

MARKETING STRUCTURE AND PROBLEMS OF SOUR CHERRY FARMERS: AFYONKARAHISAR AND KONYA PROVINCE EXAMPLE

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Abstract

The purpose of the study was to examine the marketing structure of sour cherry, to reveal the marketing problems of the sour cherry in the region and to give suggestions to improve the sour cherry production in the region and Turkey. The main material of this study was the primary data to be obtained by survey method from the farmers who produced sour cherry in Sultandağı and Çay districts of Afyonkarahisar and Akşehir and Doğanhisar districts of Konya province. In addition, data was obtained from intermediaries in the marketing channel. Stratified sampling method (Neyman Method) was used to determine the number of samples to be surveyed. The sample size represented the main population was calculated as 138 farmers. Afyonkarahisar province is in the first place with a share of 22% in Turkey sour cherry production. Konya follows Afyonkarahisar with a share of approximately 16%. In the region, 63.04% of farmers was conventional production and 36.96% of them was organic production. The most important problem that producers face with the sour cherry cultivation was the low price. The prices of the sour cherry were determined by the companies. Most of the sour cherry producers sell commissions. The most powerful factor in choosing sour cherry cultivation was the preferred industrial product. Consumption as fresh was very low. The most important threat to sour cherry production in the region is the climate. The frost occurred during the flowering period reduces the yield. The following improvements can be suggested for the production of sour cherry to a better position: increasing the number of facilities processing in the region, increasing the awareness of farmers about producer organization.

Key words: sour cherry, marketing margin, channel, Turkey

INTRODUCTION

Turkey is one of the richest countries in Europe and the Middle East in terms of plant cover, with up to 10,000 plants (Ölmez, 2005) [31].

Sour cherry grows easily in almost every region of Turkey. Commercial production of sour cherry is in limited areas of favourable climatic conditions. The main cherry-makers are Afyonkarahisar and Konya.

Although sour cherry is well grown in temperate climates, it is also resistant to very low and high temperatures and is adaptable to climate changes. The sour cherry resembles as an apple in terms of its resistance to cold. Cherry is very resistant to winter frost (Özbek, 1978) [32].

It was determined that cherry and sour cherry occur between the Caspian Sea and the Black Sea, as well as the best development in the Mediterranean or temperate climate (Webster and Looney, 1996) [43].

The sour cherry systematically belongs to the Rosales team, the Rosaceae family, the Prunoideae subfamily and the Prunus genus (Özbek 1978) [32].

The sour cherry is very resistant to winter colds. They are less likely to suffer damage from late spring frosts than from cherry blossoms. It can be grown without irrigation even in regions where annual rainfall is around 400 mm (Ağaoğlu et al., 1997) [2].

In Turkey, sour cherry is generally grown on mahlep seedling rootstocks (Prunus mahaleb). Much of the mahlep seedling rootstocks are yellow mahleps. The reason for this is that the yellow-coloured mahleps have less problems than the black-coloured ones based on the graft incompatibility. On the other hand, seeding of Prunus avium are also used in sour cherry cultivation (Özbek, 1978, Akça, 2000). The sour cherry is a fruit with a sour stalk, obtained from the sour cherry trees (Prunus cerasus L.), a member of the Rosaceae family. The sour cherry is evaluated for processing

products such as fruit juice, syrup, jam, marmalade, compote and liquor more than table (Iezzoni, 2008) [22].

The interest in sour cherry juice in the world scale is quite low. The main reason for this is that the sour cherry is not well known and the positive effects of sour cherry juice especially on nutrition and on human health are unknown. As a matter of fact, the content and antioxidant richness of anthocyanins in many fruit juices such as blueberries, black grapes, and blue berries are mentioned (Borowska et al., 2005, Mac Donald, 2005) [11,27]. There are limited studies on sour cherry about these types.

However, a great deal of technical research on sour cherry juice has been made and is being made. There are some studies about the determine the general chemical composition and variability of sour cherry juice (Ekşi et al., 1980, Erbas, 1981, Toht-Marcus et al., 1993, Velioğlu and Yıldız, 1996) [16, 18, 38, 39]. There is also a significant number of studies on the color and stability of anthocyanins in sour cherry juice (Cemeroğlu et al., 1994; Will and Dietrich, 2006; Bonerz et al., 2007) [10,13,44]. Studies have also been carried out on the importance of antioxidant activity in sour cherry juice and the prevention of healthy nutrition and disease prevention (Meyer, 1999; Kang et al., 2003; Borowska et al., 2005; Ataie-Jafari et al., 2008) [8, 11, 23, 28, 31]. There is also an increase in the number of researches on phenolic compounds and especially anthocyanins of sour cherry juice (Wang et al., 1997; Wang et al., 1999; Burkhardt et al., 2001; Kim et al., 2005; Šimunić et al., 2005; Kirakosyan et al., 2009; Damar, 2010) [12, 14, 24, 25, 37, 41, 42].

The sour cherry is very low in fresh use and is used predominantly in the industrial sector. Fruit juice, jam and frozen product use is more common. Sour cherry is one of the most important raw materials for fruit juice sector. Sour cherry juice has a high demand both in the domestic market and in exports. Öktem and Gül (2016) [30] reported that 0.16% of the fresh sour cherry produced in Turkey is subject to export. They stated that the exports of fresh and fresh use of sour cherry are very

limited. According to Öktem and Gül (2016) [30], 37.7% of the sour cherry produced in Turkey is used in the fruit juice industry. They also reported that the share of sour cherry juice in the total amount of fruit used in the industry was 8.9%.

In Turkey, technical studies related to sour cherry, cherry juice and breeding have been made predominantly. It can be said that there is not adequate study on the economic aspect of sour cherry breeding.

In this study, it was aimed to reveal the problems related to marketing of sour cherry farmers and intermediaries in Turkey. In other words, it was aimed to determine the marketing structure of sour cherry, to introduce marketing channels, to identify the problems in these channels, and to suggest solutions in the case of Afyonkarahisar and Konya illustrations.

MATERIALS AND METHODS

The data used in the research were provided from the producers in the villages of Sultandağı, Çay, Akşehir and Doğanhisar districts where the production of sour cherry is intense in Afyonkarahisar and Konya provinces. The number of sample farmers surveyed was determined by stratified sampling method (Neyman Method). Accordingly, the sample number was calculated as 138 farmers. Besides, the information obtained from the 20 broker / trader and 2 processing factories in the region constituted the data obtained from the intermedia. The data were included the 2016 production season.

Farmers in sour cherry production were divided into four groups according to their frequency distribution, taking into account the size of the sour cherry planting area. (The first (I) layer refers to the sour planting area of 1.0-4.99 decares, the second (II.) layer is 5.0-9.99 decare planning area, third (III.) layer is 10.0-14.99 decares, the fourth (IV.) layer represents 15.0 decares and more sour cherry planting areas.

According to this; 65 farmers from the first layer, 29 from the second, 10 from the third, and 34 farmers from the fourth layer were

interviewed. In line with the calculated sample size, farmers from the mainland were selected randomly.

Data collection method

The survey was conducted by interviewing farmers and intermediaries who produce sour cherries in a face-to-face interview technique. The questionnaire was prepared considering the marketing issues and problems of farmers and intermediaries in the study area. Questionnaire was made up of (i) sour cherry information, (ii) marketing structure, and (iii) marketing problems sections.

Evaluation of data

The data obtained in the study were coded using the statistical package program and frequency distributions were generated. SWOT analysis was performed for sour cherry production in the region. SWOT analysis is a technique used by enterprises or organizations surveyed to determine the strengths and weaknesses of the process or situation and the opportunities and threats that arise from the outside. With the application of this technique, it is possible to develop plans and strategies to minimize the effects of threats and weaknesses on the basis of existing strengths and opportunities, taking into account internal and external factors (Akkaya, 2015). These aspects of the industry were sought to be investigated in accordance with the information obtained from farmers

and intermediaries.

RESULTS AND DISCUSSIONS

The average age of the sour cherry producing farmers in the studied regions was calculated as 46 years, and their education level was about 9 years. The household size in the region was determined to be 4 persons. It was found that farmers were engaged in plant production for 19 years. Farmers' sour cherry production experience was 17 years in the first group, 20 years in the second group, 25 years in the third group and 18 years in the fourth group and 19 years in the average. The average number of sour cherry's orchard was 2.4 pieces. The first group in the study area had 3.5 decares sour cherry planted areas, the second group had 7.6 decares, the third group had 11.7 decares and the fourth group had 22.8 decares. The average sour cherry planted area was 9.7 decares. It was estimated that the farmers sold 19.6 tonnes of sour cherry in the average. The sale price of sour cherry was 1.5 TRL. It was determined that the yield of sour cherry was higher in the third group (2.3 tons) than the others. The sour cherry yields was varied from 1.9 to 2.3 tons in the farms groups. It was determined that the fourth group of farmer had the highest relative profit. This value was 1.8 in the average (Table 1).

Table 1. Various information about farmers

Features	Farms groups				Average
	I	II	III	IV	
Farmer age (years)	45.8	46.8	49.5	44.9	46.1
Farmers' education level (year)	8.3	8.6	9.7	8.9	8.6
Household size (person)	3.9	4.5	4.2	4.3	4.2
Farmer's experience in plant production (years)	17.6	19.9	24.6	18.2	18.7
Farmer's experience in sour cherry production (years)	17.1	19.9	24.6	17.4	18.3
Number of sour cherry garden's (pieces)	1.4	2.2	2.7	4.4	2.4
Sour cherry planted area (decare)	3.5	7.6	11.7	22.8	9.7
Sour cherry production (ton)	6.5	14.8	26.5	46.6	19.6
Per kilogram sour cherry sale price (TRL)	1.7	1.4	1.5	1.5	1.5
Per decares sour cherry yield (ton)	1.9	2.0	2.3	2.0	2.0
Relative profit	1.4	1.5	1.8	2.0	1.8

1 decares equal 0.1 hectares and 1 Euro equal 3.343611 TRL (Turkish Liras)

Akçay et al. (1999) [4] estimated that the highest relative profitability rate was 2.55 in

the sour cherry in the studies of production costs and profitability of peaches, apples and

sour cherry grown in Tokat Central district. The authors found that yield per tree was 30.91 kg and yield per decares was 1,331.3 kg for sour cherry. According to the authors, it was profitable to produce cherry in Tokat province.

Özüdoğru (1998) [33] determined the value of a sour cherry orchard of Çubuk district of Ankara by using income method and market price method. The author found that the capitalization interest rate was 5% in the sour cherry orchard.

Altın (2006) [6] calculated that the yield of sour cherry for Tokat province center was 1,473 kg per decares. He calculated cost as 0.396 TRL and 0.645 TRL of the selling price for one kilogram sour cherry. He calculated relative profit of sour cherry to be 1.63. The author reported that there is no effective market system in the area and should be production and marketing efforts to increase the income of farmers.

Radosavljević (2008) [34] examined Serbia's marketing chain for sour cherry and raspberries. The author argued that the trade of fresh and frozen fruit for Serbia is complex and fragmented as farmers' market, processing industry, trading companies and intermediaries. He suggested that in order to increase quality, production, profitability and exports, it was necessary to maximize cooperation between producers, processors, wholesalers and retailers.

Sredojević et al. (2011) [35] investigated the competitiveness of investments in cherry and sour cherry production within the framework of Serbia's new program. They reported that some problems for cherry and sour cherry in Serbia such as land fragmentation, low technical knowledge and technological level, insufficient cooperation among producers, ambiguous selling prices, and slow implementation of standards.

Vukoje et al. (2013) [40] reported that the fruit processing sector in Serbia focused primarily on the production of fruit juices, alcoholic beverages, composters, aromas, jams and marmalades. They also analysed the cost effectiveness of dry sour cherry production in their work. The authors reported that raw sour cherry (60.2%) is the most

important cost element in dry sour cherry production cost structure. This was found to be followed by energy costs with labour share of 22.7% and 3.5% share.

Aydemir (2006) [9] defines marketing as the process of planning, designing, pricing, distributing and promoting products, services and ideas to provide changes that satisfy individual and institutional objectives. He stated that marketing is not an after-production but also an action that starts before production and during production, pre-sales, sales moment and after sales. Aydemir (2006) [9] stated that the marketing starts with the quantity and quality of the farmer producing the product, and includes product preparation, standardization, warehousing and transportation activities in the process and finally stated that the marketing includes all activities in the process until the consumer.

Mucuk (2004) [29] defines marketing as the process of planning and implementing "development", "pricing", "promotion" and "distribution" of goods, services and ideas that meet the needs in order to fulfil the responsibilities to achieve business objectives. According to Kotler (2009) [26], marketing is a business function that determines unmet needs and demands, identifies and measures their size, possible profitability, determines which target markets the organization can best serve, and decides on appropriate products, services and programs to serve these selected markets, and a function that requires everyone in the organization to think and serve the customer.

AMA (2013) [1] defined that marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.

The cherry sales patterns of the farmers in the study area were examined. The 50% of the farmers realized the sale on future after production. About 45.7% of the interviewed individuals made the sale in cash after the production of sour cherry. The 3.6% of them made the sale both futures and cash.

The vast majority of the cherry farmers in the region surveyed sold sour cherries in July-

August. While 20.6% of producers sold their products in July, 79.4% of them sold their products in July and August. The most important factors for the farmers to sell the sour cherry immediately after the production was that the cherry is a perishable product, the farmers do not have storage facilities and need cash.

Farmers in the research area mainly provided information on sour cherry market from exporting firms (56.5%). The 32.6% of the farmers were provided from the commission, 3.6% from the Chamber of Agriculture, 2.9% from the other farmers, 1.4% from the District Agriculture Directorates, 1.4% of them provided from the media. Market information sources were also diversifying as the sour cherry planting areas increases and also the share of commissioners in the source of information was increased.

Sour cherry sales channels of farmers in the study area were given in Table 5. About 97.1% of the farmers in the region sold their products to the commissioner. Therefore, the most important distribution channel of sour cherry was the commissioners. The 2.1% of sour cherry growers sold wholesaler-trader and 0.7% of them to factory. The sales channel was also diversified on the farm groups.

Table 2. Sour cherry sales channels in farms

Features	Farms groups				Average
	I	II	III	IV	
Wholesaler/merchant N	0	0	2	1	3
%	0.0	0.0	20.0	2.9	2.2
Broker/commissioner N	65	29	7	33	134
%	100.0	100.0	70.0	97.1	97.1
Factory N	0	0	1	0	1
%	0.0	0.0	10.0	0.0	0.7
Total N	65	29	10	34	138
%	100.0	100.0	100.0	100.0	100.0

All of the producers in the research area stated that the price of sour cherry was determined by the companies.

Marketing channels are very important in terms of general economic structure as well as producers and intermediaries in any product

market (Emeksiz et al., 2005) [17]. Güneş (1996) [20] defined the marketing channel as the way in which products came from within their production and the way they deal with various events such as processing, storage, packaging, and recycling.

Farmers operating in agriculture are usually small size with limited marketing opportunities. These limited opportunities can be avoided with the effectiveness of marketing channels. Farmers can easily access markets outside of local markets and market information. On the other hand, products are not as they are, but are processed in various stages and processed by various intermediaries to reach the consumer. In this way, both the added value of the product is gained and the products of the consumer are delivered in the desired manner (Emeksiz et al., 2005) [17].

The sour cherry marketing channels in the region were given in Figure 1. The producers can sell to the wholesale brokerage, wholesaler-trader, factory and exporter company. The broker and the wholesaler-trader markets to the whispering factory and exporting company that the manufacturer receives. The factory and the exporting company are the retailers, and the retailer is the final consumer (Figure 1). Therefore, added value is created in different marketing channels, which increases the economy.

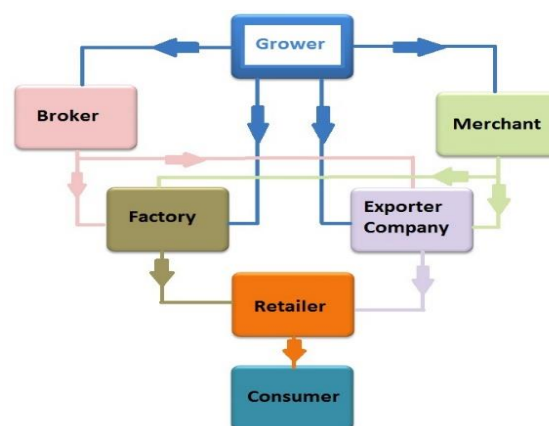


Fig. 1. Sour cherry marketing channel structure

The 17.4% of the surveyed farmers received information about sour cherry production. Therefore, participation in education-publication activities related to sour cherry

was low.

The 63% of farmers produced sour cherry with conventional agriculture and 37% of them with organic agriculture. The organic farming rate increased as the farmer's sour cherry planted area increased.

The most important factor in choosing organic agriculture for some sour cherry growers in the region was the preference for organic produce by fruit processing plants in the region. These companies promote organic farming. These companies in the research area provide the farmers with organic farming and counselling support in the fight against disease and harm. At the same time, these companies also provide farmers with pesticide, inputs suitable for organic farming and assistance in implementation. Therefore, the sour cherry farmers in the region can reduce the cost of spraying, pesticide and labour. An important factor in preference organic farming of sour cherry producers is these opportunities provided by the processing company.

Gül and Akpınar (2006) [19] point out that Turkey needs to closely monitor the developing factors in the world production and trade in terms of sustainability of the important position in world fruit production. They also stated that establishment similar product associations or consortia, as well as the application of branding and integrated pest management, are of importance in terms of sustainability. Gül and Akpınar (2006) [19] stated that national and international markets should be taken into consideration in the fruit species produced. They also stated that necessary infrastructure such as controlled-atmospheric cold storage and packaging facility should be established in order to ensure supplied to desired level and quality throughout the year.

Altın (2006) [6] determined that 80-85% of the sour cherry grown in Tokat province was sold to the factory. The author reported that processed sour cherry production could be increased by development of technologies for the domestic and abroad market.

Radosavljević (2008) [34] reports that in Serbia, vertically and horizontally integrated sour cherry and fruit marketing systems can

have fewer intermediary channels and achieve direct consumer. The author argues that integrated marketing concepts in the country can increase quality, efficiency, profitability and competitive power.

General information about intermediaries

The marketing margin is the difference between the price consumers pay for the product they buy and the price the producers get for the products they produce (Şarapoglu, 2015) [36].

There are different methods for calculating marketing margins. Amir and Knipscheer (1989) found that the most common method is the calculation of wholesale margins and retail margins. The wholesale margin refers to the price difference between wholesalers and producers. According to them, the price paid by the retailer to the wholesaler constitutes wholesale prices. Retail margins are defined as price differences between retailers and wholesalers. They have reported that the price paid by the consumer to the retailer is the retail price.

The intermediaries in the region bought the sour cherry an average of 1.3 TRLs from producer and sold 1.6 TRL averages to the processing companies. Therefore, the marketing margin at the level of intermediaries was 30% for the sour cherry.

The duration of the intermediaries' sour cherry-buying and selling activities was also investigated. Intermediaries operating in the province of Afyonkarahisar were operated duration for 13.5 years in the purchase and sale of sour cherry, while intermediaries in the province of Konya was did this work for 14.8 years (Fig. 2).

It was determined that 95% of intermediates in the region were purchasing sour cherry on behalf of the company and 5% of them had done on behalf of the factory.

The sixty percent of the intermediaries interviewed sold sour cherry to company and factory in Afyonkarahisar province. Twenty five percent of them sold to company and factory in Çanakkale, ten percent of them sold to factory in Bursa.

The intermediaries interviewed purchased 138.57 tons of sour cherry in the province of Afyonkarahisar in 2016. The intermediaries in

Konya purchased 292.14 tons on average.

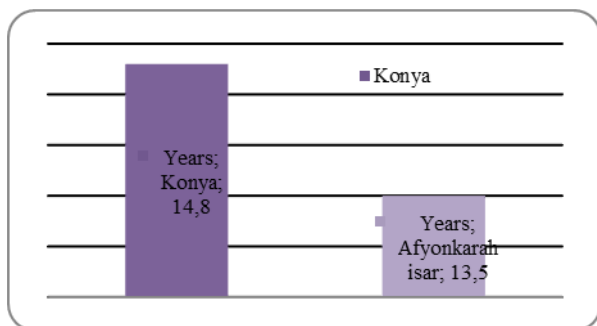


Fig. 2. Duration of dealing with sour cherry trading of intermediaries

It was also investigated how the intermediaries in the studied regions paid the price of the sour cherry they bought to the producers. Seventy percent of the intermediaries paid in the form of futures to the producers in the province of Afyonkarahisar and 30% of them paid in advance. The 80% of them paid in the form of futures to the producers and 20% of them paid in advance in Konya.

The situation of the market researches of the intermediaries was also examined and it was determined that 15% of the intermediaries conduct market research. At this point, it was effective that the majority of the companies interviewed were brokers and that they had to purchase sour cherry on behalf of other companies.

The problems related to cherry production and trade were also examined at the point of view of the intermediaries of the study field and it was mentioned that the most important problem was the prices. Besides, it was expressed in problems experienced with other companies and factories.

SWOT analysis of sour cherry growing

The analysis of the current situation and experience of the business as a whole, while defining the strengths and weaknesses of the business and harmonizing them with environmental conditions is called Interaction (SWOT) Analysis (Dincer, 1994) [15].

The SWOT Analysis is a technique used to identify the strengths and weaknesses of the organization, technique, process, or situation and to identify opportunities and threats originating from the external environment

(Gürlek, 2002) [21].

The SWOT analysis of sour cherry production was made in line with the information obtained from producers, brokers, processors and merchants in the region. The strengths, weaknesses, opportunities and threats of the production of sour cherry were determined.

The sector is strong in the region, as the research field is suitable for the sour cherry-growing climate, the marketing of the product is easy, demand as an industrial product and product yield are high.

Weaknesses in the regions were identified as high levels of input prices, the lack of longevity of trees, low sales prices of sour cherry, inadequate technical knowledge in breeding, lack of technical staff, irrigation problems in some areas and increase in diseases and harms.

Opportunities in sour cherry production are determined as the employment of the sour cherry, the creation of added value, the adaptation to the region, the name of the region product.

The threats of frost during flowering, the delay in crop harvesting due to climate change, the presence of insects in the absence of appropriate measures, the lack of storage possibilities of producers, and the lack of processing facilities were identified as threats (Fig. 3).

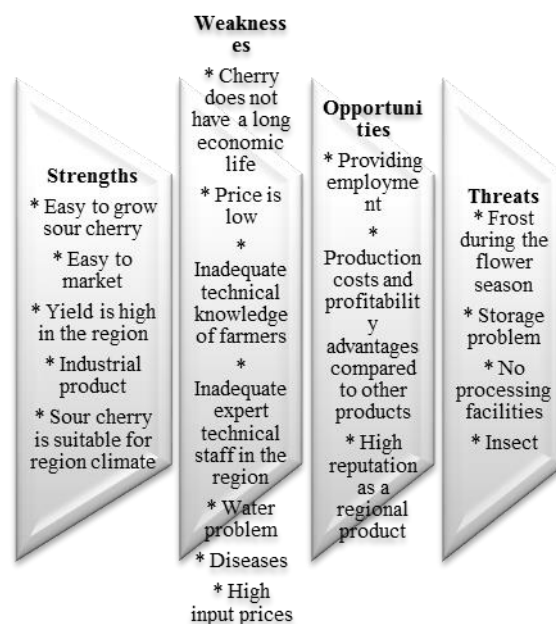


Fig.3. SWOT analysis of the sour cherry industry

CONCLUSIONS

Afyonkarahisar and Konya are the most important places for sour cherry production in Turkey. While Afyonkarahisar took first place in sour cherry production, Konya follows him in second place. Sour cherry is suitable for the region climate due to ecological conditions and its production has increased in these regions. One of the reasons why sour cherry farming is preferred is the raw material for the industry. The harvested product is sold to brokers, traders, factories or processing plants without being subject to any classification. The most important problem experienced by producers in the region is that the sales price of sour cherry is low and the input costs are high. The price of sour cherry is determined by the companies. Therefore, producers can not influence price formation. Sour cherry growers are usually sold their products in July and August.

The commissioners dominated the marketing channel of the sour cherry production. As a matter of fact, 97.1% of the farmers who are interviewed sold their products to the commissioner. Farmers did not sold with cash their products.

In order to better evaluate the product produced in the region, the manufacturer needs to improve its marketing processes and solve its problems in order to obtain profitable and higher quality products. For this it is necessary to organize the producers in the region, to improve the storage infrastructures in the region and to increase the processing facilities.

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