observation of the opposite trend in the following years is related to the establishment of new tea processing enterprises in the region, the fact that tea growing surpassed vegetable growing in terms of the income obtained from each hectare, the support provided to this field by the state, as well as the advantages of the research area with more favorable natural

[17] Azerbaijan's agriculture. Statistical collection // State Statistical Committee of the Republic of Azerbaijan. - Baku: - 2023, - p.709

climate and soil conditions for the development of tea cultivation over other areas of the republic.[18]

Our statistical analyzes show that the rice fields in the research region were 1067 ha in 2004, but in 2008 they decreased by 75% to 268 ha, and this trend continued in the following years and reached 177 ha in 2014. The surveys we conducted with the population in the areas show that the main reason for such a sharp decline in rice cultivation is that more labor is required in this field than in other crop fields and relatively low income is played. At the same time, many of the rice fields were replaced by vegetable growing, and especially by 2008, the vegetable fields had rapidly been increased.

The total area of spring and autumn wheat crops in Lankaran-Astara economic-geographic region for 2022 is 70212 ha, of which only 19% or 13512 ha belongs to Astara, Lerik, Lankaran, Masalli and Yardimli administrative regions, while the remaining 81 % of cultivated area is concentrated in Jalilabad administrative district.

The area of the agropark owned by "Guneshli-Agro" LLC, established in the administrative district, is 1600 hectares in total, 1200 hectares of which are equipped with modern irrigation systems, and barley, wheat, sugar beet, alfalfa and corn are cultivated here. On the farm 563 hectares of barley and 219 hectares of wheat are intensively planted using modern irrigation systems and equipment.

In the total area of 507.2 ha (for 2020) within the Lankaran administrative region, mainly in the villages of Gurumba, Burjali, Rvo, Havzava, Osaküche, Haftoni, and partly in almost all settlements, feijoa cultivation is carried out. Within the Astara administrative region, feijoa plantations are spread over a wide area in the villages of Kijaba, Archivan, Tangerud, Mashkhan, Pensar and Alasha, with a total cultivation of 874.6 ha (for 2020). 92% of the total feijoa plantations in the republic (1501.9 ha) belong to Lankaran and Astara administrative regions alone.

[18] Alaskarzada, I.I. Territorial organization and prospective development of tea cultivation in the Lankaran-Astara economic-geographical region // - Baku: "Bulletin of the Pedagogical University, Series of Mathematics and Natural Sciences, - 2021, №2, p.192-204 (co-author: Pashayev N.A.)

Recently, several perspective varieties and forms have been obtained as a result of many years of selection work of the “Lankaran Tea Branch of the Scientific Research Institute of Fruit Growing and Tea Cultivation”. Currently, farmers prefer to grow plantations with seedlings prepared by varieties in newly established gardens. Since the farmer knows the quality standards of the product and the yield index in the orchards planted with the seedlings, the agrotechnical maintenance of the farm and harvest are timely carried out. All this has a positive effect on the cost of the product, its position in the market and purchasing power. So, since feijoa gardens propagated by seeds are made up of different varieties of feijoa bushes, the harvest time cannot be precisely determined, and the harvest is organized several times with intervals. A uniform quality standard of the total collected product cannot be determined, which weakens the product's position in the market.

The growth of berry crops in the economic-geographic region has shown itself in recent years. The increasing tendency is observed especially in Jalilabad, Lankaran and Masalli regions. The increase in growing berry crops, especially strawberries, among the farmers in Jalilabad administrative district, is explained by the strong competition in potato growing, which they were previously engaged in. Thus, small farm owners, unable to compete with large farm owners in potato farming, either sell their farms to other farmers or turn to grain, strawberry or other crop cultivation. As a result, there has been a sharp increase in strawberry and grain cultivation areas in the administrative region in recent years.

Chapter III called **"Development prospects of the territorial organization of plant growing in Lankaran-Astara economic-geographic region"**. In this chapter, the influence of the state programs adopted for the development of agriculture and population employment in the country on the development of horticulture in the studied economic-geographical region was studied in a comparative way based on statistical indicators and reports of local agricultural departments.

In "State programs for the socio-economic development of the regions of the Republic of Azerbaijan in 2004-2008, 2009-2013,

2014-2018 and 2019-2013", "State program for the development of the agricultural sector in the Republic of Azerbaijan in 2002-2006", "The State Program on reliable supply of food products to the population in the Republic of Azerbaijan in 2008-2015" taking measures for the development of grain growing, viticulture, fruit growing, cotton growing, tobacco growing, tea growing, fruit growing and other fields, which are the traditional fields of regional agriculture, was set as a priority task. With the implementation of these State Programs, restoration of grape-growing areas in Lankaran-Astara economic-geographical region and start-up of a second winery in Jalilabad region, planting of high-quality and highly transportable grape varieties, restoration of abandoned tea plantations in the transitional economic period, and new tea plantations in Lankaran , Masalli and Astara administrative regions, the increase of both cultivated areas and the productivity index, the development of vegetable growing, rice growing and fruit growing (especially citrus fruit growing, which is traditional for the region) allow us to say that these State Programs have led to important progress in the economy of the region.[19]

Unlike other production areas of the economy, agriculture is not able to operate efficiently without the financial support of the state. For this reason, in most developed countries, entrepreneurs working in a number of agricultural fields are given financial support by paying various subsidies and grants. In the last periods of the planned farming system, the amount of investment in agriculture in Azerbaijan was 14-15% of the total amount in the main areas of the economy. In the first years of the collapse of this system, investment in agriculture was almost completely stopped, the aggression of the occupying Armenia in 1991 greatly hindered investment in this field. From 2000 to 2006, the volume of investment in agriculture was up to 30 times lower than investment in industry. In 2019, the volume of investment in agriculture was 12 times less than investment in industry, outpacing investment in information and communications.[20]

[19] Aleskerzade, I.I. On the prospects of developing plant cultivation in state programs. // - Baku: Works of the Azerbaijan Geographic Society, Journal of Geography and Natural Resources, - 2021, No.1 (13), pp. 95-101

For 2020, 22.1% of applications to the "Entrepreneurship Development Fund" for various projects fell to the share of the economic-geographical region we studied, of which 16.3% were supported by the allocation of loans.[20]

Lankaran administrative region has the traditions of tea growing, citrus and subtropical fruit growing, rainfed vegetable growing and rice growing, and has favorable natural conditions and labor force for the development of these fields.

94.5% of the registered tea plantations and 94.04% of green tea leaf production in the Republic belong to Lankaran-Astara economic-geographic region.

Over the past years, more than 100,000 tangerine and 50,000 orange seedlings were distributed to the population free of charge for the development of citrus fruit growing, which is a perspective field for the administrative region, and thus supported the development of citrus fruit growing, which requires high maintenance in the economic-geographic region of the state, and created new workplaces by attracting agricultural lands to production.

Despite the fact that vegetable growing in the administrative region has a high development perspective, vegetable growing in the administrative region has been replaced by other vegetable growing fields in recent years. As a result of the analysis, a number of factors influencing this were determined, as the greenhouse vegetable production in other regions of Azerbaijan is distinguished by its high productivity throughout the year and leaves the Lankaran administrative region, where rainfed vegetable growing is more preferable, behind to a certain extent.

In Yardimli administrative district, one of the perspective agricultural fields is potato growing, and in 2019, 8144 tons of potatoes were harvested from 876 hectares of land in the district. On average, 93.2 centners of product were harvested from each hectare of potato field. Compared to last year, more potato crops were

[20] Entrepreneurship Development Fund-Annual report // Ministry of Economy of the Republic of Azerbaijan, Baku, 2020. p.56.

harvested in farms belonging to Vergeduz, Porsova, Kurekchi, Peshtasar, Bozayran, Ostayir administrative territories of the region.

Plantation work is being carried out to develop plant growing, which is one of the prospective horticultural areas of Jalilabad administrative region, and the grape areas are periodically increased, so that the area of total crops increased from 50 hectares in 2004 to 1005 hectares in 2008, and, compared to 2008, in 2019, this indicator has increased by 39.4% and reached 1401 hectares. In the administrative district of Jalilabad, there are large vineyards mainly in the villages of Alar, Karazanjir, Uzuntepe, Privolnoye, Guneshli, and Uchtepe, and they are grown mainly under the conditions of a greenhouse.

Conclusion and proposals

1. It is the first time that the study of the territorial organization of plant growing in the Lankaran-Astara region in a complex economic-geographical aspect is considered. Here, the theoretical and methodological bases of territorial organization of plant growing, a comprehensive analysis of natural and economic factors affecting its development were conducted, and it was justified that the natural resource potential of the research area has greater opportunities for effective territorial organization of plant growing than the current situation.

2. Territorial organization of citrus growing, vegetable growing, tea growing as well as grain growing, viticulture, potato growing and rice growing, which are considered as one of the specialized and prospective fields of agriculture of the region, employment level of the population in these farms and modern development trends have been determined.

3. For the first time, the modern development dynamics and problems of territorial organization of specialized citrus fruit growing were studied, and the prospective possibilities of each area were studied. We also investigated the fact that most of the citrus orchards in the research region belong to farms of the families (with a workforce of 2-3 people and a total area of 1-2 ha) who are engaged

in a second or third job because this job is seasonal, and they cannot fully support themselves with the income from small farm gardens.

4. On the example of the Lankaran-Astara region, an economic-geographical study of the territorial organization of tea farming was achieved, and as a result of the research, maps and tables reflecting the development dynamics of the problem were drawn up. As a result of the research, it was determined that both the soil and climate conditions and the presence of the required number of labor force are positive factors for the development of tea cultivation in the territory of the economic-geographic region. Therefore, a number of programs and measures should be implemented for the development of this field, which is directly dependent on state care.

5. The development dynamics of the specialized plant growing of each district belonging to the Lankaran-Astara economic region, the problems arising in production, as well as the field and territorial differences of this farm, the changes in its production and export, that took place due to state support were investigated. In the research work, by using different scientific methods, analyzes were carried out according to each section reflecting the socio-economic nature of the region, relevant tables and maps were drawn up, the development prospects of the specialized areas of the territorial organization of plant growing in the food supply of the population at the regional and national level, and a package of relevant recommendations were prepared.

6. For the first time, the territorial organization of viticulture in the area according to altitude zones, the development and perspective of processing enterprises based on it were investigated. At the same time, regional and field differences, development dynamics and prospects of grain growing, potato growing, fruit and berry fields, which are important in food supply of each region and country, were studied.

Recommendations.

1. Looking at the year-round dynamics of the wholesale prices of citrus fruits, it is observed that the price of the product fluctuates, the price drops sharply only after the local product appears on the market. The fact that all farm owners bring the product to the market at the same time leads to an abundance of products in the market and the supply exceeds the demand, which is manifested by a decrease in the price of the product. Some farm owners are unable to sell all of their crops, so they remain in the gardens, because the price of the product has fallen, and they cannot cover the production costs spent on its collection and transportation. At this time, it is proposed to increase the number of warehouses for citrus fruits in the economic-geographic region and to preserve them in warehouses until the months when the value of the product increases in the market, or to apply the method of parity prices.

2. Citrus plants, like other perennial crops, have positive economic productivity for a long time. For this reason, it is important to use seedlings that are certified, of known origin, ecologically clean and meet quality standards. To provide citrus fruit seedlings, farm owners use seedlings imported from Georgia, produced by local producers, and by themselves. During the survey, it was determined that preference is given to seedlings purchased from local seedling producers. Incorrectly selected seedlings when planting orchards that have produced crops for about 40 years can lead to large economic losses. One of the main conditions is the establishment of citrus orchards using virus-free seedlings. For this reason, seedling farming is necessary in the economic-geographical region.

3. While some farm owners turn to an agronomist to take measures to control pests and diseases, most small farm owners use the advice of non-professionals selling medicinal preparations, which can lead to negative results; farms can often suffer serious damage as a result of natural disasters and a number of external factors, resulting in quantity and quality losses. For this reason, according to the Regulation prepared based on Article 6.1 of the Law No. 1617-VA dated June 27, 2019 of the Republic of Azerbaijan "On Agricultural

Insurance", the amount of damage caused to agricultural plants as a result of one or more risks mentioned below is guaranteed by an insurance contract: hail, fire, earthquake, landslide, hurricane, storm, plant diseases and pests, spread and attack of particularly dangerous pests, by a third party. It should be noted that in different years, frost has seriously damaged citrus fruit growing. Especially in 2005, 2008 and 2011 severe frosts resulted in the destruction and damage of a number of trees. It is suggested that compensation for damages caused by frost, which has a serious effect on the economy, should be reflected in agricultural insurance contracts: as part of the frost control measures, it was noted that the lemon plant, which is non-frost-resistant, was covered with light-conducting polyethylene materials, while other citrus fruits were grown uncovered. In a number of cases, farms affected by frost are farms that do not take timely measures for this or do not use sufficiently advanced methods. In order to minimize the loss and ensure economic efficiency, agrotechnical measures should be strictly observed.

4. At the same time, there is a need for various processing enterprises in the economic region. Thus, the region has high potential opportunities for organizing the production of various types of products, from the production of various types of juice to the production of essential oil from orange peels.

5. The increasing profitability indicator over the years indicates the price increase and high demand for the produced tea in the future. Thus, in 2010, the selling price of green tea leaves was approximately 80 manats per centner, while in 2019, this figure was 143 manats. According to the statistics of imported products of 2017, tea products worth 53 million US dollars were imported into Azerbaijan. As it can be seen, the priorities of developing the field with demand and high profitability indicators are high; as a result of the research, it was determined that there is an irrigation problem in some tea plantations. For example, the tea bushes of the Tuado tea plantation are not irrigated and are grown in rainfed conditions. In such areas, sprinkler and economical drip irrigation can be more effective. Agricultural loans, which are quite useful for other agricultural sectors, are not so useful for tea farming due to their terms. If new credit conditions or

long-term benefits are introduced for the tea industry, this could lead to the development of new areas by attracting entrepreneurs to tea growing.

6. Within the studied topic, the profitability index of the "Productive" variety of feijoa was studied, and the productivity indicators of the new "Shahla" and "Sarkhan" varieties adapted to local conditions were determined. At the same time, when planting feijoa gardens in the region, it is advisable to give preference to seedlings planted by varieties instead of propagating by seeds, which will increase the economic efficiency of perennial crops.

Published scientific works on the subject of the dissertation

1. Ələskərzadə İ.İ (2019). Cəlilabad inzibati rayonunda üzümçülük təsərrüfatı, üzüm məhsuldarlığının effektivliyinin artırılması və optimallaşdırılması. Lənkəran Dövlət Universitetinin "Elmi xəbərlər" (Riyaziyyat və təbiət elmləri seriyası) jurnalı, №2, 91-96. (Həmmüəllif: Paşayev N.Ə) https://lsu.edu.az/new/imgg/T-2019-2.pdf.
2. Ələskərzadə İ.İ (2019). Lənkəran-Astara iqtisadi-coğrafi rayonunda çayçılığın müasir regional inkişaf meylləri. Lənkəran Dövlət Universitetinin "Müasir təlim texnologiyalarının tətbiq olunmasının təhsilin keyfiyyətinə təsiri" adlı konfrans materialları jurnalı,51-53. https://lsu.edu.az/new/imgg/ KONFRANS% 20 MATER%C4%B0ALLARI%202019%202.pdf
3. Ələskərzadə İ.İ (2021). Dövlət Proqramlarında bitkiçiliyin inkişaf etdirilməsinin perspektivliyi haqqında. Azərbaycan Coğrafiya Cəmiyyətinin əsərləri – Coğrafiya və təbii resurslar jurnalı, №1 (13),95-101. http://journal.geonatres.az/ dovl %c9%99t-proqramlarinda-bitkiciliyin-inkisaf-etdirilm%c9%99sinin-perspektivliyi-haqqinda/
4. Ələskərzadə İ.İ. (2021). Lənkəran-Astara iqtisadi coğrafi rayonunda çayçılığın ərazi təşkili və perspektiv inkişafı. "Pedaqoji Universitetin Xəbərləri (Riyaziyyat və təbiət elmləri seriyası) №2,

Астаринском экономико-географическом районе, Научная Мысль: Перспективные Направления: Третьей Международной Научнопрактической Конференци» Выпуск 3., Минск, Республика Беларусь 17-20. https://iisi.science/mn014.pdf.

7. Ələskərzadə İ.İ. (2022). Цитрусовое хозяйство в Ленкоранском и Астаринском районах Азербайджанской Республики. Московский государственный университет им. М.В. Ломоносова –Вестник Московского Университета. Номер: 6.129-139. (Həmmüəllif: Paşayev N.Ə) https:// vestnik5.geogr.msu.ru/jour/article/view/1096/743.
8. Ələskərzadə İ.İ. (2023) Территориальная организация овощеводства в Лянкяранско-Астаринском экономико-географическом районе Азербайджанской Республики. Белгородский Государственный Университет - Региональный Геосистемы. Номер: 4. 518-529. https://reg-geosystems-journal.ru/index.php/journal/issue/view/16
9. Ələskərzadə İ.İ (2024). Lənkəran-Astara iqtisadi-coğrafi rayonunda bitkiçiliyin inkişafına təsir göstərən təbii və iqtisadi amillərin rolu. Azərbaycan Coğrafiya Cəmiyyətinin əsərləri – Coğrafiya və təbii resurslar jurnalı, №1 (21), 45-51. https://journal.geonatres.az/ lenkeran-astara-iqtisadi-rayonunda-bitkiciliyin-inkisafina-tesir-gosteren-tebii-ve-iqtisadi-amillerin-rolu/

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