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ECONOMICS OF *ROSA DAMASCENA* IN ISPARTA, TURKEY

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Abstract

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Isparta province of Turkey is one of the two economically important growing centres of *Rosa damascena* in the world as the climatic needs permits economical production only in certain areas. *Rosa damascena* is also known as Isparta rose" because experimental studies for economical production elsewhere for oil rose have not produced desired quality and productivity.

This study was conducted through interviews with Cooperatives Union for Agricultural Sales of Rose Oil and Oily Seeds (GULBIRLIK) staff and producers as the main stakeholders, and academics and agricultural experts as they know the area and subject in Isparta in 2011. Results obtained from the study show that the most important challenge of the sector is providing a sustainable production in quantity and quality in parallel with market demand. Production and marketing problems at internal and external markets come from organisational problems in processing, lack of farmers' interest in investment and establishing recording systems to keep data in production and processing. Other problems in the sector are regarding diversification, introduction/promotion and inefficient use of rose products; and problems regarding lack of advanced technologies, no support from state in rose productions and training problems of producers. It was observed that GULBIRLIK has not fulfilled most of the primary and support activities of the value chain and their activities have not been targeted to farmers anymore. It is because there are already surplus in the market, and they do not have problem to find row material. Rose oil industry has oligopolistic structure controlled by mainly GULBIRLIK and a few private companies. This is why "cost leadership" and/or "differentiation" which are main concerns of a value chain analysis for a competitive advantage are not paid enough attention by GULBIRLIK. However, it is thought that it has to change in the near future because young people in the rural areas are not seem so interested in rose plantation under the current conditions and it will decrease the production if they are not encouraged. According to the results of farm analysis, 72.62 per cent of total cost is variable cost and the rest (27.38 per cent) is fix cost. Among the variable costs, maintenance accounts for 53.17 per cent and harvesting accounts for 46.82 per cent. Profitability rate was calculated 1.21 according to the same analysis.

There is a big difference between rose flower price and its products' prices. Producers are not involved in rose oil business and this is why they cannot benefit from the value added. They are traditionally producing rose but do not deal with it as a real business. Who benefits from the value added created in the supply chain is rose oil industry and its buyers (perfume and cosmetic industry in abroad).

Key words: rosa, value chain analysis, Isparta, *Rosa damascena*

Introduction

Isparta and Isparta Rose (*Rosa damascena* Mill.)

Isparta is located in the Lake Region of Turkey (West Mediterranean Region) (Figure 1). Its surface area is 8 933 km² and height above sea level is 1 050 m. Isparta has 407 463 habitants and the density is 45 person/ km² according to the census in 2008. While 65 per cent of the total population live in the urban areas of Isparta 35 per cent of its population is living in the rural areas (Anonymous, 2010).

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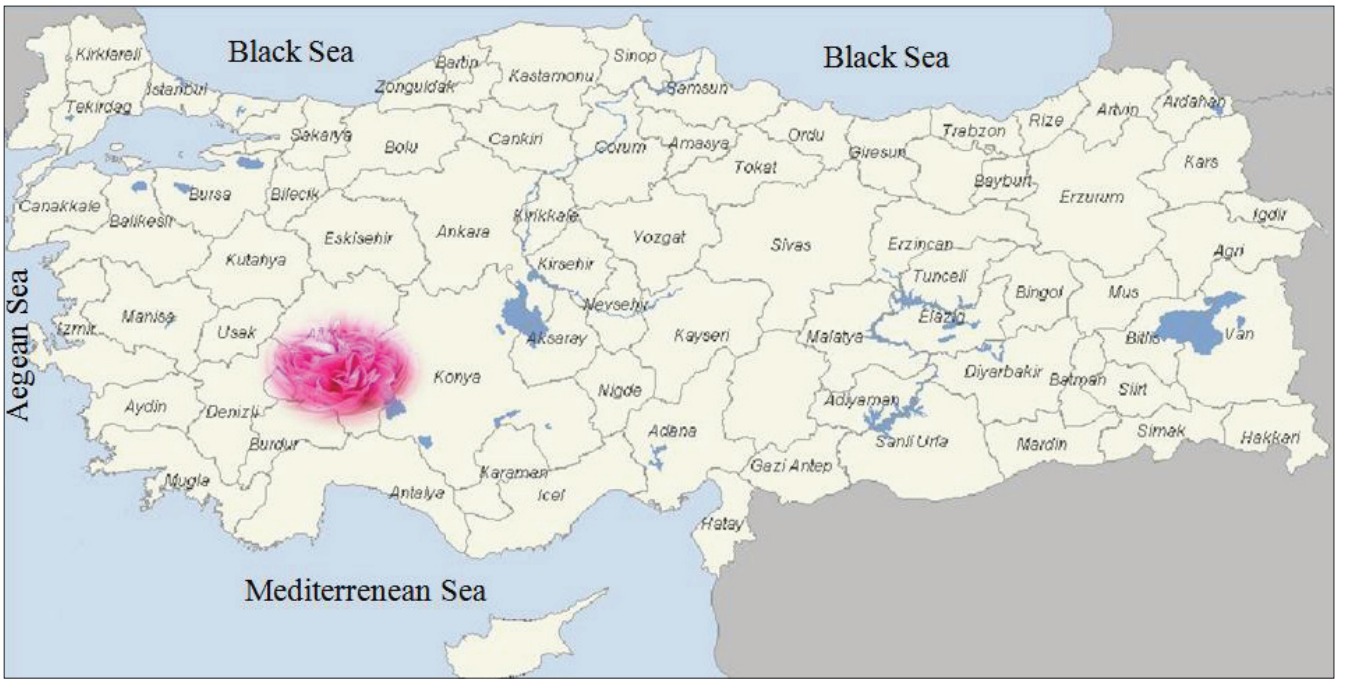

Fig. 1. Isparta Rose (*Rosa damascena*) and Isparta in Turkey

Rose and rose oil have been historically used in the Anatolian territory all along. However, cultural accumulation regarding rose and rose oil in Isparta developed different from general development in Anatolia. Rose cultivation was improved in Anatolia through the state incentives and encouragement of Ottomans while it arose as an individual enterprise and independent from the 'state rose policy' in Isparta. The rose story in Isparta begun with the individual interest of Ismail Efendi in 1888 and brought an entrepreneurship model along with itself (Altintas, 2010), as a good example of entrepreneurship.

Rose oil (*Rosa damascena* Mill.) which is known as Pink Rose Oil, Rose Oil or Damascus Rose beside the "Isparta rose" is one of the important agricultural products for Isparta. The Isparta rose is cultivated to obtain rose oil, which is the main raw material of perfume industry. The most important world rose oil producers are Bulgaria and Turkey. Rose oil is produced in Isparta in Turkey and Kazanlak region in Bulgaria. Both "Turkish Oil Rose" and "Bulgarian Oil Rose" are distilled from fresh rose oil flowers.

During the Othman Empire, rose production centre was Kazanlak region in Bulgaria. Later, although experimental studies and incentives for rose production were carried out in different provinces of Anatolia, it failed.

Rose oil distillation could not be achieved at the early beginning of rose cultivation. First rose oil production was done in 1892. The first "industrial" rose oil plant was established in 1935.

"Isparta Rose" cultivation is a process needs a dedicated efforts and patient, especially in terms of flower harvesting. To obtain a good quality in rose oil production roses should gathered between before sunrise and mid-day. Rose oil production is really tough and labour-intensive activity carried out by family farms without a high-income expectation. Although because of all these challenges, rose oil production still exists because it is a traditional local product and a part of cultural heritage, and provides a certain income to its producers.

80 per cent of Turkey's rose oil is produced in Isparta (Table 1, Figure 2) and the rest comes from the neighbourhood of Isparta (Afyon, Denizli and Burdur). Roughly 10 000 families deal with rose oil production and 8 700 families out of 10 000 live in Isparta (Anonymous, 2012). Isparta produces 60 per cent of the world rose oil. Turkey's volatile oil export accounts for USD

21 million while rose oil export accounts for USD 11.73 million in 2009. Main rose oil importers from Turkey are France, USA, Germany, Japan, Switzerland, Belgium, England and Saudi Arabia (Altintas, 2010).

"Isparta rose" has been registered with the same name since 2006 through a geographic indication given by Turkish Patent Institute after the application of GULAR (Rose and Rose Products Research and Implementation Centre of Suleyman Demirel University in Isparta).

The products obtained from Isparta Rose are used in food, cosmetics, beauty, aromatherapy and beverage sector while it is historical and traditional strategic plant can be produced in only certain areas. However, it was not known very well in the other region than its production area. Recently most of the rose and rose oil's producers has become conscious, their technology has been improved and the market for their production has been diversified during the years and their importance has still been increased for Isparta. The town had a success to become a brand through rose production. However, rose producers are not benefiting from all these developments because they are still not strong enough to bargain in the market and involved in price decision making. In the value chain of the rose oil, the producers have still been at the first stage (rose production) which means farmers can not get the high value added from rose oil products.

As producers are not involved in rose oil business, they can not benefit from the main value added. They are traditionally producing rose but do not deal with its products business where the value added comes from. Who makes use of the benefit come from the value added is rose oil industry and its buyers (perfume and cosmetic industry in abroad). Rose blossom was used

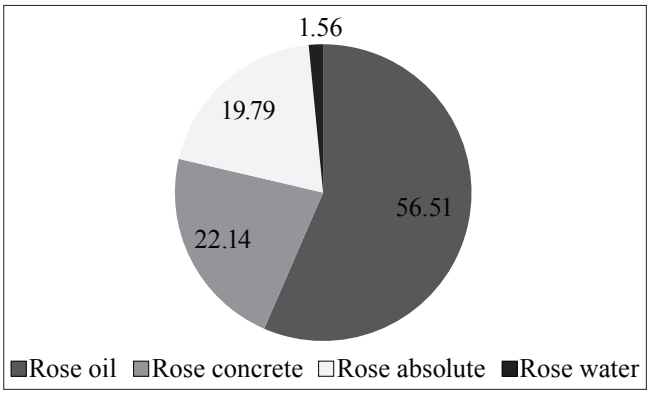

Fig. 2. Production of average annual rose products in total rose production (%), calculated from Table 1

Table 2
Rose oil and concrete exports from Turkey

Year	Rose oil, kg	Value, $ (rose oil)	Concrete, kg
2004	1 100	9 210 000	5 600
2005	1 200	8 098 000	6 000
2006	1 450	8 339 000	6 500
2007	1 100	9 971 000	7 000
2008	1 300	12 834 000	9 000
2009	1 200	11 730 000	7 000
2010	1 000	10 626 000	5 000

Table 1
Production of Rose oil and its products in Isparta

Year	Production area, ha	Rose production, tonnes	Yield, kg/ha	Rose water, tonnes	Rose oil production, tonnes	Concrete production, tonnes
2001	1 591	5 811	3 652	35	1.18	3.38
2002	1 563	5 827	3 728	99	1.19	3.18
2003	1 563	6 073	3 885	99	1.19	3.18
2004	1 591	7 540	4 739	100	1.19	3.24
2005	1 894	9 972	5 266	156	1.25	5.15
2006	1 903	10 564	5 553	58	2.32	9.30
2007	1 905	7 085	3 718	131	1.16	4.37
2008	1 855	8 420	4 539	140	1.25	3.80
2009	1 855	8 510	4 588	259	1.31	8.05
2010	1 600	6 000	3 750	100	1.00	5.00

Source: Union of Agricultural Sales Cooperatives for Roses, Rose Oil and Oil Seeds (GULBIRLIK)

mostly to produce rose oil (54.77 %) and later for rose concrete (31.69 %) and for rose absolute (Figure 4).

Table 5 below compares cost and values by products. The last column of the Table shows that values (€) per unit (kg) change so much from one product to other. It is 746 €/kg for rose oil, 127 €/kg for rose absolute and 70 €/kg for rose concrete while it is only 0.19 €/kg for rose blossom which main row material of the other three product.

Organisation of Rose Producers and Distribution Channels

The rose producers have cooperatives and their central union of unit cooperatives in Isparta: GULBIRLIK (*Union of Agricultural Sales Cooperatives for Roses, Rose Oil and Oil Seeds*).

GULBIRLIK was founded in 1954 by 9 unit cooperatives. Recently, it has 6 unit cooperatives with 8 000 producer member. However, only 4 000 of the members are active in the union, which means they sell their rose production. The only service providing to the producers by the GULBIRLIK is buying their production under the limited amount of thequota determined by previous year's individual member's selling to the Union.

GULBIRLIK has four rose oil production facilities and two rose concrete facilities in Isparta. These facilities allow the GULBIRLIK process 300 tonnes fresh blossoms per day and produce rose oil and concrete. Although the GULBIRLIK had produced many rose products in Turkey in its own production units (Rosense and Sweet Rose) since 2005, almost all rose oil has been exported. The Union is the world's largest producer and exporter of rose oil. Rose oil is used in perfume and cosmetic sector. Considering the world market demand for rose oil the Union has involved in organic production in certain areas since 2010. For instance, in Senir town of Isparta, Sebat Roseoil and Volatile Oil Company is cultivating organic roses in 10 hectares. Sebat

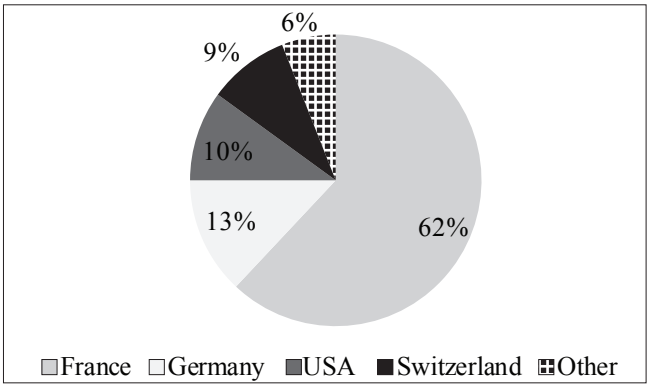

Fig. 3. Rose oil export by countries (2009)

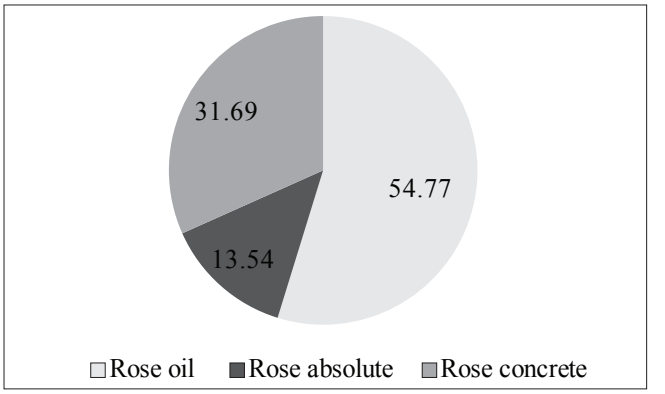

Fig. 4. Distribution of rose blossom in processing of its products (2009)

Table 3
***Rosa damascene* and its products in 2009 in Isparta**

	Production, kg	Price, euro/kg	Total, euro
Rose blossom	8 510 000	0 90	7 659 000
Rose oil	1 310	4 694	6 149 140
Rose absolute	1 899	1 300	2 468 700
Rose concrete	8 050	583	4 693 150
Rose water	100 000	3	300 000

Table 4
Production cost of rose blossom's products (2009)

Costs item	Rose oil	Rose absolute	Rose concrete
Fuel oil	473 222.48	125 438 .53	329 774 .66
Water	25 238.53	4 703 .95	7 759 .40
Electricity	105 160.55	20 906 .43	51 729 .36
Transport-ation	126 192.66	31 359 .63	77 594 .04
Labor	315 481.65	78 399 .08	193 985 .09
Rose blossom	4 126 500.00	1 025 460 .00	2 535 750 .00
Hegzan	-	940 788 .98	931 128 .44
Total	5 171 795.87	2 227 056.60	4 127 720.99

Table 5
Production costs and values by products (2009)

Products	Production, kg	Production Value, €	Production Cost, €	Net value, €	Value, €/kg
Rose blossom	8 510 000	7 659 000	6 011 651.38	1 647 348.62	0.19
Rose oil	1 310	6 149 140	5 171 795.87	977 344.13	746.06
Rose concrete	8 050	4 693 150	4 127 720.99	565 429.01	70.24
Rose absolute	1 899	2 468 700	2 227 056.60	241 643.40	127.25

Gul has obtained ECOCERTSA certificate, and export its rose products, about 15 kg of rose oil, 1 250 kg of rose concrete and 750 kg of rose absolute to Germany. It also exports 10 tonnes of rose water to France.

Main distribution channel and marketing mechanism of rose oil and its products is illustrated in Figure 4 and share of GULBIRLIK is given in Table 6 below.

Material and Methods

The study material collection conducted through interviews with GULBIRLIK stuffs and farmers as the main stakeholders, and academics and agricultural experts as they know the area and subject beside the secondary data. Three analyses were implemented in the study: i) basic model of Porter's Value Chain for GULBIRLIK; ii) problems tree of rose sector through logical framework approach; iii) economic analysis of a rose farm interviewed.

Findings

Porter's Value Chain Analysis

Observations and opinion on the GULBIRLIK through interviews, farmers meetings and experiences in the area are:

It is the biggest and oldest rose producers' organisation.

It has its own production and processing units.

However, they need to be upgraded and provided with new technologies.

It determines the rose price every year but it is usually during rose harvesting.

It plays a price regulatory role in the market.

However, it does not provide any other service its member to buy a certain amount of their products.

It has two commercial brands (Rosense and Sweet Rose) and its own shops in many provinces in Turkey and in the world.

However, its investment in these brands does not seem rational as they target fast growing and enlargement strategy without considering cost-benefit analysis.

GULBIRLIK was originally born as a producers' organisation but as it is not managed democratically, it is becoming a structure, which does not satisfy producers' requests.

Producers believe that the importance of GULBIRLIK and but they do not believe that it works properly.

Given the active number of the Union is half of the total registered number makes a sense.

Moreover, GULBIRLIK has not accepted new memberships for a decade and decreased its purchase capacity.

Apparently, the Union has not only wrong marketing strategy but also wrong decision in implementation regarding organic production, while using GAP standards would be enough to satisfy the market requirements on chemical residuals and easier and cheaper to start it for producers.

Table 6
Share of GULBIRLIK purchases in Isparta

Year	Rose production, tonnes	Purchase quantity, tonnes	GULBIRLIK share, %
2003	6 073	2 009	33.08
2004	7 540	1 992	26.42
2005	9 972	2 848	28.56
2006	10 564	2 667	25.25
2007	7 085	2 671	37.70
2008	8 420	2 712	32.21
2009	8 510	1 934	22.73
2010	6 000	1 257	20.95

Source: Anonymous 2011.

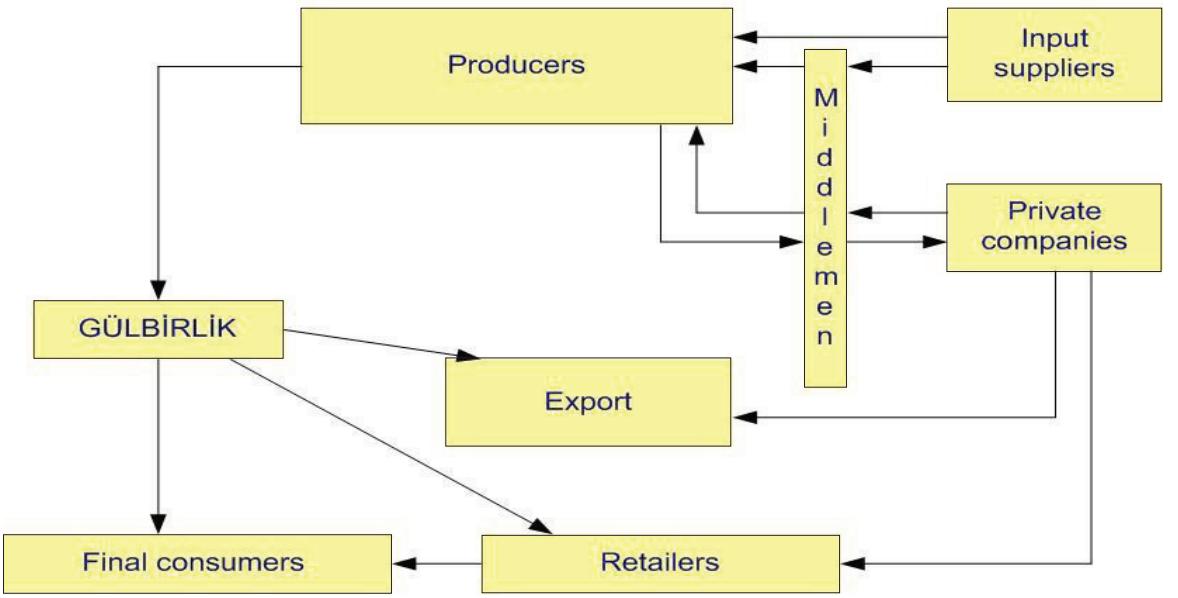

Fig. 5. Distribution channels of rose oil and its products

Value chain analysis conducted for GULBIRLIK has been shown in the Table 7. It was observed that GULBIRLIK has not fulfilled most of the primary and support activities of the value chain and their activities have not been targeted to farmers anymore. It is because there are already surplus in the market and they do not have problem to find row material. Rose oil industry has oligopolistic structure controlled by mainly GULBIRLIK and a few private companies. This is why "cost leadership" and/or "differentiation" which are main concerns of a value chain analysis for a competitive advantage are not paid enough attention by GULBIRLIK. However, it is thought that it has to be change in the near future because young people in the rural areas are not seem so interested in rose plantation under the current conditions and it will decrease the production if they are not encouraged.

Rose oil production does not require any specific input. This is why there are no specialised input providers for rose market. Producers buy their inputs (fertilizers and pesticides) from ordinary agricultural input suppliers or as in kind credits from Agricultural Credit Cooperatives. Most of the producers prefer to sell their rose production to the private rose oil companies as those companies provide producers with advance pay before production session through middlemen and producers can buy their inputs before production session. There is no written contract or agreement between companies and producers. However, middlemen are between them and they keep trade relationships in a long term based on trust and traditional gentleman agreement.

There are 15 rose oil factories owned by GULBIRLIK and private companies in Isparta, and 5 of them are big scale facilities. There are many purchase point from all companies close to production centres and it is important to receive roses before midday in terms of quality.

Rose oil and concrete prices are determined by GULBIRLIK and private sector takes it as a minimum price level. The main factor in price establishment is rose oil export price. Unit (kg) prices for each product in 2010 are following: € 0.90 for rose blossom; € 3 for rose water; € 548 for concrete; € 1300 for absolute; € 6100 for rose oil.

As it may seem there is huge difference between rose flower price and its products' prices. Producers are not involved in rose oil business and this is why they cannot benefit from the value added.

Table 7
Porter's Value Chain for GULBIRLIK

SUPPORT ACTIVITIES				
INFRASTRUCTURE: It is characterised very conventional and "primitive" management infrastructure. There are 4 delegates elected by 6 unit cooperatives. According to the farmers interviewed, they are coming from a few rich and powerful families of the town. There are no proper structure divided into quality management, planning, finance, administration and RD.				
HUMAN RESEARCH DEVELOPMENT: Slowly and recently starting to aiming at developing human capacities and completing their real needs of human resources.				
TECHNOLOGY DEVELOPMENT: There is RD unit and recent upgrading in technology.				
PROCUREMENT: They buy rose blossoms from their members from May to August through procurement points in the field.				
PRIMARY ACTIVITIES				
INBOUND LOGISTIC	OPERATIONS	OUTBOUND LOGISTIC	MARKETING	SERVICES
Receiving rose blossom: GÜLBİRLİK buy rose flowers at many purchase points located in the several villages from May to August. Flowers are bought on a daily based from at 5:00 to 12:00 a.m. Roses have to be processed in the same day. Storage: As it is bought and processed in the same day, there is no need to long time storing. However, GÜLBİRLİK has storage facilities. Inventory: Inventory system has not been established yet. GÜLBİRLİK has no available regular data collection system, either. This makes "traceability" impossible.	GÜLBİRLİK has 4 rose oil and 2 concrete facilities, 300 tonnes of daily capacity. Blossoms are processed to rose oil, concrete and rose water.	About 99% of rose oil and concrete are exported mainly to France, Germany, and USA. 1% of the production is used in their own cosmetic production (Rosense) beside rose water.	GÜLBİRLİK, as the biggest producer of few companies has not aware of the importance of marketing services and functions. So far the only feedback from the market they have considered is that regarding "chemical residuals. They had to considered because it came from one of the biggest industry demands rose oil (Germany). This is why they have initiated "organic rose production"	Isparta rose has been registered with a Geographic Indication by Turkish Patent Institute since 2006 but it is not practically available yet. Rosense has ISO 9001:2000 and ISO 22000:2005 certifications.

Problem tree in the rose sector

Problems of sector determined through sector stakeholders' consultations are presented in Figure 6. As shown at the figure, problems of the sector can be classified at three levels by causation. According to hierarchical ordering, at the bottom of tree, there are diversification, introduction/promotion and inefficient use of rose products; and problems regarding lack of advanced technologies, no support from state in rose productions and training problems of producers. Stakeholders think that those cause organisational problems in processing, lack of farmers' interest in investment and establishing recording systems to keep data in production and processing. Because of these, production and marketing problems at internal and external markets occur and at the top of the tree, one can see that the most important challenge of the sector is providing a sustainable production in quantity and quality in parallel with market demand.

Economic analysis of a rose farm

To obtain more specific data and conduct an economic analysis one of the rose farms was interviewed in depth beside the farmers meetings. The farmer live is Yakaoren village only 20 km away from the centre. He has 0.5 ha rose plantation beside fruit trees and horticulture. He has two sons and recently they are getting more involved in rose cultivation then his father.

He is a member of GULBIRLIK. He is used to sell about half of his production to GULBIRLIK and the

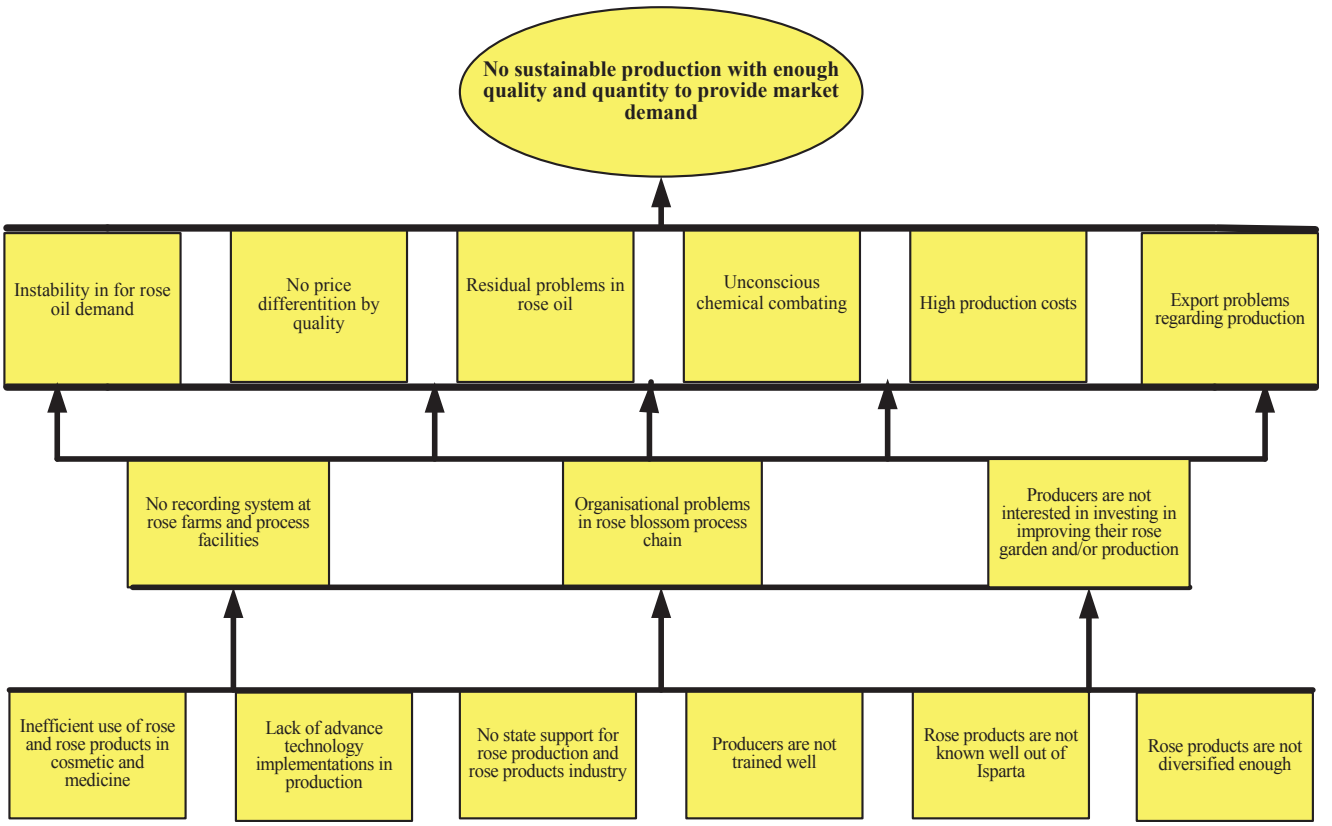

Fig. 6. Problems tree of rose production and rose products industry

rest to the private companies. There is no price difference between GULBIRLIK and private sector. Private sector also accept GULBIRLIK's price. Why he prefers to private companies is because they provide farmers with advance payment without interest 9-10 months before harvesting and farmers pay it back in kind with roses. Why he does not sell of his production to the private sector is because he does not want to lose his membership in case private companies may stop buying. According to him, GULBIRLIK's presence in the market is a kind of guarantee for rose producers but GULBIRLIK does not work properly in favour of its producers and misleading due to the administrative problems and irrational investment. It has been confirmed by some other producers and experts during the study.

In 2010, he collected 2.25 tonnes rose. Private companies and GULBIRLIK have middlemen where work at the purchase points in the village during harvesting period. All producers collect their daily production and bring the purchase point. There is no quality control in conventional production for individual producers because all roses are collected in the same collection pool. For the quality of the rose and following products, the earlier collecting in the morning provides the better quality. The costs item and the total cost of the farmer is given in the Table 8.

Small farmers cannot step forward after rose production and benefit from the added value although they have "so-called" producers union. To obtain 1 kg rose oil approximately 3500 kg rose blossoms and for 1 kg concrete 350 kg rose blossoms are needed.

Conclusions and Recommendations

Isparta has been familiar with *Rosa damascena* cultivation since late 1800s, and rose business had its first attempt of industrialisation through a rose oil factors in

Table 8
Cost of rose production of the farm interviewed

	Costs (TL/decare*)
I. MAINTENANCE	
Pollarding	59.00
Fertilisation	60.00
Ploughing	48.00
Hoe	35.00
Pesticide blitz	66.00
Irrigation**	-
II. HARVESTING	
Collecting blossoms	120.00
Transport	60.00
Circulating capital interest	56.00
Total variable cost(TVC) (TL/decare)	504.00
Total fix cost (TFC) (TL/decare)	190.00
Total production cost (TVC+TFC) (TL/decare)	694.00
Rose yield (kg/decare)	450,00
Production cost (TL/kg)	1.54
Rose price (TL/kg***)	1.87
Gross product value (TL/decare)	841.5
Gross profit (TL/decare)(GPV-TVC)	337.5
Net profit (TL/decare)	147.5
Profitability rate (GPV/TPC)	1.21

** 1 euro = 2.18 TL*
*** Under the rained condition for this producer, however there are irrigated areas in the region, as well.*
****Price of 2010.*

1935. It was followed by foundation of GULBIRLIK in 1958 and the other factories owned by GULBIRLIK and other private sector companies. Isparta still keeps its leading position in rose cultivation and rose oil production. GULBIRLIK purchases 20-30 percent of total annual production of Isparta. GULBIRLIK together with private companies supplies 70 per cent of the world's rose oil demand. The price determined by GULBIRLIK and GULBIRLIK keeps its regulatory role in the market. However, it was observed that most of the producers sell a part of their production just to maintain their membership and prefer private companies thanks to their advance pay. Recently GULBIRLIK does not provide any service or input for producers and does not accept any new members.

It was observed that GULBIRLIK has not fulfilled most of the primary and support activities of the value chain and their activities have not been targeted to farmers anymore. It is because there are already surplus in the market and they do not have problem to find row material. Rose oil industry has oligopolistic structure controlled by mainly GULBIRLIK and a few private companies. This is why "cost leadership" and/or "differentiation" which are main concerns of a value chain analysis for a competitive advantage are not paid enough attention by GULBIRLIK. However, it is thought that it has to be change in the near future because young people in the rural areas are not seem so interested in rose plantation under the current conditions and it will decrease the production if they are not encouraged.

There is a big difference between rose flower price and its products' prices and their profitability. Value chain analysis also shows that values (€) per unit (kg) change so much from one product to other. It is 746 €/kg for rose oil, 127 €/kg for rose absolute and 70 €/kg for rose concrete while it is only 0.19 €/kg for rose blossom which main row material of the other three product. Industrial products are much more valuable and profitable than rose blossom farming.

Total benefit produced by processing rose blossom to its products is 977 344 euro for rose oil, 565 429 euro for rose concrete and 977 344 for rose absolute and total added value created by these three products is 1 784 417 in 2009.

Producers are not involved in rose oil business and this is why they cannot benefit from the value added. They are traditionally producing rose but do not deal with it as a real business. Who benefits from benefit is rose oil industry and its buyers (perfume and cosmetic industry in abroad).

Producers' involvement in rose oil factories would be a good option to increase their benefit from the sector and take a higher share from the total value added. GULBIRLIK as a producer's organisation cannot be ignored in the market although recently it does not work efficiently and properly. It is thought that there are administrative problems in GULBIRLIK organisation and lack of producers' participation in decision-making process and implementation.

It is recommended that farmers should be involved in decision making in GULBIRLIK and try to organise themselves to integrate with in rose oil industries. In

fact, the most important thing in the sector is to change the structure of GULBIRLIK as recently it is far from producer organisation. Farmers should feel that it is really their own organisation to improve their conditions and protect their rights in the market. This needs a more democratic structure and again involvement of farmers into decision-making.

As a local product and a part of cultural heritage Isparta rose has already known. However, diversification of its products and using area is not known enough. Its contribution to local economy should be increased through keeping value added in Isparta. This needs to create industry (e.g. cosmetics, aromatherapy) which demand rose oil and the other rose products and export more processed products than raw material. It has been also observed that residual problems are going to be a serious bottleneck in export. To overcome this problem organic farming has been initiated in some areas. However, good agricultural practices also should be considered to meet external market demand.

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