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Marketing structure of apricot production and analysis of its problems: A case of Mut district in Mersin province

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Abstract

In this research, marketing structure and problems of apricot production at the level of producers and intermediaries in Mut district, which is an important apricot production region of Mersin, were examined. Data were obtained from 91 producers and 35 intermediaries in the region by face to face survey method. The data included the 2016 production period. The most used marketing channel in the region was "producer-commissioner-consumer". Apricot marketing margin ranged from 11% to 100%. Inefficiencies of producer unions in the region and price instabilities are the points to be developed for the improvement of apricot production.

Key words: Marketing margin, apricot, SWOT, channel, Mut

Introduction

Turkey ranks first in the world apricot production (Gül and Akpınar, 2006). Turkey is an important country in world exports, especially dried apricots (Akpınar et al., 2006). Among stone fruits, apricot cultivation in Turkey shows a significant rise in recent years. Apricots are cultivated in almost every region except the regions with high altitude in the Black Sea and Eastern Anatolia. Malatya apricot variety is grown in most provinces in Turkey. 90% of apricots grown in Malatya are considered to be dried (Demirtaş, 2000).

Mersin ranks second in apricot production of Turkey. In 2018, 89300 tons of apricot was produced in 71905 decares in Mersin. There have been significant rise in harvested areas and production amount compared to 1995. As a result of the yield, the rising production demonstrated a fluctuating course (Table 1). This can be explained by the fact that agricultural activities are highly dependent on natural conditions.

The share of the Mut district in the apricot-plantation area of Mersin province is 77.52%, and its share in production is 78.66%. Therefore, Mut is a district that meets almost all of the apricot production of Mersin province. Accordingly, Mut district was chosen as a sample area.

The study aimed to analyse the marketing structure of the apricot cultivation in Mut district. Marketing channels, the problems in these channels (both at the producer level and the intermediary, in the process of processing) were evaluated.

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Table 1. Apricot production, planted areas and yield in Mersin province

Years	Harvested area (decares)	Area index (1995=100)	Production (ton)	Production index (1995=100)	Yield (kg/tree)	Yield index (1995=100)
1991	-	-	10.822	59	35	66
1995	24.550	100	18.241	100	53	100
2000	35.790	146	45.678	250	92	174
2005	54.630	223	55.737	306	86	162
2010	62.313	254	56.430	309	47	89
2011	70.506	287	52.486	288	46	87
2012	72.140	294	46.865	257	38	72
2013	68.433	279	94.055	516	76	143
2014	67.684	276	111.738	613	84	158
2015	67.943	277	107.922	592	79	149
2016	68.694	280	104.310	572	73	138
2017	67.278	274	86.918	476	60	113
2018	71.905	293	89.300	490	58	109

Source: TÜİK, 2019

Materials and Methods

The research material was gathered from the apricot producers in the Mut district and intermediaries in the marketing channel. The stratified sampling Neyman method was used, and the farmers' sample was calculated. It was found that the number of farmers in the sample was 91 with a margin of error of 5% and a confidence interval of 90%. Farmers were divided into four layers according to the apricot plantation area. Farmers who grow apricots in between 1.00-7.00 decares were named as the 1st group, the farmers having orchard between 7.01 and 14.00 decares were the 2nd group, farmers having orchard between 14.01 and 25.00 decare were the 3rd group and farmers with 25.01 decares or more orchards was named as the 4th group (Table 2).

Table 2. Sample size (Farmers)

Farm groups	Apricot planted area (da)	N	Standard deviation	Variance	Average	Sample size
I	1.00-7.00	1520	1.76	3.11	3.80	24
II	7.01-14.00	868	1.95	3.82	10.04	16
III	14.01-25.00	500	3.05	9.32	18.41	14
IV	25.01+	265	15.64	244.59	38.49	37
Toplam		3153	11.04	121.96	10.75	91

Additionally, 35 intermediaries in the region were interviewed. Data were obtained by survey method. At this point, marketing structures for each channel took place in the survey questions. Original data from farmers and related stakeholders were analysed and interpreted as appropriate tables. Also, SWOT analysis was performed for apricot cultivation.

Results and Discussion

Apricot production takes place in 70 countries around the world. In 2017, world apricot production was about 4.27 million tons, and production had risen by 145% compared to 1980. Major apricot producing countries in the world are Turkey, Iran, Uzbekistan, Algeria, Italy, Pakistan, Morocco, France, Ukraine and Japan (Table 1).

Apricot production in Turkey ranks first in the world. Turkey, with 985 000 tonnes of production in 2017, has a 19.7% share of the world apricot production. Based on 1980 data, Turkey's apricot production has increased 5.1-fold (Table 3).

Table 3. Apricot production in the world

Country		1980	1990	2000	2010	2017	Share (%)	Index (1980=100)
Turkey	Harvested area (ha)	44075	49595	89800	108053	125049	11.9	137
	Yield (kg/ha)	3630	6049	5902	4165	7877	-	371
	Production (ton)	160000	300000	530000	450000	985000	19.7	507
Uzbekistan	Harvested area (ha)	-	12400	17000	35500	41711	7.78	336
	Yield (kg/ha)	-	4145	4000	9155	12768	-	308
	Production (ton)	-	51400	68000	325000	532565	12.51	1036
İtaly	Harvested area (ha)	13000	14042	15340	19543	18993	3.54	146
	Yield (kg/ha)	7392	13154	13127	12940	14032	-	190
	Production (ton)	96100	184710	201372	252892	266372	6.26	277
Algeria	Harvested area (ha)	7700	14010	13390	49495	44307	8.27	535
	Yield (kg/ha)	3024	2497	4209	4010	5798	-	192
	Production (ton)	23285	34979	56354	198467	256890	6.03	1103
İran	Harvested area (ha)	14000	11877	28692	81290	11545	2.15	82
	Yield (kg/ha)	3929	7197	8703	4774	20760	-	528
	Production (ton)	55000	85474	249700	388049	239712	5.63	436
Pakistan	Harvested area (ha)	3218	6400	12909	29648	30877	5.76	960
	Yield (kg/ha)	11115	12656	9752	6414	5796	-	52
	Production (ton)	35768	81000	125889	190174	178957	4.20	500
Spain	Harvested area (ha)	19300	22800	23487	18333	21002	3.92	109
	Yield (kg/ha)	5896	5246	6067	4294	7755	-	132
	Production (ton)	113800	119600	142498	78715	162872	3.83	143
France	Harvested area (ha)	13000	13759	14992	13797	12768	2.38	98
	Yield (kg/ha)	6077	8026	8724	10380	11631	-	191
	Production (ton)	79000	110432	130787	143212	148500	3.49	188
Afghanistan	Harvested area (ha)	6820	5115	5754	8320	23890	4.46	350
	Yield (kg/ha)	6965	7044	7445	8000	5518	-	79
	Production (ton)	47500	36030	42840	66560	131816	3.10	278
Morocco	Harvested area (ha)	-	13500	13921	12244	11419	2.13	85
	Yield (kg/ha)	-	5459	8591	11020	9856	-	181
	Production (ton)	63000	73700	119600	134933	112538	2.64	179
Other coutries	Harvested area (ha)	172944	153033	200250	188440	194519	36.29	112
	Yield (kg/ha)	6136	7265	5972	5719	6385	-	104
	Production (ton)	1061103	1111785	1195970	1077639	1242019	29.17	117
World	Harvested area (ha)	294057	316531	435535	564663	536072	100.0	182
	Yield (kg/ha)	5899	6916	6574	5854	7942	-	135
	Production (ton)	1734556	2189110	2863010	3305641	4257241	100.00	245

Source: FAOSTAT, 2019

Turkey's Mediterranean Coast region has great potential for fresh and early apricot production. Turkey has more favourable geography than other Mediterranean countries such as Greece, Italy, France and Spain for early apricot production. Early maturation can be achieved 10-20 days earlier than these countries (Durgaç and Kaşka, 1996).

As of 2018, the provinces where most of the apricot production takes place in Turkey were given Table 4. Malatya province is ranked the first with 798366 decares of the planted area and 401363 tonnes of production. Mersin province ranked in the second place with 71905 decares of planted area and 89300 tons of production. Share of Mersin province in Turkey's apricot plantation area was 5.72%, while its share of

production was 11.91%. Mersin was followed by Elazığ with a ratio of 6.90%, Iğdır with 4.83%, Kahramanmaraş with 3.97% and Antalya with 1.89% (Table 4).

In 1995, a total of 18241 tons of apricot was produced in the apricot planting area in 24550 decares of land in Mersin. The planting area continued to increase with each passing year and total apricot production reached 52486 tons in 2011. The production decreased to 46862 tons, due to drought in 2012. In 2015, its production increased by ten times compared to 1991 and reached 107922 tons. In 2017 and 2018, adverse weather conditions decreased to 89300 tons.

Table 4. Apricot production in main producer provinces in Turkey (2018)

Province	Harvested area (decares)	Share in Turkey (%)	Production (ton)	Share in Turkey (%)
Malatya	798.366	63.49	401.363	53.52
Mersin	71.905	5.72	89.300	11.91
Elazığ	98.192	7.81	51.775	6.90
Iğdır	34.070	2.71	36.194	4.83
Kahramanmaraş	89.328	7.10	29.778	3.97
Antalya	18.044	1.43	14.201	1.89

Source: TÜİK, 2019

Farmer Level Findings

The average household size in the research area is composed of 4.26 persons, 54.90% of households were in the 15-49 age group,and 20.62% was in 50 and over age group. The population of the family in the first group of farmers was maximum 4.42. Demirtaş and Gül (2003) determined the average household size as 5.43 in 1998 in the same region. There has been a declination in the average household width in the last 20 years. The declination in the population growth rate and migration from rural to the urban were effective in this situation.

Apricot cultivar "Alyanak" was in the first rank with 32.27%. "Tyrinthe" cultivar was in second place with 22.32%, and "Bebeko" cultivar was in third place with 15.42%. "Şekerpare" cultivar was the leastly cultivated cultivars with 4.15% among the farmers interviewed in the region, 96% of farmers indicated that they make daily pruning. Pruning is mostly done in January. Demirtaş and Gül (2003) found that 90% of farmers maintained pruning in their study in the same region. Over the past 20 years, the rate of pruning has increased. It can be said that the increase in the level of consciousness of farmers has been effective at the increased rate of prunning. In the apricot orchards, soil tillage is made by tractor and hoeing is made by hand. The majority of farmers were engaged in hoeing two times every year .

Irrigation process starts in April and continues until November. Major diseases and pests in apricot orchards are monilia (*Monilia laxa*), sapling dip worm (*Capnodis spp.*), and freckle disease (*Coryneum beijerinckii*). In apricot production, agrochemicals application is 4.97 times in a year. They were generally applied in February, March and April.

Labour was used in apricot production as 37.20 hours on average. 50.10% of this was for irrigation, 17.95% for fertilisation, 13.37% for spraying, 11.95% for pruning, 6.64% for soil processing. Demirtaş and Gül (2003) calculated that 49.20 hours of labour is used per decares according to 1998 data in the same region. There was a decrease in the labour force used in the unit area. With the development of technology, it can be said that use of better quality tools and equipment is effective.

Machine power use was the 37.88% in the production of apricot was used in soil treatment, 40.28% in fertilisation and 21.85% in spraying. Demirtaş and Gül (2000) calculated that 6.01 hours of machine power is used per decares according to 1998 data in the same region.

The 79.12% of the farmers carried out the classification in harvested product. As the scale of business increased, the level of classification increased (Table 5). Product classification was made in farmers' enterprises.

Apricot harvest begins in the second week of May and ends in the third week of June.

In the apricot harvest, 40.73% of the labour force was used for harvesting, 62.98% for packaging, 0.79% for transporting, 1.09% for storing.

Table 5. Product classification of farmers in apricot

Farm groups	Make product classification		Does not make product classification		Total	
	N	%	N	%	N	%
I	14	58.33	10	41.67	24	100
II	13	81.25	3	18.85	16	100
III	12	85.71	2	14.29	14	100
IV	33	89.19	4	10.81	37	100
Total	72	79.12	19	20.88	91	100

Of the farmers in the research area, 74.7% sold the apricot to the broker, 13.1% to the merchant, 5.4% to the merchant from outside the district, and 5.4% directly to the consumer. In all farmer groups, brokers were the most important actors in the product sales channel of producers. In small-scale farmers, direct sales to consumers were over 5% (Table 6). Demirtaş and Gül (2003) calculated that the majority of product sales was to merchants (69.1%) according to 1998 data in the same region. This was followed by the broker with 28.4%. There was a decline in sales to the merchant

Table 6. Apricot sales channels for farmers

	Broker		Merchant		A merchant from outside the district		Consumer		Total	
Farm groups	N	%	N	%	N	%	N	%	N	%
I	15	62.5	6	25.0	1	4.1	2	8.3	24	100
II	12	75.0	1	6.2	2	12.5	1	6.2	16	100
III	12	85.7	2	14.2	0	0	0	0.0	14	100
IV	29	78.3	3	8.1	2	5.4	3	5.4	37	100
Total	68	74.7	12	13.1	5	5.4	6	5.4	91	100

In the examined area, apricot sales are in the form of sale in bulk in the harvest time, sale in bulk in the flowering time and sales in the form of weight in harvest time.

About 97.8% of the farmers received the price of the product with forwarding sell and 2.2% received with cash. In the process of determining the product prices, 97.80% of the producers reported that the prices vary depending on the quantity, while 2.20% stated that the firms determined the prices.

The most important problem experienced by farmers in apricot cultivation was the high input prices. Also, lack of consultant, lack of laboratory and lack of scientific activity related to apricot was the other problems mentioned.

In the research area, "Alyanak" cultivar was the first of the cultivars with 34.1% of the farmers. 25.3% of the producers stated "Tyrinthe" cultivar and 24.2% of "Bebeko" cultivar.

One of the most critical problems experienced by farmers in marketing was sometimes the decrease in the number of apricot brokers/merchants periodically and the delay in product payments. They also stated that intermediaries and firms have an essential role in price setting. The production of dried apricots in the district was not very common. There is no industry to process the product. Therefore, depending on the season, apricots can be sold at a low price.

Findings from intermediaries

80% of the intermediaries (broker and merchant) interviewed in the research region were in Mut district of Mersin, and 20% were in Iskenderun district of Hatay city.

40% of the apricot intermediaries interviewed were engaged in trading activities for more than ten years, 20% were trading in less than ten years. 20% of the intermediaries interviewed received apricot quantities from producers at 16,000 tons, and 80% received earlier apricots from producers at 16,000 tons and above. The period they bought the apricot was usually the end of May, and they started to sell the apricots in May-June with the storage service.

80% of the interviewed intermediaries reported that the apricot purchase price changed according to that season's yield, while 20% said that the market supply and demand balance had determined the purchase price of apricot.

The 60% of the intermediaries were active in Istanbul and Ankara, and 40% in the Mersin market.

All the brokers and traders interviewed in the region were selling the apricot to the processing company.

The purchasing period for intermediaries from the apricot producers was generally in June. The sales amount of 20% of the intermediaries was 10000 tons or less, 40% was between 15000 and 16000 tons, and 40% was sold at 20.000 tons or more.

The difference between the price paid to the first seller and the price paid by the last buyer in the market chain is called the marketing margin. The marketing margin at the level of apricot the intermediaries in the region was 50% on average. This value could vary between 11% and 100%.

60% of the intermediaries in the region were able to store the apricot, and 20% of them did not have storage facilities.

It was determined that 80% of the intermediaries conducted market research. About 40% of the intermediaries gave more importance to the colour in the purchase of apricots. 40% of them reported that the size of a product is more important, and 20% said that fruit maturity is more important in the purchase of apricots.

The 60% of intermediaries in the region reported that they made a payment with time bargain on the purchase of apricots, 40% of them made a payment with cash.

80% of the intermediaries reported that with the support for apricot would improve the market.

In the research area, five apricot processors and marketers were also interviewed. It was determined that the firms interviewed had apricot purchase activities between 7 years and 15 years. 20% of the companies in the research area were family companies, 40% were private companies, and 40% were other companies. The level of education of the employees of the firms was generally at the high school level.

The executives of the firms stated that they have a university degree in education. Processor and marketing companies in the region had both a food engineer and an agricultural engineer.

It was determined that 80% of the firms interviewed in the region were exporters and domestic marketers and 20% were handlers and marketers.

The 20% of the exporter firms interviewed in the study obtained apricots from Isparta and Çanakkale, and 80% of them were obtained from the Mersin and Malatya.

20% of the exporting firms interviewed exported apricots to the USA, 20% exported to Ukraine and 60% exported to Russia.

All of the exporters had an infrastructure for export. 60% of the companies interviewed in the region had a production facility, storage, packaging unit, transport vehicles. It was determined that 40% were only storage-packaging / packaging tools.

Apricot marketing channel

A significant portion of the apricots produced in Mut district of Mersin city is sold from producers to brokers, from brokers to the domestic market and from retail outlets to consumers (Figure 1).

Processors used to buy apricots were marketing channels of producers and brokers. The company was also sending the product abroad by the broker. Direct marketing of the product was low. The following figures give different marketing channels in the region (Figure 1).

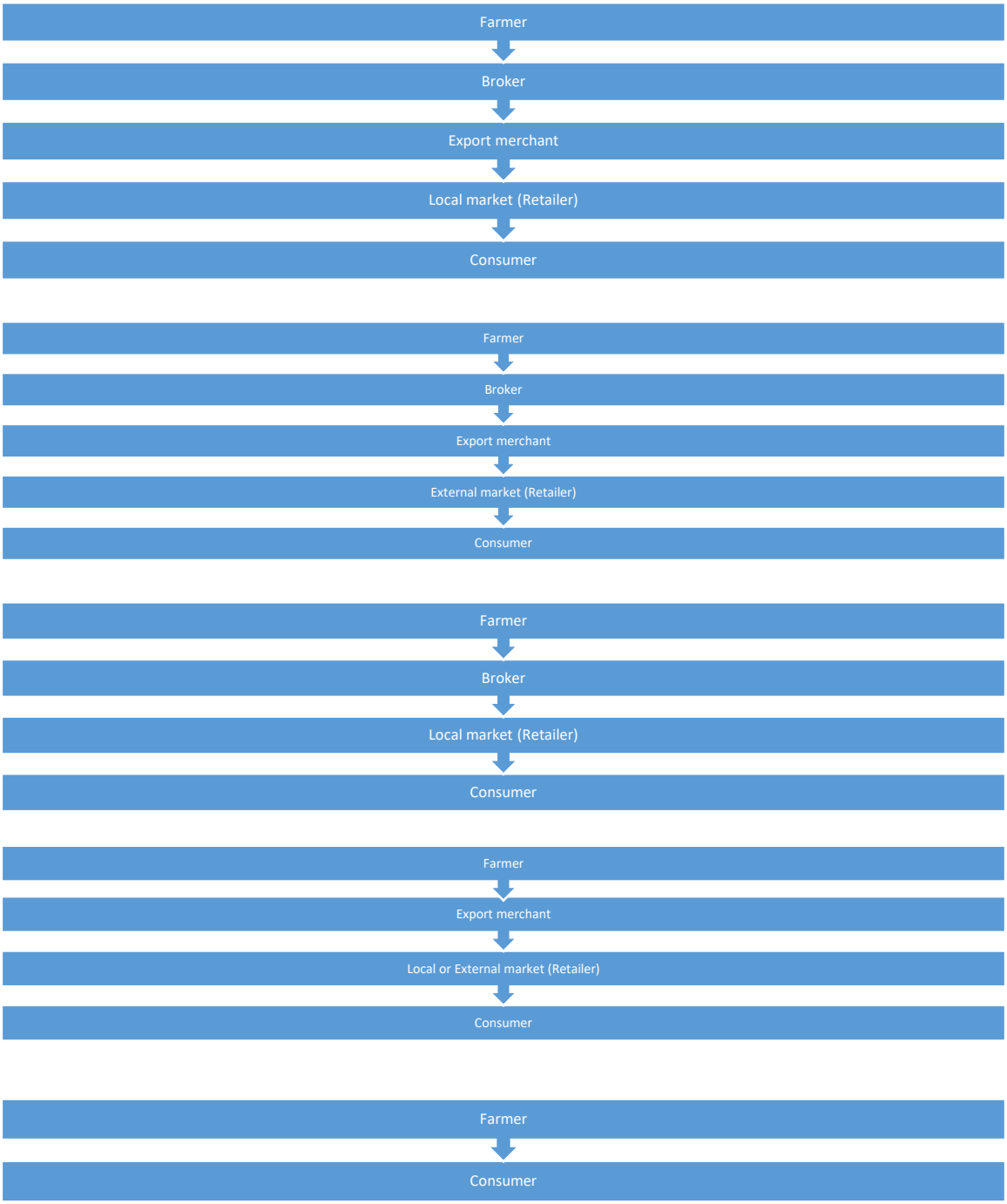

Figure 1. Apricot marketing channels in the region

80% of the firms were using the broker-consumer sales channel. 20% of the firms were using producer-collector-broker-exporter-foreign market retailer-consumer-sales channel. All of the apricot processors and marketers interviewed were doing market research. It was found that they carried out market research with their staffs.

It was determined that firms used domestic packaging. It was declared that 40.00% of the packaging material was used as a mesh bag, 20.00% as bulk box and 40.00% as a wooden case. Companies were implementing standardisation for apricot. Colour-size-shape is essential parameters in the standardisation process.

When the 1 kg apricot cost of the handler and apricot brokers were calculated, it was found that the average processing cost was 0.01 TRY, the labour cost was 0.25 TRY, the transportation cost was 0.01 TRY, and the packaging cost was 0.25 TRY, 10% commission and 10% withholding tax.

SWOT Analysis of Apricot Cultivation

SWOT analysis is one of the methods used to analyse the internal state of any organisation, public or private sector firm, and the external factors surrounding it (Houben et al., 1999; Yumuk ve Inan 2005; Aslan and Gul, 2017; Gül and Öktem, 2017; Gül and Parlak, 2017; Bayraklı and Gül, 2018). In this study, the opinions of the stakeholders about apricot were

examined in SWOT analysis for apricot production. Within this framework, the strengths, weaknesses, opportunities and threats of apricot production were put forward in the framework of information obtained from producers, intermediaries and processors.

As the strengths of the apricot, the region is suitable in terms of environmental conditions for apricot sector, apricot quality, taste and odour are different from apricots produced other regions, the yield is above the country average, storage life is long, and the input used to be low, the income obtained was high.

The weaknesses in the field of research are that producers do not carry out soil analyses and the lack of organisation in the region in terms of production and marketing. It was determined that there was a few organisation based on producers in the region. Specific boards and organisations do not establish the price of the apricot market. It should be avoided by the trader/broker in the local market. With the increase in the organisation, it can be said that the producers will gain advantages in terms of input and product sales price. Inadequate input use by the operators in the researched area could decrease the yield and decrease the quality. In the region, there was also a lack of processing, sorting and packaging facilities. Since the apricot is a source of livelihood by the operators in the region, the capital allocated to apricots is high.

The opportunities in the apricot sector in the region may increase the possibility of insuring against the cold, thus reducing the product risk. Also, the growing diversity of apricot cultivation in the region also creates an opportunity for export.

Threats in the apricot sector of the region discussed in the study were the presence of climate change, the occurrence of frost in specific periods, the reduction of the quality and price of the diseases and pests of apricots, the difficulty in finding workers in the region, the lack of production planning and the price instabilities.

Demirtaş and Gül (2003) determined that more than 70% of the farmers in this region were exposed to frost damages in the spring. In the spring, especially in the flowering period of apricot cultivation frost events every year more or less affects this cultivation. Among the measures that can be taken to protect against the spring frosts, besides burning the different materials, the breeding of the varieties resistant to frosts is also essential (Gül and Demirtaş, 1998).

Conclusion

An essential part of the earlier apricots produced in the Mut district is evaluated in domestic markets. It is mostly consumed as fresh. In the region, the food industry did not develop.

Farmers in the region sell apricots most to brokers. Apricot price is a problem in years when the harvest is high.

Apricots are classified according to their size and quality and are offered for sale. In the market, medium size apricots, which are primarily difficult to sell, present to market firstly.

The hardness of climatic conditions in the region, weakness of exports, insufficient fruit attitude, lack of marketing opportunities, fluctuations in apricot prices were identified as essential problems.

There is no organisation in the area of production and marketing. In the years of production, the product price has increased, and in the case of production surplus in the next year, the product price decreases considerably, and this leads to significant price instabilities over the years. Therefore, enterprises will take a step towards price stability with the establishment of cooperatives/producer organisation for the marketing of apricots.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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