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EVALUATION OF ALMOND MARKETING ORGANIZATION IN THE EASTERN MEDITERRANEAN REGION OF TURKEY

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Abstract

Total almond planting area in Turkey was 8.2 thousand hectares in 2000, while the figure increased 4.3 times to 35.2 thousand hectares as of 2017.The Eastern Mediterranean Region has a share of 16.75% in Turkey's total almond production. For the future, effective marketing of the increasing level of production is considered very important. In this study, it was aimed to reveal the marketing structures and problems in the field of almond production and to develop solution proposals for the Eastern Mediterranean region. For this purpose, face to face interviews were conducted with 100 producers, 8 intermediaries, 4 retailers and 2 almond processing plants in the region. Research results show that the average land size of farms and almond orchards were 33.44 decares and 24.33 decares respectively. The total amount of harvested unripe almonds was 40,600 kg, while the total amount of harvested shelled almonds was 324,300 kg. Unripe almond is directly sold to the traders and consumers, while shelled almond is sold to merchants and the BADEMDER association. The most important problems faced in the marketing of almond in the research area were determined as the limited number of buyers, lack of varieties, inadequate market knowledge and inadequate quality or quantity of the processing facilities. Producers should be encouraged to gather under cooperatives to provide the services they need in almond production and marketing. In order to establish a common trademark for almond, entrepreneurs should be conscious and support the industry by establishing more comprehensive almond processing facilities.

Keywords: Almond, Marketing Organization, SWOT Analysis, Eastern Mediterranean Region

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1. Introduction

Almond (*Prunus dulcis*), a member of the nuts family, is reproduced by use of the seeds belonging to the family of the roses. There are two types of the fruit, one is sweet and the other is bitter seed. Sweet almond seeds are used in the pastry, confectionery and chocolate, almond oil and almond flour industries, while the seeds of bitter almonds are used as additives in the cosmetics industry

(Ozudogru, 2003).

While total almond planting area was 8,200 hectares in Turkey in 2000, it increased to 35,200 hectares as of 2017 thanks to the government support programs. Average almond yield varies from year to year due to climate conditions and the effects of various diseases, and it is seen that the average yield per tree between 2000 and 2017 varied between 11 kg and17 kg. As a result of the increase in both almond planting areas and yield, total almond production rose by 91.49% from 47,000 tons in 2000 to 90,000 tons as of 2017(TSI, 2018).

According to the Turkish Statistical Institute (TSI) data for the year 2017, almond planting areas in Turkey concentrate in the Southeastern Anatolia (28.97%), Aegean (27.61%) and Mediterranean (16.78%) regions. The data reveal that the regions with the highest amount of almond production are Mediterranean (27.70%), Aegean (23.34%) and Southeastern Anatolia (21.45%) (TSI, 2017).

Total almond planting area in the Eastern Mediterranean Region, in which this study was conducted, increased by 11.6 times from 307 hectares in 2000 to 3,552 hectares as of 2017, and average almond yield also increased from 13 kg/tree to 15 kg/tree in the same period. Therefore, total almond production increased by 2.2 times from 6.857 tons in 2,000 to 15,078 tons as of 2017 (TSI, 2018). Almost 12.47% of almond trees are fruitless, while the remaining 87.53% yield fruits. The production amount will increase further when fruitless trees start to yield. Effective marketing of this production capacity will be very important in the future. The climate and vegetation of the Eastern Mediterranean region are suitable for growing almonds. In addition to this, in terms of the export potential offered by the geographical location, almond is of great importance for both the region and the national economy.

The literature includes only a limited number of studies on the economic and marketing structure of the almond production industry (Murua et al., 1993, Kaska et al., 1999, Sengul and Emeksiz, 2001, Yazdani et al., 2006, Jafar and Saeed, 2010, Salem and Zare, 2010, Isgin and Ak., 2011; Oguz et al., 2011; Pezikoglu et al., 2012; Ahmadzai, 2016;). Besides, there is no study addressing the almond marketing structure in Turkey in the literature. In this study, general characteristics of almond production in the Eastern Mediterranean region (size of farms, size of almond planting areas, number of parcels in farms, number of parcels in almond planting areas, number and ages of almond trees), demographic properties of almond producers (age of producers, number of households, agricultural production experience of producers and level of experience in almond production) and the structure of almond marketing organization (marketing channels, intermediaries and marketing services) were tried to be revealed. In addition, the strengths and weaknesses of the almond industry and the opportunities and threats the industry is facing were presented through SWOT (Strength, Weakness, Opportunities and Threats) analysis. Based on the findings obtained, suggestions were made to contribute to the development of the almond industry in the Eastern Mediterranean Region.

2. Material and Method

2.1. Material

The main material of the study is the primary data obtained from face-to-face interviews with almond producers, intermediaries, processing plant owners and retailers. Questionnaires prepared separately for producers and intermediaries were given their final form after the pilot survey study had been conducted. The fieldwork was carried out between 1st of March and 30th of March 2018, and data was collected for the 2017 production season. The data for the SWOT analysis were provided through interviews made with the enterprises in the almond processing industry, as well as by use of the information given by farmers on the activity forms. As secondary data, the figures obtained by the Turkish Statistical Institute (TSI), the Food and Agriculture Organization of the United Nations (FAO), the Ministry of Agriculture and Forestry, and Adana and Mersin Provincial Directorates of Agriculture and Forestry were used.

The Eastern Mediterranean region was selected as the research area, which provided 16.75% of Turkey's total almond production in 2017 (TSI, 2018). Eastern Mediterranean region, according to the classification made by TSI, consists of Mersin, Hatay, Kahramanmaraş, Adana and Osmaniye provinces. The selection of the provinces to be included in the scope of the study was made with the "Purposive Sampling Method", taking into account the number of trees and production quantities. Adana and Mersin, which meet 84.05% of the total almond production in the Eastern Mediterranean region, were selected as the provinces of study.

On the other hand, the districts to be included in the scope of the study were selected based on their contribution to the provincial production, as well as the opinions of the Provincial Directorates of Agriculture and Forestry. The sample provinces were selected with the "Purposive Sampling Method" to represent the production and marketing aspects of the industry. Accordingly, Gülnar, Silifke and Anamur districts of Mersin province and Karaisalı district of Adana province were selected as sample districts.

The "Simple Random Sampling Method" was used based on the frame lists provided by the District Directorates of Agriculture and Forestry for the agricultural establishments that produced almonds, and the number of the farmers to be surveyed was determined accordingly.

$$n = \frac{N.z^2.p.q}{N.d^2 + z^2.p.q}$$

In the formula;

n: Sample volume,

N: Main mass (number of producers was 1,242),

z: 1.64 (90% standard z-value corresponding to the confidence level),

p: The ratio of the main mass with a specific characteristic, based on preliminary information or estimation,

q: (1−p) Refers to the ratio of the main mass without the relevant characteristic,

d: Accepted error representing the tolerance level (accepted as ± 10% in this study).

In total, 1,242 people engaged in almond cultivation in the study districts constituted the frame list of the research. In the study, the sample size was calculated to be 89 farmers with 90% confidence level and 10% margin of error. These farmers were selected in such a manner that Gülnar (31), Silifke (35), Anamur (15) and Karaisalı (19) districts were all represented in the study. In these four districts, 100 producers, 8 intermediaries, 4 retailers and 2 almond processing facility owners were interviewed.

The data obtained from the farmers as result of the study were reviewed based on the size of almond cultivation areas. Farms were divided into three groups based on almond cultivation area size, as 0-5 decares (Group 1), 6-30 decares (Group 2) and larger than 31 decares (Group 3).

2.2. Methods

In order to assess the effectiveness of the almond marketing organization in the Eastern Mediterranean Region, market transparency, marketing margin and competition were examined as the elements of the fulfillment of marketing services. Functional and institutional approaches were utilized to fully demonstrate the effectiveness of marketing services. The functional approach was used to examine the marketing organization. In this method, the services during the flow of agricultural products from producers to consumers were taken in consideration. In the institutional approach, on the other hand, the activities of persons or enterprises, involved in marketing organization, including various intermediaries and processing plants and organizations that process and market almond, were examined (Inan, 2006).

In the study, in the Eastern Mediterranean region;

✓ Activities of the merchants (intermediaries, traders, processing plants, retailers),

✓ Marketing services (collection, processing, distribution, handling and packaging, transportation, storage, grading and standardization),

✓ Marketing elements (market transparency, competition and marketing margin)

were examined and the effectiveness of the marketing organization was revealed.

The data was also presented through the SWOT (strengths, weaknesses, opportunities, and threats) Analysis approach and some recommendations were made. A SWOT analysis is a tool that helps you to evaluate the strengths, weaknesses, opportunities and threats involved in any business enterprise — including farms and ranches. A SWOT analysis can help scholars to gain insights into the past and think of possible solutions to existing or potential problems (USDA, 2011).

The results obtained from face-to-face interviews with producers, intermediates, and almond processing enterprises were presented in frequencies, percentages and averages. In the study area, the general characteristics of the almond land size groups and farms (size of the farm, size of the almond cultivation areas, number of the parcels in farms, number of the parcels in almond cultivation areas, number and the age of almond trees) and the demographic characteristics of the producers (age of producers, number of households, agricultural production experience of producers and experience in almond production) were compared among groups by one-way ANOVA analysis.

The marketing margin is defined by Inan (2006) as the difference between the price that consumers pay for the final product and the price applied for the raw materials produced by the producers. This definition refers to the difference between the purchase and sale of the product in the marketing channel.

In the literature, three methods are given for the calculation of the marketing margin (Abbott, 1966 and Mittendorf, 1967 quoted Emeksiz, 1994);

✓ A party of product is tracked through a selected typical marketing channel until it reaches the final consumer.

✓ By selecting a representative marketing channel, intermediary costs are deducted from the sales price appliedby the intermediaries at each marketing stage. The difference is divided by the amount. In this way, the resulting margins are collected and total marketing margin is determined.

✓ By using the representative price series at each marketing stage, the prices in different marketing stages are compared.

In this study, the last one of these methods was applied.

3. Results and Discussion

3.1. Farm Sizes, Number of Parcels and Parcel Sizes

The average size of almond farmlands was 33.44decares, while the average almond cultivation area was 24.33decares. The average number of parcels was 2.39 and the number of almond parcels was 1.53. There were 29.36 almond trees per decare in the farms. The average age of almond trees was calculated to be 17.89 years.

The difference among the cultivation area size groups was found to be statistically significant in terms of farm size, number of parcels in almond cultivation areas and ages of almond trees (p <0.05) (Table 1).

3.2. Demographic Characteristics of Producers
The average age of producers was calculated to be 52.38. Sixty four percent of the producers were primary school graduates, 9.00% of them were secondary school graduates, 17.00% of them were high school graduates and 2.00% of them were vocational high school graduates, while the remaining 8.00% had university degrees. The average almond production experience of the producers was 19.31 years. While the producers in

the first group had the highest level of experience, the third group had the lowest. The difference among the cultivation area size groups was found to be statistically significant in terms of the level of agricultural experience and almond production experience (p<0.05) (Table 2).

3.3. Evaluation of the Almond Marketing Organization
In the evaluation of the marketing organization, the structure of the marketing channels was examined by demonstrating the fulfillment of marketing services, marketing margins, market transparency and competition.

Table 1. Farmland characteristics

Characteristics of Farms	Group 1		Group 2		Group 3		Total	
	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.
Almond Cultivation Area Size	3.23	1.21	13.66	6.45	81.86	54.56	24.33	39.11
Farm Size	5.23	5.14	26.3	36.8	95.43	68.07	33.44	51.5
Number of Parcels in Farms	1.57	1.04	2.89	2.79	2.71	3.02	2.39	2.44
Number of Parcels in Almond Cultivation Areas	1.17	0.45	1.57	0.9	2.05	1.86	1.53	1.11
Number of Almond Trees	28.91	7.86	28.39	7.25	32.14	6.44	29.36	7.39
Age of Almond Trees	21.23	12.32	18.72	11.22	11.43	7.78	17.89	11.45

Table 2. Demographic characteristics of almond producers

Demographic variables	Farm Groups (da)	Mean.	St. Dev.	Min.	Max.	Sig.
Age	Group 1	55.46	12.92	30.00	80.00	
	Group 2	49.52	10.76	20.00	80.00	0.071
	Group 3	53.24	9.83	40.00	73.00	
	Overall	52.38	11.59	20.00	80.00	
Size of Households (Person)	Group 1	3.97	1.20	2.00	6.00	
	Group 2	3.98	1.25	2.00	8.00	0.179
	Group 3	3.43	1.03	2.00	5.00	
	Overall	3.86	1.20	2.00	8.00	
Agricultural Production Experience (Years)	Group 1	33.60	15.36	3.00	65.00	
	Group 2	29.91	10.45	5.00	50.00	0.003
	Group 3	21.24	13.44	4.00	50.00	
	Overall	29.38	13.62	3.00	65.00	
Almond Production Experience (Years)	1.Group	25.80	14.40	2.00	60.00	
	2.Group	18.18	11.35	2.00	50.00	0.000
	3.Group	10.86	7.96	4.00	40.00	
	General	19.31	13.06	2.00	60.00	

3.3.1. Marketing channels
In terms of the economic structure of any product market, marketing channels are very important. Most of the producers in the agricultural sector were small-scale farms with limited marketing opportunities. When these limited opportunities are left behind thanks to the effectiveness of marketing channels, producers can easily access markets and market information outside of their local markets. In addition, the products reach the consumers after being processed in various stages and

by various intermediaries, which adds value to the product and therefore contributes to the overall economy, and also the products are delivered to consumers in the form desired (Emeksiz et al., 2004).
The amount of harvested unripe almonds was 40,600 kg, which was totally offered for sale, while the amount of shelled almonds harvested was 324,300 kg in total. In the marketing of unripe almonds, the producers were seen to sell to the collector traders (82.00%) and also directly to consumers (18.00%). Collector traders, after

buying from the producers, sold the product to mostly to retailers (70.00%) and also to traders (30.00%). Retailers and traders sold the entire amount to the consumer. In the study area, 98.41% of the shelled almonds were sold in the market, 1.56% of them were consumed at home and the rest (0.03%) was given to workers.

In marketing of shelled almonds, collector traders, traders and special almond processing plants (only for almond cracking) were seen to be active. Most of the producers sold the product (94.00%) to traders (including BADEMDER: The organization was established as "Association of Supporting Almond Producers" in 26th of January 2011. The association mainly works to find solutions for producers' problems, provide information about almond production to producers, improve almond production and give support to people and the organizations working in the field of almond production). The remaining harvest (6.00%) was purchased by special almond processing plants to be turned into unshelled almonds. Processing plants sold 50.00% of the processed product to traders, 35.00% of it to retailers and 15.00% of it to chocolate and confectionery factories. Collector traders were observed to tend to store shelled almond until they obtain a reasonable price and they sell the whole almond stocks (100.00%) to traders. Traders, on the other hand, sold to exporters, nuts dealers and retailers (Figure 1).
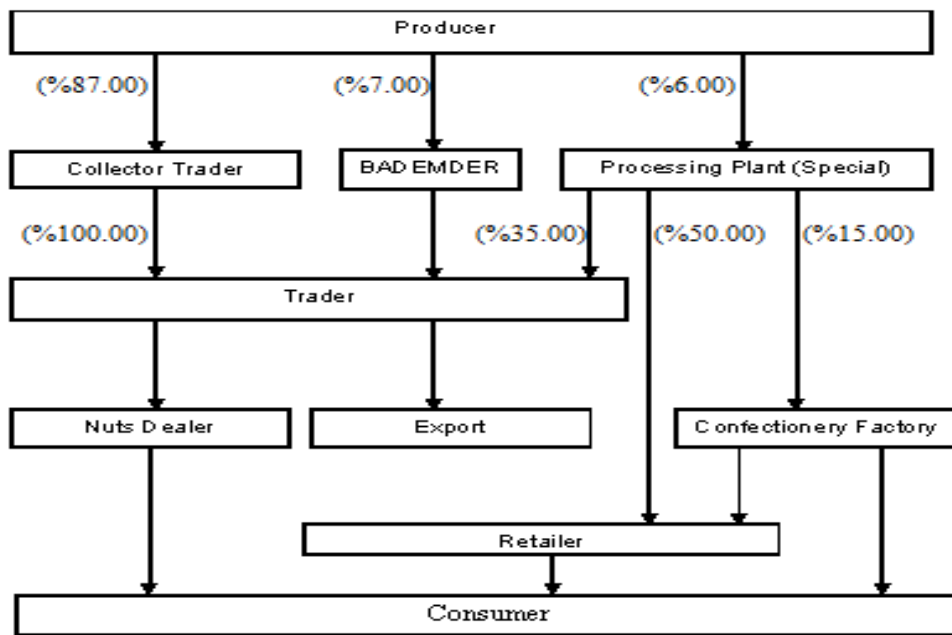

Figure 1. Shelled almond marketing channels in investigated enterprises.

3.3.2. Marketing services

In this section of marketing services, collection, handling and packaging, processing, distribution, grading and standardization of almonds are examined.

In the research area, delivery of the whole yield was performed in the farms. Neither producers nor intermediaries stated any problem in this regard and there was no situation reducing the affectivity of collection services. Processing activities in the region mainly consisted of peeling and cracking of almond. However, the number and properties of the processing plants in the region were understood to be quite insufficient. While the distribution of processed almonds was performed by traders within and out of the region, exporting activities were performed by exporters. There was no problem observed in terms of the effectiveness of distribution. Unripe and the shelled almonds were carried in burlap bags, which was not complying with the industrial standards in terms of both cleanliness and functionality. In the light of these findings, marketing organization in terms of handling and packaging can be considered inadequate.

Distribution of almond was a two-stage process. In the first stage, producers bring harvested almonds to the place of storage (usually the house) by use of vehicles such as tractors and vans. In the second stage, almonds bought by the merchant are loaded on trucks and transported to the points of consumption. It can be said that there was no factor reducing the efficiency of the marketing organization from the point of transportation services. Only 14.00% of the producers can store almonds in their homes (cellars), since modern storage facilities were not present in the region. Therefore, storage activities were seen to be underdeveloped in the region, which was an important technical service that enables the presentation of products to the market. This can be said to be a factor reducing the effectiveness of almond marketing in the region. Besides, only 32.00% of the producers performed grading. Shelled almonds were graded based on their properties such as crust hardness,

crust thickness and crust color, while freshness of the product was the main criterion of grading for unripe almond. In the unshelled almond grading process, the rate of double kernels, almond color, almond size and almond taste were taken into consideration. When the grading efficiency of the almond marketing organization in the region was examined, it could be said that the marketing organization was effective except for certain technical deficiencies.

3.3.3. Marketing margins

Marketing margins in the research area were calculated separately for three different almond types, namely unripe almonds, shelled almonds and unshelled almonds. In the calculation of margins for unripe and shelled almonds, the producer, trader, retailer and consumer stages in the marketing channel were taken into account. To calculate the margin, product delivery prices from producers to traders and from traders to retailers were taken into consideration. The average selling price of unripe almond was 2.54 US $/kg. The average selling price of unripe almonds collected by traders was 3.10 US $/kg, while the selling price applied by retailers were

4.23 US $/kg. As a result, the total marketing margin was calculated to be 1.69 US $/kg (Table 3).

While the selling price of shelled almonds applied by producers was around 3.70 US $/kg, the figure increased to 5.64 US $/kg until the product reaches consumers. The share of producers in the retail price was 65.00%. Traders' almond selling price was 4.23 US $/kg, while retailers applied a selling price of 5.64 US $/kg. As a result, the marketing margin was determined to be 1.98 US $/kg (Table 4).

In the calculation of the margin for unshelled almonds, the producer-almond processing plant-trader-retailer-consumer channel was taken into account as the marketing channel. The selling price applied for unshelled almonds by producers was 3.70 US $/kg and it increased to 9.88 US $/kg after being turned into unshelled almonds by processing plants and to 16.93 US $/kg until reaching to consumers. The share of producers in the retail price was 58.33%. Traders sold almonds for 12.70 US $/kg, while retailers' selling price was 16.93 US $/kg. As a result, the total marketing margin was calculated to be 7.06US $/kg (Table 5).

Table 3. Unripe almond marketing margin in the Eastern Mediterranean region (2017)

Intermediary	Average Selling Price ($/kg)	Absolute Margin ($/kg)	Relative Margin (%)
Producer	2.54	-	-
Trader	3.10	0.56	18.18
Retailer	4.23	1.13	26.67
Total Marketing Margin		1.69	
Share of Producers in the Retail Price (%)		60.00	

Table 4. Shelled almond marketing margin in the Eastern Mediterranean region (2017)

Intermediary	Average Selling Price ($/kg)	Absolute Margin ($/kg)	Relative Margin (%)
Producer	3.70	-	-
Trader	4.23	0.56	13.33
Retailer	5.64	1.41	25.00
Total Marketing Margin		1.98	
Share of Producers in the Retail Price (%)		65.00	

Table 5. Unshelled almond marketing margin in the Eastern Mediterranean region (2017)

Intermediary	Average Selling Price ($/kg)	Absolute Margin ($/kg)	Relative Margin (%)
Producer	3.70	-	-
Processing Facility	9.88	6.21	62.86
Trader	12.70	2.82	22.22
Retailer	16.93	4.23	25.00
Total Marketing Margin		7.06	
Share of Producers In the Retail Price (%)		58.33	

3.3.4. Market transparency

Market transparency is defined as the accessibility of market conditions by everyone involved in the market. For any product, market transparency is possible when the following information is available;

✓ The supply and demand quantities of the product and substitute materials in different regions,
✓ Future trends of supply and demand for storable products (Plate et al., 1994).

It is important to collect and communicate market news in an effective manner. In terms of almond marketing, producers and traders were asked about their information sources for the market in order to determine how the gathering and communication of market news took place. According to the responses, producers and traders were understood to have only limited information about the market, and they did not have any opinion about supply and demand quantities.

The main sources of producers to gather information about prices were other producers and local traders, while the local traders used the information given by other traders as the main source. In addition, BADEMDER Association occasionally releases e-newsletters about almond cultivation at the local level, processing of almond and determination of almond prices. However, these bulletins are not regularly published.

3.3.5. Competition

Evaluation of the marketing organization in terms of competition can be performed by reviewing the position of producers against the market, their market power and the intensity of the competition at the wholesaler stage (Emeksiz, 1994). The strength of producers in the market is related to the variety of marketing channels they can use (Secer, 2012).

As mentioned before, there were 3 marketing channels for almond producers, namely the almond processing facilities, collecting traders and traders. Producers stated that their weakness against traders in determination of prices was a significant problem. The reason for the said

weakness of producers was the low number and diversity of the traders in the region.

The intensity of competition in the traders' stage was determined by the level of free access to the market by traders and the behavior of traders (Secer, 2012). Traders did not face any restriction in having access to the market. The main factors affecting the competitive power of traders were timely payment, advance payment and direct buying at producers' farms. All traders in the region were making purchases in advance. They were also asked to talk about the intensity of competition between them and they stated that they did not experience any competition.

3.4. Evaluation of the Almond Marketing Organization by SWOT Analysis in the Eastern Mediterranean Region

In this part of the study, the almond production and marketing organization in the Eastern Mediterranean region were evaluated by SWOT Analysis. The main source of the data required for analysis was the survey data, which were supported by secondary data (Table 6).

Table 6. SWOT Analysis of the Almond Production and Marketing Organization in the Eastern Mediterranean Region

Strengths	Weaknesses
1. The climate characteristics of the area are suitable for almond production. 2. The potential of increase in almond production is high. 3. Grants are given for afforestation and erosion control services. 4. Means of transportation of almonds in and out of the region are well-developed. 5. Shelled almonds can be stored for a long time. 6. Almondsare an important source of income for producers.	1. Inadequate storage facilities. 2. Absence of production and marketing cooperatives. 3. Lack of studies on the formation of a regional image and branding. 4. Presence of only a small number of almond processing facilities in the region. 5. Lack of technical knowledge related to production. 6. Marketing preparation process (cracking, peeling, packaging, grading-standardization, etc.).
Opportunities	Threats
1. The rise in people's healthy nutrition awareness. 2. The tendency of rise in almond consumption. 3.The use of almonds as raw materials in various industries (medicine and shoe industry, use of shells in chipboard production) 4. The promotion of almond and its products outside the region. 5. Increase in customs tax rate in imports.	1. The necessity to sell the product immediately because of the capital requirements of farmers. 2. High costs of production inputs and marketing. 3. Climate change. 4. Plant diseases.

4. Conclusion

Almond is a type of fruit that can be grown easily in the Aegean and Mediterranean regions, and especially in the South Eastern Anatolia region in Turkey .As a result of the government supports provided by the Ministry of Agriculture and Forestry, starting in particular from the beginning of 2000sfor diesel oil, fertilizers and soil analyses, certified seed/seedling and use of standardized seedlings, a forestation and erosion control services, almond production is observed to present a significant increase.

Almond cultivation in the Mediterranean Region is largely carried out in the eastern part of the region

(especially in Adana and Mersin provinces). Considering that some regions have just started growing almonds in this region, it is important to ensure that the product is marketed effectively. Effective marketingof the increased amount of almonds supply in the coming years can be achieved by solving existing problems and making future improvements in the industry.

For this purpose, the existing problems in the marketing of almonds have been determined based on the questionnaire data and the following suggestions are made to reach a solution;

✓ Almond prices are determined by supply and demand in free market conditions. In Turkey, there is no institution or practice that prevents the price

of almonds from falling below a certain level (as is the case for wheat, corn, nuts etc.).The gathering of producers and other industry stakeholders under an organizational roof in order to ensure reasonable prices will support the development of the almonds industry.

✓ Traders' position as the only buyer in the market forces the producers to sell their products at low prices, which negatively affects the producers. The lack of a marketing cooperative also reduces the effectiveness of marketing services and weakens the market position of producers against the intermediaries. In this respect, it is very important for producers to come together and establish marketing cooperatives in the region. With the establishment of marketing cooperatives, marketing services will become more effective and production may gain sustainability.

✓ It is seen that there are deficiencies in branding of almonds and creation of a regional image for the Eastern Mediterranean Region. Establishment of a common trademark specific to this region should be encouraged by the persons, institutions and organizations involved in the industry. Almond trademark and the creation of a regional image may contribute to the regional economy.

✓ Almond is a product that can be stored for a long time when appropriate conditions are provided. One of the most important problems encountered in almond marketing is the limited storage possibilities. The inability to store produced almonds forces producers to sell their product immediately during the harvest time and reduce their opportunities to benefit from the price advantages that may arise later. In this respect, it is important to build storage facilities in the area or facilitate the use of such facilities by all producers. By increasing the storage possibilities, both almond production and producers' effectiveness in the market may increase.

✓ The grading and standardization services in the area of research are carried out only by a few producers. Encouraging these activities and raising the awareness of the producers on this issue may increase the quality of the product and make the product easier to market.

✓ There is no research institute and production station conducting researches in the region and there are only few scientific studies, in particular on the production economics and marketing of almonds. Research units should be established to review the sector as a whole and coordination should be ensured between the units. The research results obtained by these units should be shared with other stakeholders in the industry.

✓ There are no facilities for the handling and packaging of the product in the region. Handling and packaging facilities should be established and unshelled almonds should be classified as salty, salt-free, roasted, raw and chocolate-candy, and the product variety should be increased.

The literature is seen to be quite poor on the production cost and marketing structure of almonds. The findings in this study aims to make a contribution to fill the gap. However, there is a strong need for further researches on almond cost structures at both provincial and regional levels.

Conflict of interest

The authors declare that there is no conflict of interest.

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