# Problems in Avocado Farming and Solutions: The Case of Alanya, Türkiye

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**Abstract:** The study aims to evaluate the problems faced by avocado producers in Alanya and propose solutions using the SWOT analysis method. The study's materials include interviews with the Alanya District Directorate of Agriculture, the directorate Water User Association of the 134th Regional Directorate of State Hydraulic Works, the Chamber of Agriculture, the Avocado Association, and various agricultural firms. The results of the SWOT analysis reveal that Alanya possesses significant advantages for avocado production, such as favourable climate conditions, high demand for avocados, low production costs, and the use of quality seedlings. Additionally, the education of producers and the high yield of avocados are identified as factors that enhance production efficiency. However, weaknesses such as the need for organization, early harvest issues, urbanization, and uncertified seedling practices negatively impact production quality and efficiency. Insufficient agricultural analyses and irrigation pricing issues are also significant challenges. On the other hand, opportunities such as high supply, export possibilities to European and Russian markets, industrial usage options, and the expansion of the domestic market have the potential to increase the economic gains of producers. Providing necessary training and developing new varieties can further improve production quality and efficiency. Threats such as lack of education in agricultural activities, financial concerns, neglect of plant water consumption, and improper irrigation methods adversely affect production efficiency and quality. External threats, including climate change, theft, water quality issues, and uncontrolled production increases during the pandemic, are also significant risks faced by avocado producers. Measures to address these threats are crucial for the sustainability of avocado production.

*Keywords:* ***Alanya, Avocado Producers, SWOT Analysis, Tropical Fruits***

**Avokado Yetiştiriciliğinde Sorunlar ve Çözümler: Alanya Örneği, Türkiye**

***Öz:*** *Çalışma, Alanya'daki avokado üreticilerinin karşılaştığı sorunları değerlendirmeyi ve SWOT analizi yöntemiyle çözüm önerileri sunmayı amaçlamaktadır. Çalışmanın materyalleri, Alanya İlçe Tarım Müdürlüğü, Devlet Su İşleri 134. Bölge Müdürlüğü Sulama Birliği, Ziraat Odası, Avokado Derneği ve çeşitli tarım firmaları ile yapılan görüşmeleri içermektedir. SWOT analizinin sonuçları, Alanya'nın avokado üretimi için önemli avantajlara sahip olduğunu ortaya koymaktadır; uygun iklim koşulları, avokadoya yüksek talep, düşük üretim maliyetleri ve kaliteli fidan kullanımı gibi. Ayrıca, üreticilerin eğitimi ve avokadonun yüksek verimi, üretim verimliliğini artıran faktörler olarak belirlenmiştir. Ancak, organizasyon eksikliği, erken hasat sorunları, kentleşme ve sertifikasız fidan uygulamaları gibi zayıflıklar, üretim kalitesini ve verimliliğini olumsuz etkilemektedir. Yetersiz tarımsal analizler ve sulama fiyatlandırma sorunları da önemli zorluklardır. Öte yandan, yüksek arz, Avrupa ve Rusya pazarlarına ihracat imkanları, endüstriyel kullanım seçenekleri ve iç pazarın genişlemesi gibi fırsatlar, üreticilerin ekonomik kazançlarını artırma potansiyeline sahip olduğu görülmüştür. Gerekli eğitimlerin sağlanması ve yeni çeşitlerin geliştirilmesi, üretim kalitesini ve verimliliğini daha da iyileştirebilir. Tarımsal faaliyetlerde eğitim eksikliği, mali kaygılar, bitki su tüketiminin ihmal edilmesi ve uygunsuz sulama yöntemleri gibi tehditler, üretim verimliliğini ve kalitesini olumsuz etkilemektedir. İklim değişikliği, hırsızlık, su kalitesi sorunları ve pandemi sırasında kontrolsüz üretim artışları gibi dış tehditler de avokado üreticilerinin karşılaştığı önemli risklerdir. Bu tehditleri ele almak için alınacak önlemler, avokado üretiminin sürdürülebilirliği için kritik öneme sahiptir.*

**Anahtar kelimeler: Alanya, Avokado Üreticileri, SWOT Analizi, Tropikal Meyveler**

## INTRODUCTION

Avocado, botanically known as Persea americana, is a nutritious fruit with a history spanning thousands of years and originating in Mexico, Central America, and South America. Archaeological findings show that avocados were consumed in these regions approximately 10,000 years ago (Galindo-Tovar et al. 2007). In ancient Mexico, the Aztecs called avocados "ahuacatl" and used them for both food and medicinal purposes. Avocados have had an important place in the diets of ancient civilizations thanks to their rich nutritional content and health benefits (Popenoe and Zentmyer, 1963; Miller, 2020).

Spanish explorers introduced avocados to Europe in the 16th century, and over time, they became a fruit recognized and cultivated worldwide. In the 19th and 20th centuries, avocado cultivation became widespread in regions such as California and Florida (Robinson, 1926; Shepherd and Bender, 2002) and became a commercially important product. Today, avocado has increased its popularity, especially with the influence of healthy living and nutrition

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trends, and has become an indispensable part of the global market. Avocado has a rich history that reflects its historical, cultural, economic and nutritional importance. Avocado has gained an important place in the modern nutrition world with its unique nutritional profile and versatile use. It stands out as a food rich in nutritional value thanks to its healthy monounsaturated fats, high fiber content, vitamins (especially K, E, C and B vitamins) and minerals (potassium, magnesium, phosphate) (Dickey, 1927; Dreher and Davenport, 2013). With its heart health support, antioxidant properties and positive effects on the digestive system, avocado has become an indispensable part of daily diets and has gained popularity among health-conscious individuals (Araújo et al. 2018). In addition, the creamy texture and neutral taste of avocado make it a flexible ingredient in various recipes, which increases its not only nutritious but also creative use in the kitchen. In addition to its nutritional properties, avocado has also found a wide use in the cosmetics industry (Charles et al. 2022). Avocado oil stands out as an important ingredient in skin and hair care; It is frequently used in various cosmetic products thanks to its moisturizing, nourishing and repairing properties (Ferreira et al. 2022). Its vitamin E, antioxidants and healthy fatty acid content make avocado valuable in many products, from anti-aging creams to hair masks, from body lotions to lip balms. Benefits such as moisturizing the skin, increasing its elasticity and repairing the damage caused by free radicals have led to the adoption of avocado as a natural beauty source. For this reason, avocado and its derivatives have become an indispensable ingredient for consumers looking for natural and effective care products.

Avocado production has increased greatly on a global scale in recent years and has become a strategic agricultural product. Various regions, especially Mexico (Vargas-Canales et al. 2020), Latin American countries, the United States (especially California and Florida), Spain, Israel and South Africa are among the leading countries in avocado production (Caro et al. 2021). Mexico maintains its leading position by meeting a large portion of the world's avocado production. With increasing global demand, avocado cultivation is expanding to adapt to different climatic conditions and new growing countries are joining the production area. This expansion creates both economic opportunities and new challenges in terms of sustainable agricultural practices. Avocado production dynamics worldwide have significant impacts on agricultural economics and trade policies (Ayala Silva et al. 2014; Dymond et al. 2021).

Avocado production has become an increasingly important agricultural activity in the Mediterranean region (Kourgialas and Dokou, 2021). The climate of the region provides suitable conditions for avocado cultivation, which contributes to increased production (Pleguezuelo et al. 2018). Mediterranean countries such as Spain, Israel and Egypt stand out as important actors in avocado production, supplying fresh avocados to the European market. These countries specialize in the production of avocado varieties, especially Hass and Fuerte (Tzatzani et al. 2023), and are constantly increasing their production capacity to meet global demand. The mild climate of the Mediterranean ensures healthy growth of avocado trees throughout the year and allows for high-quality products. Türkiye has also made remarkable progress in avocado production in recent years (Demirkol, 1995; Bayram et al. 2012). Avocado cultivation is becoming widespread especially in regions with Mediterranean climate such as Antalya and Mersin (Selim et al. 2018). Türkiye's avocado production meets both domestic market demand and export market demand. Increasing avocado production in Antalya region (Bayram et al., 2013; Selim et al., 2018) creates various problems such marketing, irrigation etc. Few studies have investigated increasing avocado production and producers' problems in any systematic way in the region. There have been few studies (Arslan and Kartal, 2023) have addressed avocado producers' problems and their solutions.

This study aims to evaluate the problems encountered by avocado producers in Alanya and to present solution suggestions using the SWOT analysis method. For this purpose, interviews were conducted with the Alanya District Directorate of Agriculture, the 134th Regional Directorate of State Hydraulic Works Water Users Association, the Chamber of Agriculture, the Avocado Association and various agricultural companies. The results of the study are expected to make significant contributions to producers regarding the sustainability of avocado production.

## MATERIALS and METHODS

### *Case study*

This study was conducted to analyse the problems encountered by avocado producers in Alanya and the solution proposals for these problems. The material of the study consists of the results of the SWOT analysis conducted with the Alanya Agriculture District Directorate, the State Hydraulic Works (DSI) 134th Regional Irrigation Union Directorate, the Chamber of Agriculture Presidency, the Avocado Union Presidency and some agricultural companies. The study area is the Alanya district (Figure 1), which is located in the Mediterranean Region of Türkiye and is a suitable region for avocado cultivation with its subtropical climate conditions (Sabancı, 2014; Özfidaner et al. 2019). Alanya's climate, topography and agricultural infrastructure offer significant advantages in terms of avocado production. In this context, the selection of Alanya as the study area is important in terms of determining the avocado production

potential in the region and the strategies for the effective use of this potential.

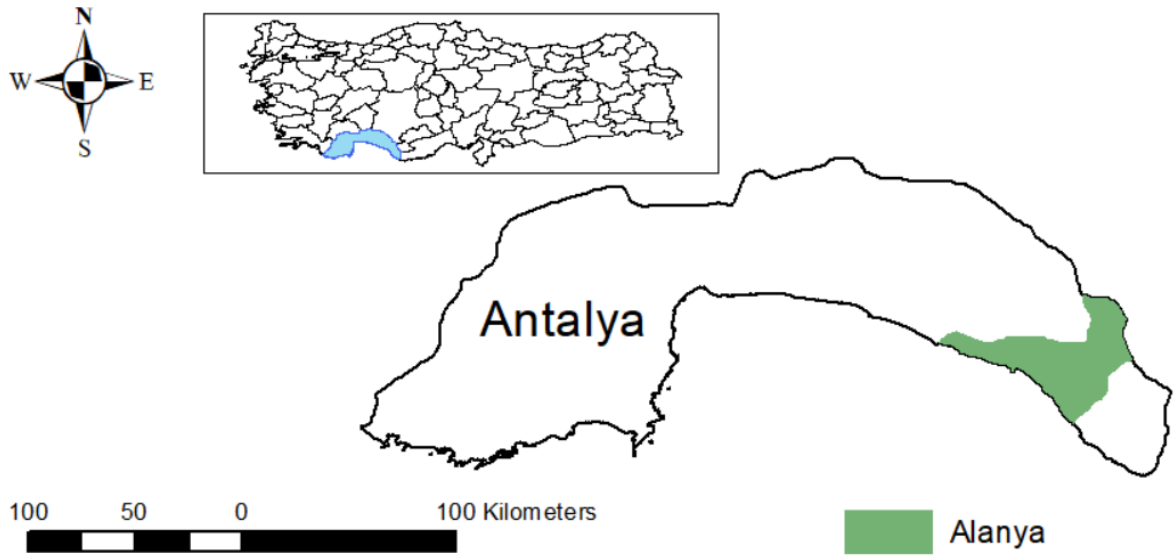


Figure 1. Study area

**Data Sources**

Data were obtained from the following institutions and organizations:

Alanya District Directorate of Agriculture: This institution, which provides management and coordination of agricultural activities in the region, provided important information about the problems encountered by avocado producers and proposed solutions.

State Hydraulic Works (DSI) 134th Regional Irrigation Union Directorate: This institution, which specializes in irrigation projects and water management, provided data on the use of water resources and irrigation methods in avocado production.

Alanya Chamber of Agriculture Presidency: This organization, which provides services to farmers in the agricultural sector, provided information about the economic and technical problems of avocado producers and contributed to the development of proposed solutions.

Avocado Union Presidency: This union, which represents avocado producers, provided data on the difficulties encountered by producers and collective solution proposals for these difficulties.

Agricultural Companies: Various agricultural companies operating in the region (recommended to be discussed by Alanya District Directorate of Agriculture and Alanya Chamber of Agriculture Presidency) provided data on their practical experiences in avocado production processes and the problems encountered.

**SWOT analyses**

SWOT analysis is a common method used to determine the strengths, weaknesses, opportunities and threats of an organization by evaluating its internal and external factors in the strategic planning process. This methodology helps organizations better understand their current situation and determine their future strategies. In this study, the SWOT analysis methodology was used as a strategic assessment tool for a specific sector or organization (Leigh, 2009; Sammut-Bonnici, 2015).

Internal Factors (Strengths and Weaknesses): Internal analysis focuses on the organization's current resources, capabilities and processes.

External Factors (Opportunities and Threats): External analysis examines factors beyond the organization's control, such as market trends, competitive status, legal regulations and technological developments.

Analysis Stages:

**Strengths**

The characteristics of the organization that provide competitive advantage are determined. At this stage, the effective use of resources, unique capabilities and positive performance metrics are evaluated.

**Weaknesses**

The areas of the organization that need to be developed and competitive disadvantages are determined. This includes inefficiencies in processes, resource deficiencies, and poor performance indicators.

**Opportunities**

External factors that have the potential for growth and development of the organization are examined. This may

include elements such as market gaps, new technology adaptation, and legal changes.

**Threats**

External factors that may negatively affect the success of the organization are determined. This may include risks related to competitive pressure, economic fluctuations, and changing customer preferences.

Strategic Assessment and Recommendations

After the completion of the SWOT matrix, the findings obtained are evaluated from a strategic perspective. Recommendations are presented on how the organization can combine its strengths with opportunities, improve its weaknesses, and develop defense mechanisms against threats.

This process continues with the determination of strategic goals, the creation of action plans, and the definition of performance measurement criteria.

SWOT analysis provides a comprehensive and systematic approach to the strategic decision-making processes of organizations. This methodology helps organizations optimize their current situation and future goals by taking into account internal and external environmental factors. This study determined strategic directions and improvement areas for a specific sector or organization by applying the SWOT analysis method.

**RESULTS AND DISCUSSION**

The data collected through the SWOT analysis are given in Table 1 as "strengths, weaknesses, opportunities and threats".

When the "strengths" were examined according to the SWOT analysis results, various important findings were revealed. First of all, the suitability of the climate conditions was stated by both DSI and AB (Avokado Birliği-Avocado Union). The fact that it has a wide place in domestic and foreign markets and the high demand for avocado are other important points emphasized by DSI (Devlet Su İşleri Sulama Birliği Başkanlığı-Alanya State Hydraulic Works District Directorate Water User Association Presidency), BATEM (Batı Akdeniz Tarımsal Araştırma Enstitüsü- Bati Akdeniz Agricultural Research Institute) and ANMEY (Private Company-Global Agriculture). The ability of avocado to be grown at high altitudes was evaluated as a great advantage for the region by ZB (Alanya Ziraat Odası Başkanlığı- Alanya Chamber of Agriculture Presidency) and BATEM. The low production costs and the feasibility of production by many investors are other strengths expressed by ANMEY. In addition, the high avocado yield was seen as a significant advantage by ANMEY and TİM (Alanya Tarım İlçe Müdürlüğü-Alanya Agriculture District Directorate). DF (Dalabasmaz Arboriculture) and Ü1 (Üretici 1-Producer 1) stated that receiving the necessary training on avocado cultivation is a great advantage. DF stated that the high avocado diversity is a strength. Another strength stated by Ü1 is the advantages of planting quality seedlings and grafting. Ü1, AB, TİM and ZB emphasized that the avocado plant is resistant to diseases due to its physiological characteristics.

The high production value, the increase in the value of this product sold in units and the low labour requirement are other strengths stated by AB and TIM. Finally, TIM stated that the fact that Alanya Avocado is a geographically indicated product is a great advantage for the region. The weaknesses determined in avocado cultivation as a result of the SWOT analysis were detailed by various institutions and organizations. First, it is seen that the need for organization is emphasized by BATEM and ZB. The problem of early harvest was stated by BATEM, Ü1, Ü2 (Üretici 2-Producer 2) and TİM, and this situation causes the product quality to decrease as a result of harvesting the avocado before it reaches the optimum maturity level. BATEM expressed the problems related to urbanization; this situation leads to the shrinkage of agricultural areas and the decrease in production areas. Uncertified seedling practices were also stated by BATEM, and this situation causes the quality of the seedlings to decrease and various problems in the production process. Variety inconsistency was emphasized by BATEM, and the cultivation of avocado varieties that are not suitable for the region reduces the efficiency in production. Populist approaches were criticized by BATEM, and the negative effects of shaping agricultural policies and practices with populist discourses without scientific foundations were expressed.

The inadequacy of agricultural analyses was stated by BATEM, DF and TİM, and this situation causes productivity to decrease as a result of not performing soil and water analyses. The irrigation pricing problem was mentioned by BATEM, and this situation causes producers to be in a difficult situation due to high irrigation costs. The lack of qualified personnel was stated by DF, and the inadequacy of specialized labor in the agricultural sector negatively affects production processes. The difficulty of accessing underground water resources was mentioned by DF, Ü1, TİM and ZB, and this situation causes problems in accessing water resources and inadequate irrigation. Unconscious farming was criticized by Ü2 and TİM, and the lack of information and unconscious operations in agricultural practices reduce production efficiency. The difficulty of accessing water resources was stated by Ü2, and this situation creates problems in irrigation systems. The lack of technology, especially equipment deficiencies such as grading machines, was mentioned by AB, and this situation leads to the inability to apply modern agricultural techniques. The lack of a professional sales system was stated by the EU, the difficulties experienced in marketing the products and the lack of trust in buying and selling were

other weaknesses expressed by the EU. Inadequate pruning was emphasized by TIM and ZB, which prevented the avocado trees from growing efficiently. Finally, the poor selection of varieties was criticized by TIM and ZB, and the selection of avocado varieties that were not suitable for the region negatively affected the production efficiency.

Table 1. SWOT analysis results

| **STRENGTHS** | **WEAKNESSES** |
|---|---|
| -Climatic conditions (DSI, AB)<br>-Domestic-foreign market (DSI, BATEM, ANMEY)<br>-Being able to grow at high altitudes (BATEM, ZB)<br>-Low production costs (ANMEY)<br>-Production can be done by many investors (ANMEY)<br>-High yield (ANMEY, TİM)<br>-Being educated (DF, Ü1)<br>-Diversity of species (DF)<br>-Conscious farming (DF, Ü2)<br>-Planting quality saplings (Ü1)<br>-No use of chemicals (Ü1)<br>-Vacclimation advantages (Ü1)<br>-No disease formation (Ü1, AB, TİM, ZB)<br>-Pruning (Ü1)<br>-Sold by the piece, high production value (AB, TİM)<br>-Low labor (AB, TİM)<br>-Geographical marked (Alanya avocado) (TİM) | -Need for organization (BATEM, ZB)<br>-Early harvest (BATEM, Ü1, Ü2, TİM)<br>-Urbanization (BATEM)<br>-Uncertified sapling farming (BATEM)<br>-Variety inconsistency (BATEM)<br>-Populist approach (BATEM)<br>-Lack of agricultural analyses (BATEM, DF, TİM)<br>-Irrigation pricing problem (BATEM)<br>-Lack of qualified personnel (DF)<br>-Difficulty in accessing underground water resources (DF, Ü1, TİM, ZB)<br>-Unconscious farming (Ü2, TİM)<br>-Difficulty in accessing water resources (Ü2)<br>-Inadequacy of technology (grading machine etc.) (AB)<br>-Lack of professional sales system (AB)<br>-Lack of trust in buying and selling goods (AB)<br>-Inadequacy of pruning (TİM, ZB)<br>-Inadequate variety selection (TİM, ZB) |
| **OPPORTUNITIES** | **THREATS** |
| -Supply is high (DSI, AB)<br>-It can be developed and production can be increased (DSI, ZB)<br>-Greenhouse cultivation (BATEM, ZB)<br>-Transportation to European and Russian markets, export (BATEM, ANMEY, Ü2, TİM, ZB)<br>-It can be used as industrial (cosmetics, oil and etc. industrial products) (BATEM, TİM, ZB)<br>-Expansion of domestic market (ANMEY)<br>-Production can be increased with necessary training (DF, Ü1, ZB)<br>-Development of new varieties (DF)<br>-Increasing quality (DF)<br>-It is a new product (Ü1, TİM,<br>-It has suitable collection, transportation etc. processes (AB)<br>-Product incentives (AB, TİM)<br>-Seedling support (TİM)<br>-Beneficial for health (ZB)<br>-Using the shell as fertilizer and the seed in seedling cultivation (ZB)<br>-Irrigation Diversity of resources (DSR) | -Lack of education in agricultural activities (irrigation, fertilization, determination of planting-planting distances) (BATEM, ANMEY, DF, ZB)<br>-Financial concerns (BATEM)<br>-Not paying attention to plant water consumption (ANMEY)<br>-Wild irrigation (ANMEY)<br>-Climate change (ANMEY, Ü1, Ü2, TİM, ZB)<br>-Failure to reach export quality due to early harvest (ANMEY, ZB)<br>-Water quality (DF)<br>-Theft (BATEM, Ü1, TİM)<br>-Lack of good irrigation projects (Ü2)<br>-Insufficient production (Ü2)<br>-Chain markets selling imported products (Ü2)<br>-Imported products brought for industrial use are sold in the country as table crops (AB, ZB)<br>-No soil surveys (TİM)<br>-Fruit shedding in extreme temperatures (TİM)<br>-Based water level (TIM)<br>-Uncertified seedling problem (ZB)<br>-Uncontrolled increase in production during the pandemic period (ZB) |

*DSI: Alanya State Hydraulic Works District Directorate Water User Association Presidency; Ü1: Producer 1, Ü2: Producer 2; AB: Alanya Avocado Union Presidency, TİM: Alanya Agriculture District Directorate; ZB: Alanya Chamber of Agriculture Presidency, ANMEY: Private Avocado Company; DF: Dalabasmaz Arboriculture)

As a result of SWOT analysis, the opportunities determined in avocado cultivation have been detailed by various institutions and organizations. First, the high supply has been stated by DSI and EU, and this situation increases the capacity to meet the market demand. The fact that it can be developed and production can be increased has been emphasized by DSI and ZB, and expanding existing production capacities and increasing efficiency has been seen as an important opportunity. Covered cultivation opportunities have been mentioned by BATEM and ZB, and it has been stated that production continuity can be ensured and efficiency can be increased with this method. Access to European and Russian markets and export opportunities have been stated by BATEM, ANMEY, Ü2, TİM and ZB, and this situation offers an important opportunity for avocado to open up to international markets and provide foreign exchange income.

The fact that avocado can be used industrially (in cosmetics, oil and other industrial products) has been emphasized by BATEM, TİM and ZB, and this increases the added value of the product. The expansion of the domestic market has been mentioned by ANMEY, and the increase in domestic consumption and the formation of new markets are important opportunities for producers. It was stated by DF, Ü1 and ZB that production can be increased with the necessary training, which shows that productivity can be increased by disseminating agricultural knowledge and techniques. The development of new varieties was emphasized by DF, which ensures that avocado varieties suitable for different climate and soil conditions are grown. The increase in quality was expressed by DF, which increases the market value and competitiveness of the product. The fact that avocado is a new product was stated by Ü1 and TİM, which ensures that it is demanded as an innovative product in the market. The fact that processes such as collection, transportation, etc. are convenient was stated by AB, which reduces logistics costs. The fact that the product is encouraged was stated by AB and TİM, which is an important opportunity in terms of supporting producers and reducing production costs. Sapling support was stated by TİM, which encourages new producers. The fact that avocado is beneficial for health was emphasized by ZB, which increases the demand of consumers for avocado. ZB stated that avocado peel can be used as fertilizer and its seed can be used in seedling cultivation, which is an important opportunity in terms of waste management and sustainable agricultural practices. Finally, ZB stated that the diversity of irrigation sources ensures the sustainability of production processes.

As a result of the SWOT analysis, the threats identified in avocado cultivation have been detailed by various institutions and organizations. First, lack of education in agricultural activities, especially in irrigation, fertilization and determination of planting-planting distances, was emphasized by BATEM, ANMEY, DF and ZB, which negatively affects production efficiency and quality. Financial concerns were stated by BATEM, which expresses the difficulties producers face in making investments and ensuring sustainable production. Not paying attention to plant water consumption was stated by ANMEY, which leads to the failure to meet the water needs of the plants properly and thus to loss of yield. Wild irrigation was stated by ANMEY, which causes water waste and soil erosion. Climate change was emphasized by ANMEY, Ü1, Ü2, TİM and ZB, which has negative effects on agricultural production. The fact that avocados cannot reach export quality due to early harvest was stated by ANMEY and ZB, which reduces the competitiveness of the products in the international market. Water quality was mentioned by DF, low water quality negatively affects plant health and yield. Theft problem was mentioned by BATEM, Ü1 and TİM, which causes producers to lose product. Lack of good irrigation projects was emphasized by Ü2, which prevents efficient use of water resources. Insufficient production was mentioned by Ü2, which leads to market demands not being met. The fact that chain markets sell imported products was mentioned by Ü2, which reduces the market share of domestic producers. The fact that imported products brought for industrial use are sold in the country as table food was mentioned by AB and ZB, which weakens the competitive power of domestic producers. The lack of soil surveys was emphasized by TİM, which leads to the failure to determine soil fertility and suitability. Fruit shedding in extreme temperatures was mentioned by TİM, which causes product loss. Ground water level was mentioned by TİM, high or low ground water levels negatively affect plant health. The problem of uncertified seedlings was emphasized by ZB, which leads to the use of low-quality seedlings and loss of yield. Finally, the uncontrolled increase in production during the pandemic period was stated by ZB, which causes supply-demand imbalance and price fluctuations.

**Discussion**

The fact that climatic conditions are suitable for avocado cultivation has been stated by DSI and the EU, and this shows that the region has a natural advantage for avocado production (Demirkol, 2001; Saygı and Mankan, 2022; Tunç and Yılmaz, 2023). The suitability of climatic conditions increases the continuity and quality of production (Bayram and Arslan, 2007). At the same time, the ability of avocado to be grown at high altitudes has been evaluated as a great advantage by ZB and BATEM, which provides flexibility in production in different geographical regions.

The fact that avocado has a wide place in domestic and foreign markets and is in high demand is one of the

important points emphasized by DSI, BATEM and ANMEY. Export opportunities, especially to European and Russian markets, have been stated by BATEM, ANMEY, Ü2, TİM and ZB, and this situation offers an important opportunity in terms of competitiveness in the international market (Bayram et al. 2006) and foreign exchange income (Er et al. 2023). However, the fact that the products cannot reach export quality due to early harvest (Bayram and Aşkın, 2006; Bayram and Tepe, 2018) has been stated by ANMEY and ZB, and this situation is a factor that negatively affects product quality in the international market.

Low production costs and the feasibility of production by many investors are among the strengths expressed by ANMEY. Low production costs increase the profitability of producers and encourage new investors (Anonim, 2023a; 2023b). However, financial concerns were stated by BATEM, which expresses the difficulties producers face in making investments and ensuring sustainable production.

It was stated by DF and Ü1 that receiving the necessary training on avocado cultivation is a great advantage. Trainings increase the knowledge and skill levels of producers and increase productivity and product quality. However, lack of education in agricultural activities, especially in irrigation, fertilization, pruning and determination of planting-planting distances, was emphasized by BATEM, ANMEY, DF and ZB, and this situation negatively affects production efficiency and quality (Demirkol, 2001; Ersoy, 2020; Saygı and Mankan, 2022).

The abundance of avocado diversity has been expressed as a strength by DF. Diversity enables the cultivation of species suitable for different climate and soil conditions, while at the same time increasing competitiveness in the market. However, variety inconsistency has been emphasized by BATEM, and the cultivation of species that are not suitable for the region reduces efficiency in production. Therefore, appropriate variety selection is an important issue for increasing production (Antalya Provincial Directorate of Agriculture and Forestry, 2024).

The fact that the avocado plant is resistant to diseases due to its physiological properties has been emphasized by Ü1, AB, TİM and ZB, and this provides an advantage in combating diseases and pests during the production process. However, uncertified seedling practices have been stated by BATEM, and this situation causes the quality of the seedlings to decrease and various problems to occur during the production process. The use of certified and high-quality seedlings will increase production efficiency (Ministry of Agriculture and Forestry, 2024). High production value and low labor requirement are other strengths stated by AB and TİM. High production value increases the profitability of producers, while low labor requirement reduces costs. However, the problem of irrigation pricing (Arslan, 2023) has been mentioned by BATEM, and high irrigation costs put producers in a difficult situation. Solution proposals should be developed for access to water resources and reducing irrigation costs (Arslan and Kartal, 2023; Arslan, 2024).

It has been stated by TİM that the fact that Alanya Avocado is a geographically indicated product (Öner et al. 2020) is a great advantage for the region. Geographical indication increases the recognition of the product and increases its competitiveness in the market. However, climate change has been emphasized by ANMEY, Ü1, Ü2, TİM and ZB, and this situation creates negative effects on agricultural production (Ramírez-Gil et al. 2019; da Silva et al. 2023). It is of great importance to develop sustainable agricultural practices and climate adaptation strategies (Denvir, 2023) to combat climate change (Charre-Medellín et al. 2021; Cárceles Rodríguez et al. 2023).

Considering the strengths and weaknesses as well as opportunities and threats in avocado cultivation, it is an important issue to develop various strategies and policies to improve production processes and ensure sustainable production. In particular, focusing on issues such as training and certification programs, greenhouse cultivation (Şahin and Kendirli, 2012), water management and climate adaptation (Howden et al. 2005), producing solutions to the problems faced by avocado producers are among the top priorities (Howden et al. 2005; Grüter et al. 2022).

## CONCLUSION

In this study, the problems encountered by avocado producers in Alanya and the solution suggestions for these problems were evaluated with the SWOT analysis method. According to the SWOT analysis results, it was seen that Alanya has important advantages in terms of avocado production. Strengths such as suitable climate conditions, high demand and low production costs stand out as factors that increase the sustainability and competitiveness of avocado production. In addition, factors such as training of producers and the use of quality saplings also increase production efficiency in the region.

However, the weaknesses identified in the study indicate various problems faced by avocado producers. Weaknesses such as the need for organization, early harvest problem, urbanization and uncertified nursery practices negatively affect the quality and efficiency of production. In addition, technical and economic problems such as inadequate agricultural analyses and irrigation pricing problems are among the other important difficulties faced by producers. Eliminating these weaknesses is important for avocado production to continue in a healthier and more sustainable way.

In the opportunities section of the study, many current and potential positive developments for avocado producers were identified. Opportunities such as high supply, export opportunities to the European and Russian markets, industrial use opportunities and expansion of the domestic market have the potential to increase the economic gains of producers. In addition, providing the necessary training and

developing new varieties can further increase the quality and efficiency of avocado production. Evaluating these opportunities can increase the competitiveness and sustainability of avocado producers in the region.

The threats identified in the study also reveal the risks faced by avocado production. Lack of education in agricultural activities, financial concerns, lack of attention to plant water consumption and threats such as wild irrigation are factors that negatively affect the efficiency and quality of production. External threats such as climate change, theft, water quality problems and uncontrolled planting increase during the pandemic period are among the other important risks faced by producers. Precautions to be taken against these threats are critical for the sustainability of avocado production.

According to the SWOT analysis, the solutions to the problems of avocado producers can be listed as follows:

- The union of avocado producers with organizations such as cooperatives where they can act together can contribute to the development of the region,

- Increasing the breeding studies of varieties with high nutritional and economic value is important,

- Increasing the R&D studies for the industrial use of avocados produced in the region is of great importance,

- Selling certified saplings can increase production,

- Producers need to conduct soil and water analyses,

- Early harvest should be prevented and product quality should be increased,

- Theft can be prevented by installing fences and camera systems,

- The use of modern irrigation systems should be increased and water, which is a scarce resource in the region, should be used economically,

- In order to develop agricultural activities (irrigation, fertilization, harvesting, determination of planting-planting distances, pruning, etc.), producers need to receive training from more experienced countries and trips should be organized

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