

Research Article

The Role of Agriculture in Regional Development: Determination and Recommendations from the Case of TR61 Region in TürkiyeHabibe YAMAN¹*,¹¹Department of Economics, Faculty of Economics and Administrative Sciences, Burdur Mehmet Akif Ersoy University, Burdur, Türkiye*Corresponding author e-mail: hyaman@mehmetakif.edu.tr

ABSTRACT

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Eliminating regional imbalances and developing regions is a situation that has been desired by societies for many years. To realize regional development effectively and to use resources rationally for this purpose, it is necessary to be aware of the existing potential of the regions and to reveal their strengths and weaknesses. Agriculture is a sector that plays a key role in regional and national development. TR61 Region (Antalya, Isparta, Burdur) is a Level 2 region according to The Nomenclature of Territorial Units for Statistics (NUTS) and has high agricultural potential because of its soil structure, water resources, underground riches, flora, and fauna. In this context, this study aimed to reveal the agricultural potential and current situation of the TR 61 region with a comparative method. The period range of this study covers the year 2000 and later, and the data of the last current year were used in the comparison of the data in the study. Because of this research, it has been determined that agriculture makes an important contribution to the development of the region. The region stands out in many areas such as grain, vegetable and fruit production, organic farming practices, undercover farming, and herbal and animal production. The region also draws attention in terms of agricultural tools and machinery, agricultural investments, sectoral exports, as well as many leading sectors such as food, cosmetics, and rose industry. In addition, because of this research, it has also been observed that the existing potential has not been shown effectively. Based on these research findings, it can be said that cooperative steps are needed to increase the contribution of agriculture to regional development and this process should be supported by policies.

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INTRODUCTION

Agriculture, which has been an important field of activity for many years, is a sector that is important in many respects, such as the production of basic nutrients, employment, growth, rural development, and regional development. This sector has a central role to play in economic transformation. Not taking advantage of the transformative role of agriculture slows and delays economic transformation to the detriment of the growth rate, food security, poverty reduction, and the well-being of rural and urban people (Mellor 2017). However, opinions about the fact that agriculture is an area that should be given priority from the point of view of nations have varied over time. In the traditional approach, governmental finance and subsidies play a very important role in terms of agricultural enterprises and farms to increase production and food supply. However, the unsustainable cost of support to agricultural enterprises has created the impression that investments in agriculture are highly unprofitable. Therefore, the attention has moved away from agriculture to focus on other areas relevant to promoting development (FAO 2010). The importance of maintaining agricultural production has been recognized by all countries throughout history. However, in the economic literature of the 1950s and 1960s, the role of agriculture in terms of development was evaluated as an assistant to the modern industrial sector where most of the accumulation and growth is expected to occur. Theoretical research and the unexpectedly poor performance of agriculture in many developing countries have led to the belief that the role of agriculture in development should be re-examined (Cornia 1985). However, the projections on food prices and food requirements have begun to reinvigorate the discussion by the Food and Agriculture Organization of the United Nations (FAO) and other development organizations on the necessity for increased investments in agriculture (FAO 2010). On the other hand, together with the Covid-19 process and the political developments in the international arena (e.g. Russia-Ukraine tension), problems have been experienced on the point of supply in the agricultural sector, price fluctuations in agricultural products and increasing costs have become the focus of discussions today, and the importance of agriculture has become the agenda again with these developments.

Nowadays, discourses about the need to develop agriculture, which is an important sector, are frequently expressed. However, agricultural development largely depends on how successfully knowledge is generated and applied (World Bank 2006). Technological developments and innovative activities contribute to the increase in yields in agriculture and livestock while increasing yields and profitability in the sector is facilitated by applications developed and integrated into this sector. Biological deficiencies of plants and animals are eliminated with developing molecular techniques, labor requirements are reduced with improvements in mechanization, and productivity and worker safety are increased. In addition, the environmental sustainability of production systems is increased while reducing the negative effects on soil and water with the help of advanced techniques (Sassenrath et al. 2008). Additionally, digital technologies overcome information problems that hinder market access for many small-scale farmers, they also increase information through new ways of providing extension services and provide novel ways for improving agricultural supply chain administration (Deichmann et al. 2016). Developing and changing conditions lead to the emergence of new approaches in regional policies. It is important to closely follow and adopt these developments to increase competitiveness in agriculture.

In the national and international literature, many studies on agriculture and development emphasize that agriculture is an important sector in terms of economic growth, sustainable development, regional or rural development (Batie 1989; Foster & Rosenzweig 2007; Tolunay & Akyol 2009; Pezikoğlu 2012; Martin 2019; Loizou et al. 2019; Şurgun Çelikten & Sevinç 2020). Agriculture is the backbone of Türkiye's economy, and this sector still maintains its importance. That is why it is necessary to work on addressing and developing agriculture, which is a critical sector, for Türkiye. TR 61 region is among the prominent regions in Türkiye in terms of geographical structure, favorable conditions for agriculture, and export of agricultural products. For this reason, we have taken the TR 61 region as a basis for this research, where we try to reveal the role and importance of agriculture in regional development. This study aims to evaluate the strengths and weaknesses of the TR 61 region and to reveal the potential of agriculture in regional development.

MATERIALS AND METHODS

This study focuses on the role of agriculture in regional development. TR 61 region (Antalya, Isparta, Burdur) is an important region in terms of agriculture in Türkiye. For this reason, this study is based on the TR 61 region (Figure 1).

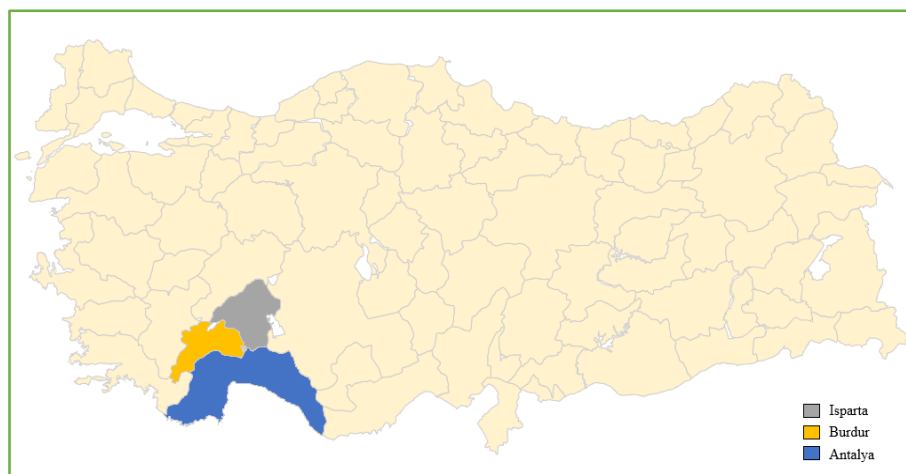


Figure 1. *The Field of Research*

In this study, the agricultural potential and current situation of the TR61 region have been revealed using a comparative method. In this process, the general appearance and agricultural potential of Isparta, Burdur and Antalya provinces were evaluated by using regional statistics that stand out in terms of the agricultural sector. Regional plans and various statistics (such as business records, and foreign trade statistics) were utilized to reveal the current situation of the region. The study periodically focuses on the data of the current year. The findings are evaluated on the axis of the study.

There are some limitations to this research. For example, one of the main limitations of this study is that the current versions of some data, reports and plans have not been published/disclosed yet. In addition, the provinces in the region under consideration have different values from each other in terms of population, surface area, etc.

RESULTS AND DISCUSSION

Overview of the TR 61 Region

TR 61 region, with an area of 36,996 square kilometers, constitutes 4.7% of Türkiye's surface area (West Mediterranean Development Agency 2015: 33). Considering the annual population growth rate (%) values of the provinces in Türkiye, Burdur Province stands out with 0.3, Isparta Province -0.8 and Antalya Province 25.7 in 2022 compared to the previous year. Antalya is in the top five among 81 provinces in terms of population with 2 million 688 thousand 4 inhabitants (TURKSTAT 2023c).

Rank the inter-provincial competition index prepared by the Istanbul University Center for Research and Practice in City Policies, Antalya ranks 4th, Burdur ranks 47th and Isparta ranks 21st during the 2021-2022 main index. In the study, while Antalya from the TR61 region is among the leading cities in demographic structure, tourism and health, transportation, and financial markets, Burdur is also among the leading cities in education. Isparta province, on the other hand, stands out in education, health, and higher education. In the sub-index rankings, Antalya ranks 3rd, Isparta 5th, Burdur 78th in the health index, and Isparta 12th, Burdur 37th, Antalya 44th in the infrastructure index. While Antalya ranks 9th, Isparta 31st, and Burdur 53rd in the Social Life Index, Isparta 27th, Burdur 37th, and Antalya 6th in the Macro Economy Index. In the agriculture index, Burdur ranks 37th, Isparta 45th, and Antalya 15th among 81 provinces. Antalya ranks 11th, Burdur 17th, and Isparta 22nd in the Innovation Index, and Antalya 8th, Burdur 57th, and Isparta 62nd in the Entrepreneurship Index (Şeker et al. 2023).

According to the 2017 Socio-Economic Development Ranking Research (SEGE) grouping, Antalya is the 1st tier, Burdur is the 3rd tier, and Isparta is the 2nd tier-developed city. According to SEGE studies for

districts in 2022, the Central district (0.917) and the Bucak district (0.439) are leading in the Burdur Province, and these districts are at the 2nd level. While the Central district (1.551) is the most developed in Isparta province, it is followed by the Gönen district (-0.034). The central district of Isparta province is in the 2nd level in terms of development, and Gönen district is in the 3rd level. Muratpaşa (3.173), Konyaaltı (2.465), and Alanya (1.676) districts, which are in the first three places in Antalya province, are the 1st tier developed districts (Republic of Türkiye Ministry of Industry and Technology 2023). The TR61 region is also important in terms of foreign trade. According to the TURKSTAT (2023a) Foreign Trade Statistics, the TR61 region exported 2,766,091,970 US Dollars in 2022. Antalya stood out in the region with 2,220,293,804 US Dollars, and the export figures of Burdur and Isparta are 272,468,072 US Dollars and 273,330,094 US Dollars, respectively.

The Outlook of the Agriculture Sector in the TR 61 Region and Its Importance for the Region

Agriculture has a critical place in the economy of the TR61 region. This sector is a source of livelihood for those engaged in agriculture and makes a significant contribution to rural development. TURKSTAT (2023d) data shows that the share of the agriculture, forestry, and fishery sectors in Gross Domestic Product varies across provinces. Compared to 2004, the share of this sector in Gross Domestic Product dropped in Antalya and Isparta Province but rose in Burdur Province (Figure 2).

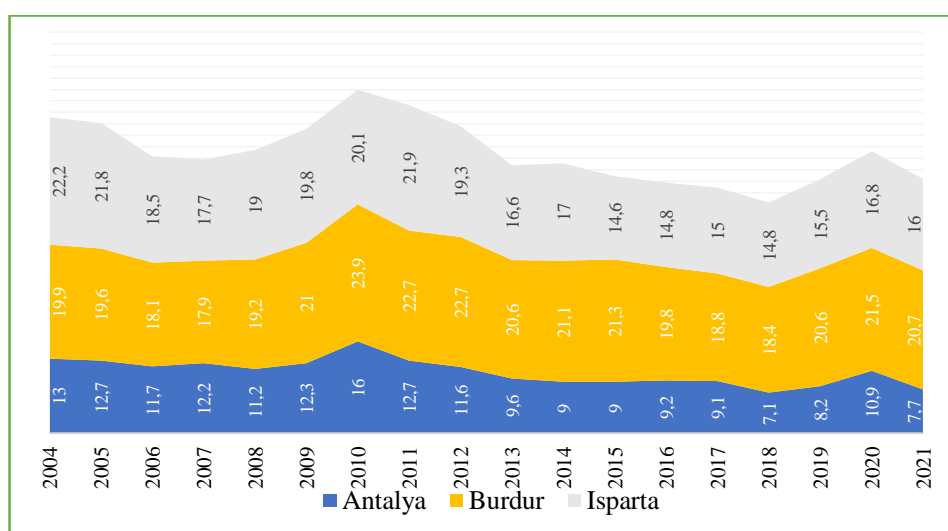


Figure 2. Share of Agriculture, Forestry, and Fishing in Gross Domestic Product (Based on 2009)

Source: Created by the author with data from TURKSTAT (2023d)

The agricultural sector has an important place in developing industrial activities in the TR61 region. The number of enterprises in the agriculture, forestry, and fishing sectors is increasing year by year in this region (TURKSTAT, 2023d).

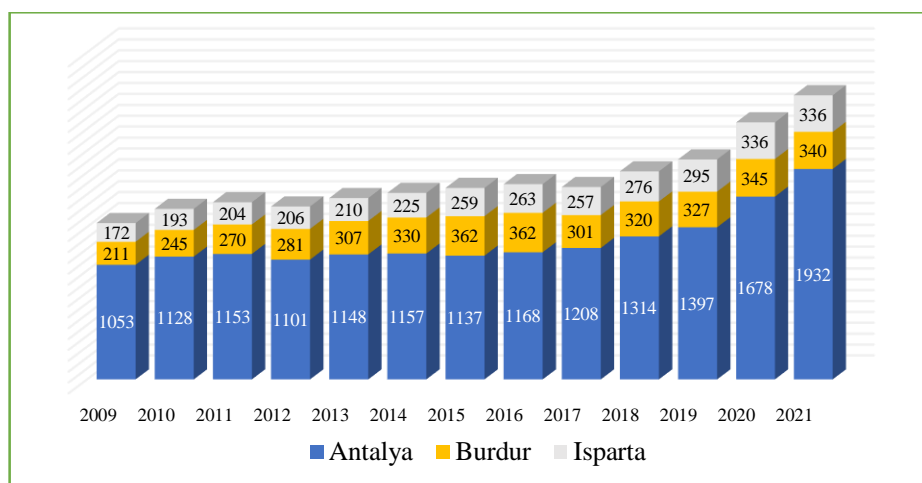


Figure 3. Number of Enterprises in the Agriculture, Forestry, and Fishing Sector

Source: Created by the author with data from TURKSTAT (2023d)

Agriculture and livestock are prominent in the foreign trade of the TR61 region. In addition, fishing, forestry, and logging have also an important place in the foreign trade of this region (Table 1).

Table 1. TR61 region exports (dollars)*

	Year	Antalya	Burdur	Isparta
Agriculture and livestock	2021	702,027,295	6,203,116	49,007,165
	2022	680,602,179	4,231,243	51,838,982
	2023	346,746,190	1,518,087	21,892,525
Forestry and logging	2021	1,948,340	587,670	8,921
	2022	1,666,770	530,715	149,246
	2023	147,587	-	-
Fishery	2021	2,667,726	-	550,342
	2022	99,047	-	210,208
	2023	-	-	-

Source. TURKSTAT (2023a).

*Data for 2022 and 2023 are provisional data.

When regional shares by sectors (2009-based) are analyzed (TURKSTAT 2024), according to activity A10 (NACE rev.2), Antalya (4.41) stands out in TR61 Region in agriculture, forestry, and fishing for 2022. This is followed by Isparta (1.15) and Burdur (0.8) respectively. However, when the data is considered on a provincial basis, professional, scientific, technical, administrative, and support service activities (6.29) are the most prominent sector in Antalya. In contrast, the agriculture, forestry, and fishing sectors are more prominent in Burdur and Isparta provinces compared to other sectors.

TR61 Region has an ideal climate and soil for agricultural production. In addition, irrigation facilities have an important role in the development of the agricultural sector. The most common agricultural activity in the region is vegetable cultivation (West Mediterranean Development Agency 2015). When the sector figures based on provinces are analyzed, it is seen that fresh fruits and vegetables, and fruit and vegetable products stand out in the sector's export performance of exporting companies (Table 2).

Table 2. Sector Export Performance of Exporting Companies in the TR61 Region (\$1000)

1 January-31 May	Isparta		Burdur		Antalya	
	2022	2023	2022	2023	2022	2023
Hazelnuts and Products	0.00	1.72	-	-	98.16	21.18
Cereals, Pulses, Oilseeds, and Products	2,710.00	2,324.35	79.46	117.86	17,329.16	23,920.40
Dried Fruits and Products	92.51	274.59	-	-	788.20	662.99
Fruit and Vegetable Products	4,783.44	5,975.58	0.00	0.00	9,510.33	11,164.53
Aquaculture and Animal Products	4,333.41	3,331.16	1,677.58	1,503.87	8,220.08	6,259.73
Ornamental Plants and Products	2,616.13	1,680.86	36.25	35.85	36,637.91	34,529.42
Fresh Fruits and Vegetables	34,201.04	33,783.61	754.48	672.18	277,596.47	358,894.38
Olives and Olive Oil	0.00	0.00	-	-	37.26	99.73

Source. Turkish Exporters Assembly (2023).

The decrease in the total cultivated agricultural area in the TR 61 region draws attention. The total cultivated agricultural area of Antalya province was 270,681 hectares for the year 2021. When we look at the year 2000, it is seen that the total amount of agricultural land processed in the province has decreased. Similarly, in Burdur and Isparta provinces, there has been a decrease in the total cultivated agricultural area compared to 2000 in recent years (Figure 4).

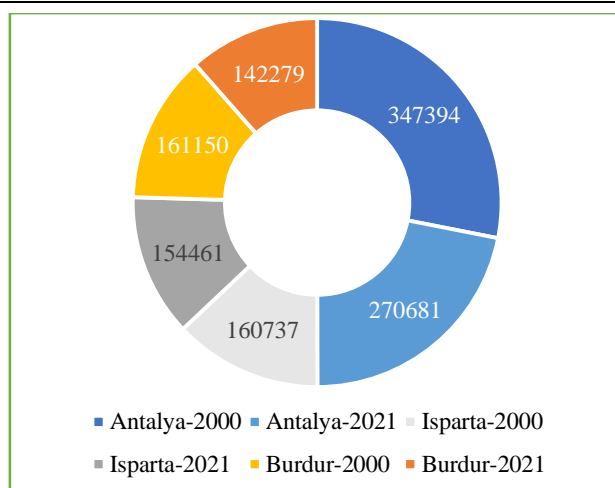


Figure 4. Total cultivated agricultural area (hectares) for TR 61 region
Source. Created by the author with data from TURKSTAT (2023b)

Developing production technologies in the greenhouse sector (e.g. the use of geothermal energy, vertical farming practices, and irrigation systems) have been effective in increasing productivity from year to year. The productivity rate of undercover farming is quite high since it is less affected by seasonal conditions (The Banks Association of Türkiye, 2023). TR61 Region has advanced a lot in undercover farming activities. According to TURKSTAT (2024) data for 2023, Antalya has 311,042.2 decares, Burdur has 13,936 decares and Isparta has 4,771 decares of undercover farming area. Vegetable production is possible in undercover farming areas from October to May, when vegetable production is limited both at home and abroad. This situation is effective in making the region come to the fore in vegetable production. Natural resources and agricultural raw materials power the industrial growth of the TR61 region. However, the manufacturing industry for the processing of agricultural products in the region is not developed enough, causing the products to be sold outside the region without being largely processed (West Mediterranean Development Agency 2015).

Organic agriculture is also performed in the region, as well as undercover agricultural activities. In addition, when the agricultural tools and machinery of the region are examined, there has been an increase in the number of tractors since 2000. There are also significant increases in plant production and the value of animal products (Table 3).

Table 3. Some Agricultural Indicators for the TR 61 Region

Year	Province	Number of Tractors	Value of animal products (1000 ₺)	Crop production value (1000 ₺)	Areas for land under protective cover by type (decare): Total	Vegetable and fruit production for land under protective cover (tons): Total	Organic crop production (including the transition process): Production (tons)
2000	Antalya	28,476	85,018	620,078	141,783	1,771,627	-
2020	Antalya	36,483	840,951	16,254,994	312,226	4,012,571	9,348
2021	Antalya	36,608	-	19,353,522	326,967	4,718,048	11,185
2000	Isparta	10,694	34,994	212,923	172	1,458	-
2020	Isparta	18,038	537,060	3,464,965	5,378	69,875	2,998
2021	Isparta	20,864	-	4,231,693	5,228	56,491	2,538
2000	Burdur	11,156	38,594	100,484	152	1,604	-
2020	Burdur	23,078	934,212	1,599,298	11,678	188,004	3,770
2021	Burdur	23,577	-	1,329,334	12,804	197,904	3,327

Source. TURKSTAT (2023b).

As in the world, chemical control is the most preferred agricultural control method in the control of diseases, pests, and weeds in Türkiye. Although Türkiye is below the world average in terms of pesticide use, when analyzed on a regional basis, pesticide use is much higher than the world average, especially in the

Mediterranean Region (Özercan & Taşçı 2022: 86-87). According to the data of Republic of Türkiye Ministry of Agriculture and Forestry General Directorate of Food and Control (2024), amounts of use of plant protection products at provincial level (in Agricultural Control Practices) (kg-L) reveal that Antalya ranks 2nd (4,460,580) in Türkiye after Adana (4,849,281) in the total use of plant protection products for 2023. In the relevant data, Isparta's value is 1,424,769 and Burdur's value is 343,657.

The economic structure of the Isparta province is heavily based on agriculture and other agriculture-based sectors. This province is one of the important centers of cattle and ovine breeding, poultry breeding, and freshwater fishing and is an important region that exports rose oil. Fruit growing is prominent in terms of agricultural activities that characterize the province. Apple, cherry, grape, apricot, and sour cherry cultivation have an important place among fruit products. Rose production is prominent in Isparta. In addition, cereals, legumes, and industrial plants also have an important place in provincial agriculture (West Mediterranean Development Agency 2017a). Agricultural production activities in the province are making progress depending on the developing technology and production techniques. However, a limited part of the products produced can be exported. Most of the products produced in the province are offered for consumption in Isparta and in the country (West Mediterranean Development Agency 2014).

In livestock and milk production, Burdur Province is the leader in the region. However, because of its advantages such as transportation, employment, and being a tourism center, Antalya is considered the locomotive province of the region in milk and dairy products production and trade. Dairy producers operating in Burdur and Isparta produce mostly to meet the needs of the region. However, the number of animals in Burdur province is high, and the organization is strong. As the strengths of the sector in this province, we can list the factors such as the developments in artificial insemination and breeding, the bacteria level being close to zero, the cold chain transportation of the milk, and the openness of the breeders to innovations (West Mediterranean Development Agency 2017b). The existence of a university specialized in animal husbandry is an important advantage for the province.

CONCLUSIONS

The importance of agriculture for regional development is frequently emphasized by both agricultural economists and regional scientists. Many factors from openness to innovations and the degree of adoption of technological developments to agricultural knowledge and learning have a significant impact on increasing the competitiveness of regions, creating new job opportunities in rural areas, preventing rural-to-urban migration and generally increasing the productivity of the sector. Considering the changing and developing conditions, it is essential to increase productivity to compete more effectively in the agricultural sector. Today, agriculture still maintains its critical position in regional and rural development in Türkiye and TR61 region has an important place in the agricultural sector in economic terms. Studies on sectoral analysis for the regions are in a guiding position in activities to increase productivity and competitiveness. In this framework, this study aims to evaluate the strengths and weaknesses of TR 61 region and to reveal the potential of agriculture in regional development. The period range of this study, which uses the comparative method, covers the year 2000 and later, and the data of the last current year were used for the comparison of data in the study.

According to the research findings, the provinces of Isparta, Burdur, and Antalya have different advantages and prominent strengths. TR61 region is highly convenient for the agricultural sector with its geographical location, ideal climatic conditions for production, natural resources, and fertile soils. The region stands out in many areas such as grain, vegetable and fruit production, organic farming practices, undercover farming, and herbal and animal production. The region also draws attention in terms of agricultural tools and machinery, agricultural investments, sectoral exports, as well as many leading sectors such as food, cosmetics and rose industry. TR 61 region has important potential in terms of the agriculture sector. However, to make a general assessment, it is debatable how effectively this potential is used in the region's development. The existence of small-scale enterprises, inadequacy of capital accumulation, lack of infrastructure, and weak use of advanced technology slow the pace of development of the agricultural sector in this region. Therefore, it is important to make the necessary improvements to the processing of agricultural products in the region, to develop agricultural and agriculture-based industrial activities, and to take strategic steps to improve the sector.

In conclusion, in this study, which focuses on the role of agriculture in regional development, the findings obtained from the TR 61 sample reveal that there are strengths in the development of this region, but also raise the need to take some steps to develop this potential. Based on the research findings, it can be said that collaborative steps are needed to analyze the potential of the region/country in detail and reveal it rationally to be able to follow a correct path towards eliminating regional imbalances in this process and to develop the region. In addition, it is necessary to perform remedial activities for the solution of problems, such as the scale size of agricultural enterprises, the use of technology, and the lack of infrastructure. Thus, the contribution of the sector to regional development will be increased.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

AUTHOR CONTRIBUTION

The first author contributed 100 %.

ETHICAL APPROVAL

During the writing process of the study titled "**The Role of Agriculture in Regional Development: Determination and Recommendations from the Case of TR61 Region in Türkiye**", scientific rules, ethical and citation rules were followed; No falsification has been made on the collected data and this study has not been sent to any other academic media for evaluation. Ethics committee approval is not required.

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