



Shen NGO

Apricot Value Chain in Armenia



Yerevan, 2012

After the collapse of the Soviet Union the apricot industry in Armenia, once a sustainable and strongest Armenian brand, experienced a sharp decline and was on the verge of collapse. The first comprehensive research on the state of the industry was initiated by Shen NGO in 1997 which was the turning point in facilitation of planting apricot orchards that gradually brought to industry revival. Today, after 15 years of active works carried out by local and international NGOs, the planting areas of apricot orchards increased more than 9,500 hectares, which is by 26% more than the respective area before the 1990s. The latest developments in the industry come to prove that Armenian apricot either fresh or processed has high potential to compete in international markets. Today Armenian fresh and processed apricots are sold in the markets of Russia, Georgia and Ukraine, as well as in Western European countries and Singapore. This assessment is the first attempt to identify the visible trends of this promising agricultural field, which would be instrumental for farmers, small businesses and local/international investors.

Shen NGO Board

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Abbreviations

ACDI/VOCA	Agricultural Cooperative Development International and Volunteers in Overseas Cooperative Assistance
AMD	Armenian dram
ARM	Armenia
ASC	Agriculture Support Centre
CARD	Centre for Agribusiness and Rural Development
DAI ASME	Development Alternatives, Inc. Agribusiness Small and Medium-Sized Enterprise
EPER	Entraide Protestante Suisse, Swiss Interchurch Aid
EU	European Union
FAO	Food and Agriculture Organization
FREDA	Fund for Rural Economic Development in Armenia
FSU	Former Soviet Union
GDP	Gross domestic product
IFAD	International Fund for Agricultural Development
LPG	Liquefied petroleum gas
LWP	Local wholesale procurers
MAP	Marketing Assistance Project
MCC	Millennium Challenge Corporation
MCCA	Millennium Challenge Corporation Armenia
MFI	Microfinance institutions
MSME	Micro, small and medium enterprises
NGO	Nongovernmental organization
NKR	Nagorno-Karabakh Republic
NSS	National Statistical Service
RA	Republic of Armenia
RESCAD	Rural Enterprise and Small-Scale Commercial Agriculture Development Project
SME	Small and medium enterprises
UCO	Universal credit organization
USAID	U.S. Agency for International Development
USD	United States Dollar
USDA	United States Department of Agriculture
VC	Value Chain
WB	World Bank
WCC	World Council of Churches
WV	World Vision

1 Executive summary

The goal of this assessment is to identify and analyse activities and inputs of all important actors of apricot Value Chain (VC) in Armenia.

This assessment was carried out to evaluate each identified participant in the chain and describe the processes of production, collection, processing, sales and export of apricots in Armenia. It demonstrates that apricot value chain in Armenia is already established and functioning. However, there are specific weaknesses characteristic of each VC participant that they can and should overcome in order to strengthen the VC to reach self-sustainability. Yet, apricot VC in Armenia is regarded as one having *high seasonality* and *yield instability*. The first factor is conditioned by overreliance on one variety (despite the wide diversity of apricot both early and late ripening varieties grown in Armenia), while the reason for non-stable yield is poor anti-hail and frostbite treatment and prevention practices implemented in apricot orchards. These factors do not allow Armenian exporters to meet the demand in international, particularly Russian, markets in order to maintain their competitive edge against the main apricot exporting countries.

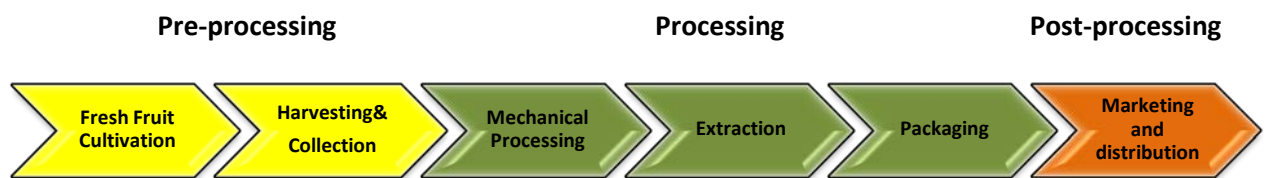
This assessment report provides a number of recommendations based on relevant conclusions that will support enhancement and sustainable development of apricot value chain in Armenia.

2 Overview of the stages of the fresh fruit value chain in Armenia

In today's increasingly globalizing world as the trade between countries increases, promotion of Value Chain concept becomes more important. Today agriculture and agriproduce processing sectors undergo the transformation of rural agricultural-based economies into more urban industrial and service-based economies. This implies that the changes occur in flows of resources, goods, services, knowledge and information between rural and urban areas. This is also true about the international agricproduce trade.

In this sense agricultural value chains have developed rural-urban linkages to meet these challenges and provide potential benefits for both rural producers and urban consumers. The value chain in agriculture development fosters market and sub-sector analysis, interlinks various actors and activities, promotes the importance of private sector development. These processes and changes are also taking place in Armenia.

In Armenia the three stages of the fresh fruits movement from orchard to final consumer are identified as follows: pre-processing, processing, and post-processing.



The profit generated during the first stage goes to farmers. Main cost drivers at this stage are the cost of saplings, irrigation, fertilizers, pesticides, and labour. The profit after the second and third stages, hence, goes to processors and exporters. The main cost drivers at the second stage incurs out of machinery, storages, packaging lines and labour costs, and the costs incurred at the final stage are the costs of distribution and marketing.

3 Apricot value chain in Armenia

3.1 Apricot production

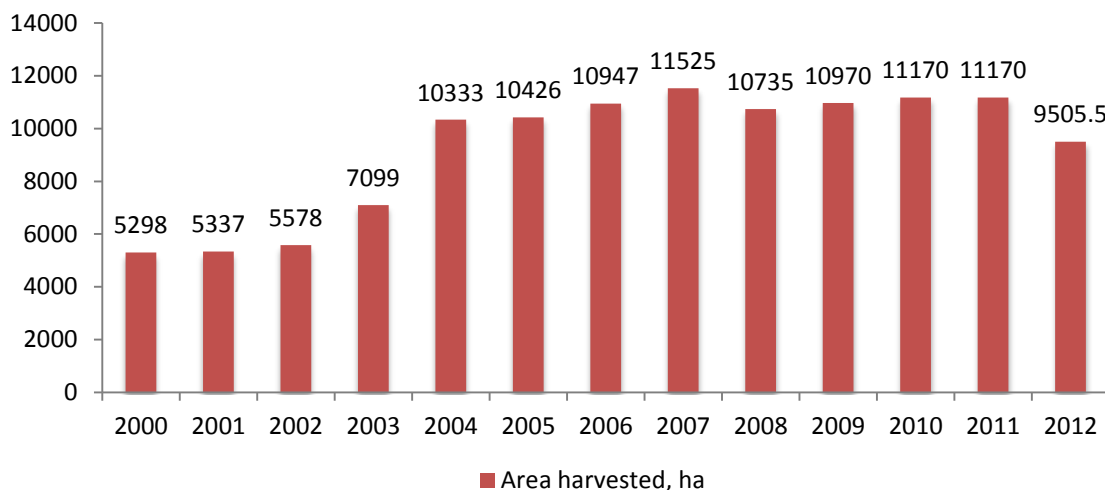
Apricot in Armenia has been cultivated since ancient times. It was long believed that apricot originated here. Its scientific name – *Prunus Armeniaca* (Armenian plum) derives from that assumption. An archaeological excavation in Garni in Armenia found apricot seeds in an Eneolithic-era site. However, Vavilov Centre of Origin locates the origin of apricot's domestication in Manchuria, and other sources say that apricot was first cultivated in India in about 3000 BC. Alexander the Great first introduced apricot to Greece, and Roman General Lucullus (106–57 B.C.) also exported some trees –cherry, white heart cherry, and apricot – from Armenia to Europe. Subsequent sources were often confused about the origin of the species. Loudon (1838) believed it had a wide native range including Armenia, the Caucasus, the Himalaya, China, and Japan¹.

According to latest classification apricots are divided into the following groups – Armenian, North Caucasian, Middle Asian, Chinese and European. In Armenia about 150 varieties of apricot are known; however, only about 50 varieties are being actively cultivated. The most demanded varieties of apricot are Yerevani (Shalakh), Sateni and Spitak. The apricot ripens in Armenia in late May and the harvesting ends in early September.



Accurate statistics are not readily available in Armenia, so all figures are the incorporation of several sources of information as well as findings of direct interviews with value chain participants.

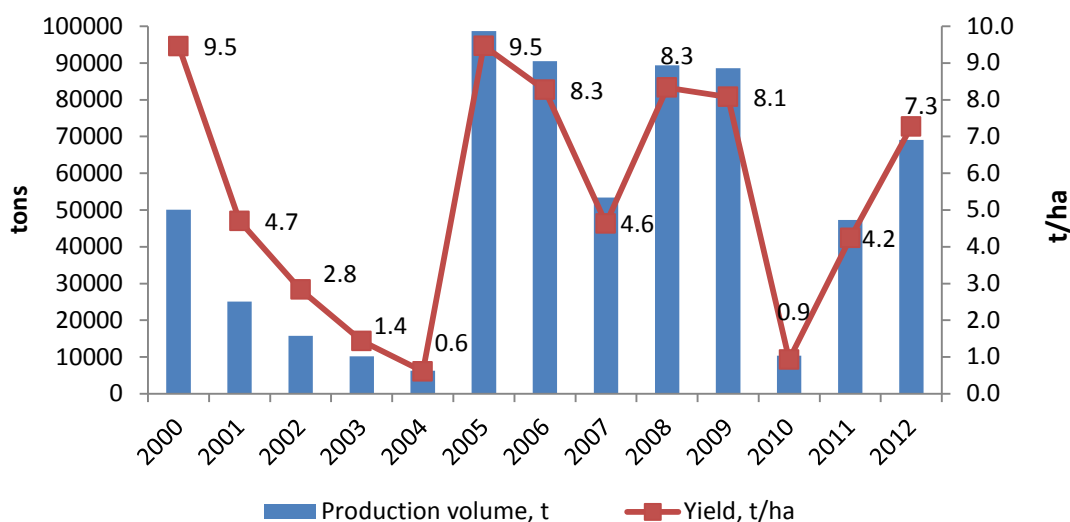
Figure 1: Areas under cultivation in 2000-2012 in Armenia



Source: Ministry of Agriculture of RA

¹www.en.wikipedia.org/wiki/Apricot

Figure 2: Apricot production volumes and yield per hectare in 2000-2012 in Armenia



Source: Ministry of Agriculture of RA

After the collapse of the Soviet Union according to estimations Armenia had about 50.2 ths ha under perennial crops of which 15% were apricot orchards. The industrial plantations were mainly located in Ararat, Armavir, Ashtarak, Echmiadzin, Abovyan, Nairi, Yeghegnadzor and Meghri regions².

Before the collapse of the USSR it was planned to enlarge apricot tree orchards up to 12,000 ha. In 1993 after the privatization of former agricultural lands of kolkhozes and sovkhoses the rural population of Armenia was left without necessary resources and equipment. In the early 1990's during the energy crisis the orchards were not only mistreated as the demand for the produce faced sharp decline both in domestic and external markets, but were also cut and used as firewood. Furthermore, as a substitute to former apricot orchards farmers started to cultivate wheat on the same fertile lands to earn their daily bread for their families. More than 3 thousand ha of apricot orchards have been destroyed during the 1990s. The whole decade agriculture was neglected in Armenia and was not considered as a profit making sector in terms of agricultural profitability and GDP growth.

The decline in agriculture reached its minimum in 1998, when according to National Statistical Service (NSS) the perennial crops area dropped down as low as 22.5 ths ha, less than a half of the area under cultivation during Soviet times. In 1997 Shen NGO initiated a large-scale research on the condition of apricot orchards³. The findings of that research were appealing: almost half of apricot orchards were destroyed. Out of 7.5 ths ha, only about 4 thousand survived. The production and export of apricots decreased to its minimum. Recognizing the value and lost potential of apricot industry for the Armenian economy Shen NGO pioneered in planting new community orchards which were meant to facilitate planting of new privately owned apricot orchards in rural communities of Armenia.

Starting from 1998 Shen NGO, with support of WCC ART Foundation, EPER (Switzerland), EED (Germany), ICCO (the Netherlands) and Shen-France planted the first 35 ha of a new community orchard in Lusakn village, Aragatsotn Marz. Great efforts have been invested for revival of apricot production in Armenia. More than 30 solar dryers (later handed over to communities) for dried apricot production were built in different regions of Armenia. International foundations also invested in general uplift of the sector particularly supporting farmers to replant and enlarge their existing orchards. The comprehensive support and provision of inputs (free or subsidized) were provided to local farmers. This

²Morikyan S., Brief description of released and widely distributed apricot varieties of Armenian SSR, Yerevan, 1983.

³Harutyunyan S., "Apricot orchards areas, state of their cultivation and expansion prospects in Ararat valley", Shen NGO assessment, Yerevan, 1999

greatly facilitated the planting of new apricot orchards by local farmers and maintaining old orchards and diverse varieties of Armenian apricot.

In the early 2000s in the scope of economic reforms the Government of Armenia declared the development of agriculture as a priority. Several new or re-opened agriproduce processing companies started to function and procure agricultural produce. Village people started to earn income of their produce grown. Since 2000 the orchards and berries shrubs area have been steadily increasing. The Government of RA contributed to the process by subsidizing the planting of perennial crops; farmers had not to pay the land tax for the first 3 years of newly planted orchards, so that the farmers would pay the tax after orchard will become productive. According to data of NSS in 2006 there were about 31.9 thousand ha of fruit-tree plantations in Armenia, 18.3 of which were stone fruit plantations, with the apricot tree representing 9,906 ha or 52.8%⁴. As of 2012 estimations 37.7 thousand ha perennial crops are being cultivated out of which 32.4 ths ha are at bearing stage.

Prior to that, farmers who were cultivating apricot orchards have been doing their works in the orchards in a non-regular and inconsistent manner, thus the yield of the apricot orchards significantly decreased during the 90s as compared to that of Soviet times. Besides lack of knowledge in farm management, those farmers who had specialization in agriculture still were unable to manage their farms properly as it demanded significant investments, which farmers did not possess.

In the mid 2000s when the processing industry started to procure fruits in larger volumes and more fruits were being exported as a consequence of easing the economic blockade executed by Turkey and Azerbaijan, farmers began to manage their orchards more intensively to gain higher yield. Starting from 2005 the yield of the apricots has increased (see Fig. 2). The only reason for productivity fluctuations are unfavourable weather conditions, when the yield of fruits can be vastly damaged by late frosts and hail as it happened for instance in 2010.

With appropriate farming techniques applied the average yield from 1 ha of a full apricot orchard could reach up to 15 t. During the last 10 years an average apricot yield in Armenia comprised about 5.2 t. This indicates that farmers are not managing their orchards properly and yet there is a significant potential to produce three times more apricots from the existing orchards. The generally low average yields suggest that overall orchard management was not very good, not only due to low productive varieties, but also low orchard population with as many as 15-20% of trees missing in an orchard (due to irregular density of an orchard), inadequate pruning, unsatisfactory crop nutrition and pest control. There is undoubtedly an excellent potential for apricot production in Armenia, not only in Ararat Valley but also in other plain areas and foothills. The key to better utilization of this potential is in introduction of more productive, cold tolerant, disease-free and pest resistant varieties, more professional orchard management, including modern cultivating techniques, marketing and processing⁵.

Industry strengths

1. Favourable climate as well as soil and water for apricot cultivation in Armenia.
2. Well known brand in the largest export country – Russia.
3. Several indigenous varieties – in particular Yerevani, Sateni, Nakhijevani.
4. Relatively low labour costs.
5. Apricots is zero-discharge fruit in Armenia, it is consumed not only fresh, but also dried, processed, being used in cosmetics and pharmaceutical production.
6. Organic apricots production and export established since 2001.
7. Potential to produce 90,000 t of fresh and processed apricots for export.

3.1.1 Nurseries

There are several private small nurseries producing rootstocks of apricot in Kotayk, Armavir, Ararat, Aragatsohn, Syunik, Vayots Dzor, Gegharkunik, Lori Marzes of Armenia. Owners of those nurseries run their businesses in a rather organized manner than it was before the 2000s, using new technologies and

⁴ Ibid.

⁵ Armenia: the challenge of reform in the agriculture sector. A World Bank country study. 1995, p.108.

R&D achievements. A wide range of apricot varieties are being produced in those nurseries that enjoy high demand in the market, in particular – Yerevani, Sateni, Spitak, as well as wild apricot saplings that are usually planted in orchards for pollination. Usually owners do not mix varieties and supposedly those saplings are virus-free. Some of the nurseries try to import new apricot varieties from Europe. According to expert estimations, currently there is a strong need for brachytic apricot trees. These can be obtained by interbreeding brachytic trees with indigenous Armenian varieties of apricots. The advantage of these varieties is that they can be planted closer to each other than traditional varieties of apricot trees and such orchard may still be as profitable as those of local traditional varieties. However there is no orchard of brachytic apricot trees in Armenia yet. Some farmers make additions in their existing orchards with brachytic apricot saplings, avoiding planting the whole orchard by new and not tested brachytic trees. Generally nurseries offer saplings for both geographical zones where the apricots are grown – flat lands and foothills.

Besides the brachytic trees it is necessary to diversify the existing varieties of apricots in saplings market. Yet there is an evident need for varieties with different ripening period to alleviate the tension of short harvest period, as well as to reduce harvest losses. Nowadays there appears to be a lack of varieties that are suitable for early picking and ripening off the plant.

Before the 1990s there were many nurseries that tried to enforce quality standards for their produce⁶. Today all nurseries are privately owned by small backyard businesses. The owners usually sell up to 80% of their saplings. The new nursery owner would face difficulties in getting confidence among his/her prospects.

Today the largest Armenian nursery “Noratunk” in Arinj village of Kotayk Marz is perhaps the only producer of brachytic apricot trees. “Noratunk” has a capacity to produce more than 50,000 brachytic apricot saplings annually. However during personal interview with the nursery owner H. Hovhannisyan it was found out that farmers tend to plant more local (indigenous) traditional varieties than new and not tested ones. This takes place because farmers, who have been cultivating traditional varieties of apricots from generation to generation, are mostly unaware of modern varieties; however they recognize the need to diversify current varieties of apricot trees to prolong the harvesting period.

The main problems identified with nurseries are:

- **lack of cooperation between nurseries:** results in unjustified price fluctuations in the local market;
- **weak state quarantine control:** saplings from North-East Armenia and NKR mostly infested by phyloxera are sold in other parts of Armenia;
- **poor variety-identification by nursery owners:** though in general nursery owners do not mix the varieties of trees, in some cases they can mix the subspecies;
- **limited number of transportable varieties:** there is only one variety, Yerevani, that withstands export and does not lose its flavour and taste qualities;
- **poor production planning:** absence of contractual relationship between nursery owners and apricot producers. They don't get the prepayments or orders before the planting season starts.

3.1.2 Crop husbandry

Apricots are mostly grown in Armavir, Ararat, Aragatsotn and Kotayk Marzes of Armenia. As of 2010 about 88% of apricot orchards are located in 4 Marzes of Armenia – Kotayk, Armavir, Ararat and Aragatsotn. According to National Statistical Service the planting area of fruit and berries plantations in these 4 Marzes is 25,006 ha, of which more than 30% are apricot orchards⁷.

⁶AvetisyanS. “Agriculture and processing industry in Armenia”, Yerevan, 2010.

⁷Harutyunyan S., “Apricot orchards areas, state of their cultivation and expansion prospects in Ararat valley”, Shen NGO assessment, Yerevan, 1999.

Table 1: Distribution of apricot orchards by Marzes

Marzes	Share in the total area, %	Area, ha
Armavir	38	3,764
Ararat	31.2	3,092
Aragatsotn	10.7	1,061
Kotayk	8.5	841
VayotsDzor	5.3	520
Yerevan	4.7	469
Other Marzes	1.6	148

Source: Ministry of Agriculture of RA

The prevalence in cultivation of apricots over other stone fruits in the mentioned 4 Marzes speaks for recognition by farmers of higher liquidity level of the apricots against the other fruits.

After the land privatization on average each farmer owns about 1.2 ha of orchard area. In general farmers make the additions of new saplings in their orchards rather than try to enlarge or establish new orchards. But if they operate collaboratively they could reduce cost of planting new orchards. However as far as most apricot orchards are owned by small farmers who are still reluctant to join into cooperatives they lose the opportunity to optimise the incurred expenses.

The typical planting distance between the trees in orchards is 5-8m, the leafage extends up to 5-7m. That shape of trees creates certain difficulties during cultivation and harvesting. It also makes it difficult to spray and prune a tree. With such extended leafage an uneven shading of fruits that do not ripe evenly leaves less opportunity for selective harvesting, thus additional losses take place.

Although a number of apricot tree varieties grow in Armenia, two varieties - Yerevani and Sateni, are mostly cultivated. The share of Yerevani in Ararat and Armavir Marzes is about 85% of all orchards. The main Ararat Valley variety – Yerevani, is one of the most important and truly indigenous Armenian varieties, and is recognised as the symbol of Armenia. Yerevani, also known among local population as Shalakh - named after its distinctive pineapple aroma, is famous for its balance of sugar and tartness, and has a juicy and creamy texture. It is well-adapted to the country's arid climate and has almost constant high yields. Subspecies of Yerevani variety were derived to withstand the transportation and increase the shelf life of the product. They have stable high yield. Today the apricots in grocery stores labelled "from Armenia", particularly in international markets, are usually *not* the authentic Yerevani apricots. In Armenia, production of Yerevani apricot is limited to mostly domestic consumption, with each family in the Ararat Valley owning a few trees for personal use. Instead, the international market is being flooded with hybrid apricots being marketed under the Yerevani name. Thankfully, international development organisations and local producers are recognizing the value of such plants, and acting accordingly to protect the species. By continuing to cultivate this local apricot variety, Armenian farmers are not only preserving their local culture, but also protecting the environment⁸.

As per dried fruit Sateni is the most suitable variety and its plantations cover about 500 ha. This variety has high productivity as well. In general the fruits are large, have tasty appearance and the best flavour qualities. However, as it was mentioned by dried food producers, the current production of Sateni is still not enough for satisfying the demand for dried apricots in the market both local and international. Farmers who plant new orchards are aware of the fact that 20% of the planted trees should be of other variety. As far as Yerevani is the most popular for fresh consumption and most suitable variety for export, farmers tend to plant only this variety. On the other hand there are very rare cases when farmers establish orchards consisted of only Sateni variety. On the external borders of their orchard they tend to plant wild apricots sapling for pollination as the saplings of wild apricots are lower in price, almost half of Sateni. Thus the producers of dried apricots experience difficulties at procurement of Sateni variety in the necessary volumes.

⁸<http://blogs.worldwatch.org/nourishingtheplanet/shalakh-apricot-protecting-a-species%E2%80%99-diversity-and-a-local-culture/>

The orchards are mostly located at 700-1000m above sea level and the florescence of the trees often coincides with the late frosts and rains, which brings to a loss of about 50% of total potential harvest. Nevertheless there are available several means to fight against late frosts and rains. Most popular method in Armenia of fighting against this natural disaster is when farmers fumigate trees. Although this method is applied countrywide, yet it is not very efficient. A modern method of fighting against late frosts is the employment of modern agrotechnical devices such as “Frostbusters” working on LPG.



Frostbuster

Another factor limiting high yield of apricots is the late spring hails that can damage or tear down young fruits from the trees. The preventive method against hails is the usage of anti-hail systems. Today Barva⁹, a local R&D company manufacturing various hi-tech innovative facilities for different applications (agriculture, energy, utilities, etc.), offers “Zenith” anti-hail system. It is a shock wave generator used to prevent the formation of hailstones in the clouds and is operating on liquid gas. It is estimated that it has 70-80% effectiveness in transformation of hailstones into rain. Small anti-hail Zenith station can cover up to 20 ha and bigger stations – 80 ha.



Anti-hail system

Several farmers can join and buy one anti-hail system which will in a cost-effective way cover the total area of their orchards. During Soviet times the Government was using canons to suppress hails by shooting special chemicals consisted of very toxic and hazardous heavy metal compounds. Now modern anti-hail suppression systems disrupt the formation of hailstones with nature friendly sound waves.

Besides, as the apricots ripen at the same time, shortage of labour takes place, therefore the loss of the yield makes up about another 20-25% of the total yield. Thus the need for variety diversification becomes obvious. Having various varieties allow farmers to supply fresh fruits to the market for a longer period of time. Today farmers supply market with fresh apricots starting from late May, June, July, very small quantities in August and September. In late May apricots ripe in southern part of Armenia (Meghri region), and in August-September, when in Ararat valley the harvesting is over, apricots ripe in Gegharkunik and Lori Marzes¹⁰.

⁹ <http://www.barva.am/>

¹⁰ Avetisyan S., “Agriculture and processing industry in Armenia”, Yerevan, 2010.

Table 2: Apricot ripening period depending on orchard area altitude¹¹

Variety	Altitude above sea level			
	<700 m	700-1000 m	1000-1500 m	1500-1800 m
Nakhijevani red	3 rd decade of May	1-2 nd decade of June	2-3 rd decade of June	1 st decade of August
Nakhijevani yellow	1 st decade of June	1-2 nd decade of June	2-3 rd decade of June	1 st decade of August
Masisi	2 nd decade of June	2-3 rd decade of June	1 st decade of July	2 nd decade of July
Yerevani	2 nd decade of June	2-3 rd decade of June	3 rd decade of June up to 1 st decade of July	2 nd decade of July
Aragatsi	2-3 rd decade of June	1 st decade of July	1-2 nd decade of July	2-3 rd decade of July
Sateni	2-3 rd decade of June	1 st decade of July	1-2 nd decade of July	2-3 rd decade of July
White apricot	2-3 rd decade of June	3 rd decade of June up to 1 st decade of July	1-2 nd decade of July	2-3 rd decade of July
Shoxer	2-3 rd decade of June	3 rd decade of June up to 1 st decade of July	1-2 nd decade of July	2-3 rd decade of July

3.1.3 Quality

For domestic consumption apricots are picked in the stage when the sugar content in the fruit starts to deteriorate quickly even when the appropriate storage conditions are preserved. Thus after picking the apricots should be kept in cool storages or in places of retail sales for a very short period of time (usually not more than 2-3 days). Apricots are suitable for immediate consumption as table fruits and unlike pears or apples they are not suitable for long keeping.

For longer distance exporting apricots should ripen off the plant.

Fruit sorters do not mix different quality apricots with each other. Fruits are packed separately. Usually farmers split the harvest by grades. In 2012 the first grade apricots were being sold for 700-400 AMD/kg; second quality – 250-300 AMD/kg; and third quality 150-200 AMD/kg. Longer shelf-life and hardness are also important factors affecting price. Yerevani is considered to be the best apricot variety that withstands transportation and still does not lose its flavour and nutritious substances. In 2012 in agricultural markets of Yerevan Yerevani apricots were being sold for 300 AMD/kg.



For export

Table 3: Description of apricots' grades

Grade	Characteristics
First	Large fruits, not damaged, firm fresh, mature to withstand transport

¹¹ Ibid.

Second	Small or large well matured fruits
Third	Mostly damaged and too mature fruits used in processing

3.1.4 Production costs

All production costs are given for one hectare of an apricot orchard with the following planting scheme.

Table 4: The planting scheme of apricot orchards in different geographical areas of Armenia

	Geographical Areas					
	Ararat Valley	Foothills and Dzor Marz	Vayots	North-East	Lori	Shirak and Gegharkunik
Planting scheme	8x6 , 7x6	7x6 , 7x5		7x6	7x5	7x5

The production costs below are calculated for existing farms that are supposedly already fenced and irrigated. The production costs calculated for one hectare of apricot orchards are growing until year 10. After that the production costs do not fluctuate and become stable. The negative balance between cost and income is maintained until year 10. After the tenth year the apricot production cost increases for not more than 2% annually. In the meantime, the trend is changing for larger areas. Regardless the size of the orchard fixed costs of production are the same, but the operational costs are decreased on larger areas. The maximum production efficiency can be achieved using 1 set of agricultural machinery on 40 hectares.

Table 5: Apricot production cost breakdown, AMD

Years	1	2-5	6-9	>10
Investment (a)	110,500	179,000	367,000	424,000
Operational costs (b)	209,000	207,000	277,000	220,000
Labour days invested(c)	46	59	90	130
Costs of Labour (d)	184,000	231,220	244,320	256,000
Total Costs (e=a+b+d)	503,500	617,220	888,320	900,000
Yield (kg) (max 15t/ha) (f)	0	156	2,340	8,580
Cum. yield (g)	0	0	2,496	11,076
Gross Income (h)	0	54,600	819,000	3,003,000
Cum. income (i)	0	0	873,600	3,822,000
Investment flow (i-e)	-503,500	-617,220	-14,720	2,922,000
Cost price (AMD/kg) (h/f)	0	350	350	350

3.2 Collection, packaging and transportation

The harvesting period of apricots in Armenia starts in the second half of May. In its early stages of ripening period the harvesting is usually organized by the farmers together with their family members only.

Starting from the second half of June and up to the second half of July, farmers having large orchards hire seasonal labourers. Generally fruit collection is organized by the farmers/farm managers and it lasts for 1-5 days depending on the size of the orchard. The workers' wage is about 5000 AMD/day. One picker collects about 600 kg daily. The sorters earn more – about 6000 AMD/day. They put apricots in wooden boxes or cardboard if it is not intended for export. Usually sorters range the apricots in the boxes as eggs are put in the plastic boxes to decrease the losses during transportation. Exporters provide farmers with their own 12 kg storage capacity wooden boxes and often send their workers to sort/pack the fruits.

Transportation of fruits generally is organized by Local Wholesale Procurers (LWPs)/retailers for the regional market, by exporters for international markets and by farmers for the processors procurement

sites. After fruits are transported to the wholesale sites, apricots can be kept there about 2-3 days in case if there is no cool storage.

3.3 Processing

Food processing sector is declared by the Armenian Government as a priority sector of economy. The sector's strengths are high quality of local agricultural produce, available but currently idle processing capacities, availability of qualified workers and relatively low labour costs. The processing industry is considered by experts to have a high development potential in particular through the establishment of foreign co-operation and investments.

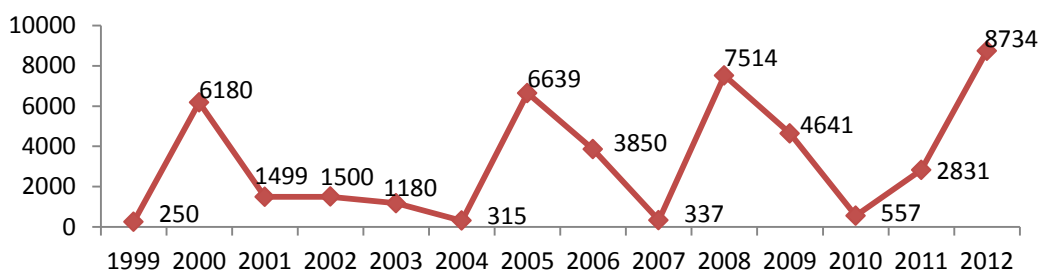
The revival of processing industry is very important for sustainable development of agriculture in Armenia. During Soviet times the output of Armenian canneries was mostly being exported to other Soviet republics. Armenian agricultural products were always highly appreciated there having reputation of high quality products. After the collapse of the Soviet Union and the economic blockade executed by Turkey and Azerbaijan, the processing industry of Armenia appeared in a totally devastated state. Further, starting from 1998, as a result of the investments made by private investors and with the support of international organizations and foundations, Armenian food processing industry started to revive. In particular, Lincy Foundation and USDA MAP jointly carried out a USD 8 mln worth loan project which was the first project for the processing industry. Four processing factories were involved in the project¹². The implementation of the project boosted not only procurement of tomatoes by the processors in the first year but also procurement of apricots, peaches and apples. In a relatively short period of time the processing companies managed to organize export of their produce to external markets. In 1999 thirteen canneries were already functioning as compared to only 8 in 1992. Larger companies established new laboratories and product testing facilities. The medium and small scale companies started to use new packaging lines parallel with refurbished Soviet equipment.

Presently, the industry constitutes over 40% of the manufacturing sector in terms of output value¹³. The food processing sector is still export-oriented, since domestic demand for processed fruits and vegetables is not satisfactory. Most of Armenia's food processing plants are actively looking for foreign partners to increase their quality of production and their export potential.

It is worth mentioning that in recent years processors tend to work with farmers on contractual basis, which is an important premise for the stable procurement of agricultural produce, and yet incentive for farmers to increase the yield and improve the production processes. A few agreements are signed between processors and farmers in case if the processor is going to buy a significant volume of produce.

The recovery of processing industry and increase of export volumes of their output fostered the procurement of agricultural produce and increased the level of its liquidity.

Figure 3: Volumes of procured apricot by the processing companies in Armenia in 1999-2012, tons



Source: Ministry of Agriculture of RA

As it is seen from the chart above the procurement of fresh apricots significantly fluctuates from year to year. Armenian processors are still unable to secure the sufficient quantity of raw input. It depends on the harvest of apricots in the given year. It implies that even if an Armenian processor manages to

¹²Ibid

¹³<http://www.awex.be> AGRO-FOOD SECTOR in ARMENIA

penetrate into international markets, it has extremely limited ability to maintain its market position. So that international markets share of Armenian processed fruits can be taken away by more reliable and competitive suppliers from other countries.

Recently more processors have been establishing their own orchards that would allow producers to leverage the risks related to price, quality, timing issues created by the individual farmers/suppliers of fresh apricots. Seasonally these plants employ local farmers on contractual basis to work in their own plantations. Thus about 360 ha of apricot orchards are already established by processors which can bear about 1560 tons of apricots annually. However, so far their own orchards produce little quantities of apricots because they are still young. This trend to plant own orchards explained by overdependence upon the farmers and inability to employ contract farming relationship with them. In order to secure stable and more predictable yield of the orchards farmers need to invest in anti-hail and frostbite preventive technologies, however, they can't afford themselves such expenses because of low incomes whereas the credit organizations offer credits with high interest rates. In their turn processors also should secure their procurement volumes by supporting farmers and help them to buy input supplies and install anti-hail systems.

There are six large processing plants in Armenia every year procuring apricots from farmers – Tamara Fruit CJSC, Beer of Yerevan CJSC, SIS Natural LLC, Euroterm CJSC and Karolina Group LLC, Proshyan Brandy Factory CJSC. They produce jams, juices, compotes, dried apricots¹⁴, and apricot vodka. Some pharmaceutical companies, like Vitaline, produce cosmetics and vitamins. Interestingly, the procurement prices of fresh apricots for jams, compotes and dried apricots are almost the same as the prices for fresh apricots in agricultural markets in Yerevan. Apricots for jams and compotes should be firm, matured, but not overripe, and big. The apricots for production of puree and distilleries are sold at lower – about 40% of fresh apricots price in agricultural market. Four plants in Armenia – Artashat Cannery OJCS, Euroterm CJSC, Borodino Armenian Cannery and Etchmiadzin Cannery produce apricot puree, mainly for export.



Stone extraction for drying

Currently the largest share of export of processed production takes Russia and CIS countries. Russian Federation absorbs about 75% of Armenia's agro-food exports; CIS countries including Russia, about 85%. In 2011 2867.5 ton of processed fruit was exported to Russia, 711.7 ton – to Ukraine and 164.8 ton to Georgia¹⁵. The financial stability of Russian market is still a very decisive factor for export oriented Armenian processors. The industry is highly dependent on Russian consumer's preferences. During 2008 when the Russian economy has been hit by financial crisis the Armenian processing industry decreased the volume of procured apricots by 42%. However, recently there has been a clear trend of increased sales of the processed agriproduce in some European countries and in the USA as well. This became possible because processors underwent the processes of certification and their products now are more traceable, which is a very important for especially western and more demanding customers.

¹⁴For dried apricots value chain assessment, see http://bsc.am/dried-fruit/BSC_OXFAM_Dried%20Fruit%20Supply%20Chain%20Report-06-11-2012.pdf

¹⁵<http://customs.am/Content.aspx?itn=csCIForeignTradeByProducts>

Nonetheless the production volume is still highly dependent on the orders from Russian traders. So after the world economic crisis of 2008 the output volume of Armenian processors experienced a sharp decline. The domestic sales comprise small portion of net sales volume.



Locally produced organic dried fruits and juices



3.4 Bulk buyers/retailers

Farmers sell fruits to local wholesale procurers/bulk buyers and retailers right from their orchards. Local wholesalers and retailers visit farmers in harvest season. Some wholesalers would buy the whole yield while others ask only for high quality fruits. Usually no prepayment is done.

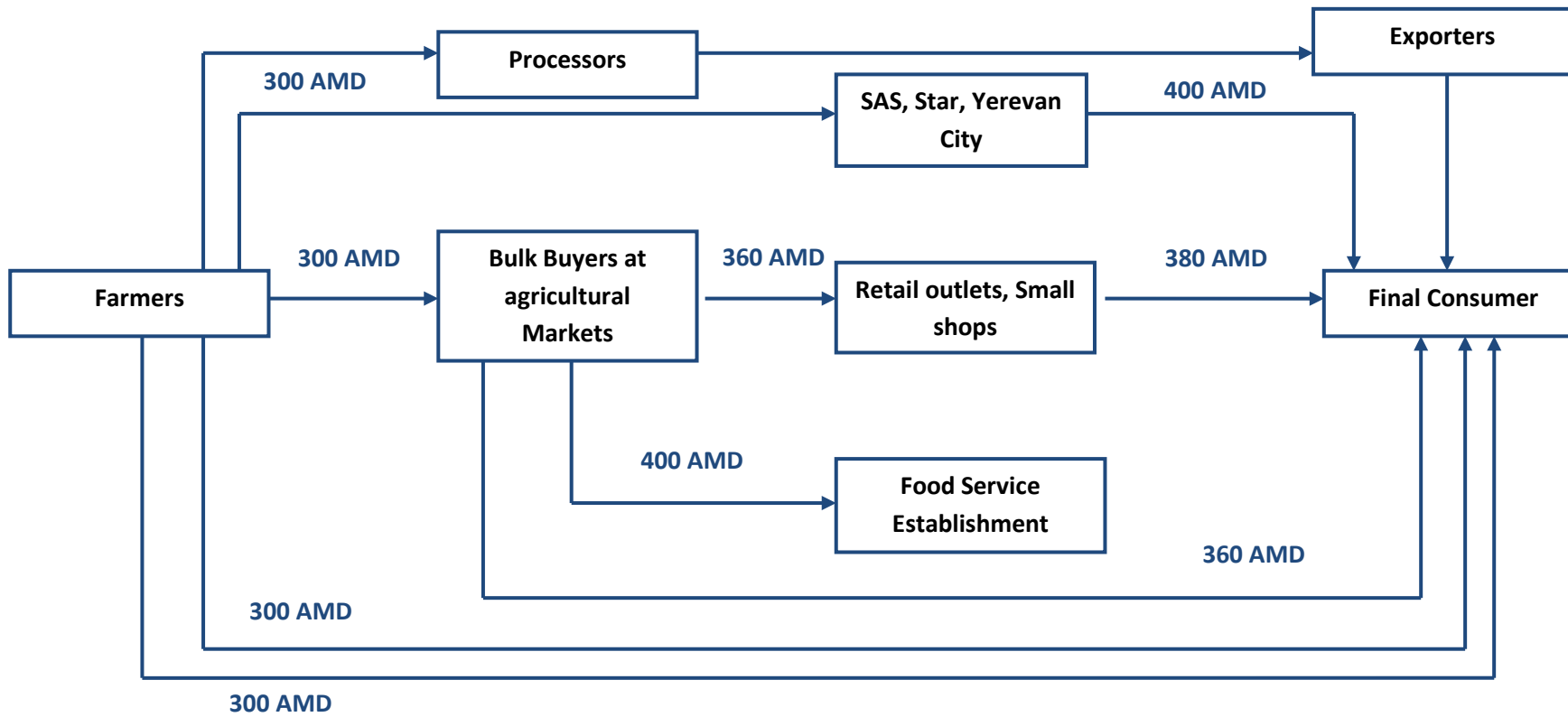
Then the farmers are responsible for harvesting, packaging and employing labour. The labourers are employed for one or a few days to pick the whole harvest, depending on the size of the orchard and expected yield. They are not very careful in picking or sorting the fruit – everything is harvested including un-ripened fruits. Other labourers are hired to sort the fruits and they are paid more than pickers – 6000 AMD/day in comparison to 5000 AMD/day for pickers.

Typical costs across the value chain from farm gate to regional market are:

- The farm gate price in 2012 – 300 AMD/kg;
- Labour cost – 15 AMD/kg for pickers and 12 AMD/kg for sorters;
- Transportation costs: generally trucks transporting fruits are operating on liquefied petroleum gas (LPG) instead of petrol and the cost to rent such truck (load capacity 1200 kg agriproduce) is 15,000 AMD. So the average price to transport apricots from orchards to regional market is 12.5 AMD/kg.

There are two major retailers in the country that send their representatives to the regions to procure the apricots – SAS and Star retail chains.

Figure 4: The fresh apricots movement.



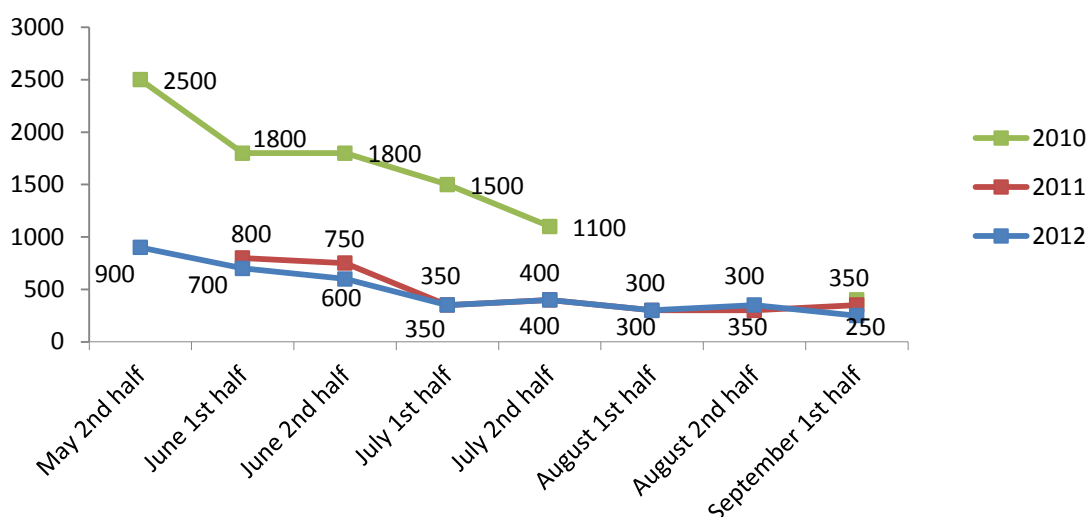
3.4.1 Wholesale market in Yerevan

Many middlemen operate in Yerevan's three main agricultural markets (green market) – Malatia, Komitas and Armenian agricultural market (GUM). Farmers usually have their warehouses in these markets and they sell their produce at night-time to local middlemen. Middlemen usually purchase big volumes then during daytime sell the smaller lots to retailers and/or final consumers.

On average wholesalers add about 20% on the farmers' price. In the meantime many consumers (especially low budget ones) visit those wholesale markets during night time to buy apricot at lowest price from farmers. Usually there are no losses to the physical product; the net profit of the middlemen is usually low but they operate on high turnovers. Besides the sales of fresh fruits, the middlemen selling apricots in agricultural markets where there are no cool storages, make additional profit “converting” later on the leftover (non-sold) fresh into dried ones. They take home the quantity of apricots that they did not manage to sell in the market in 2 or 3 days and dry it.

Below is presented price trend of Yerevani variety apricots during last three years in agricultural markets in Yerevan by months.

Figure 5: Price trends of Yerevani apricots in last three years, AMD



3.4.2 Retailers

Two major retailers in Yerevan – SAS and Star, have their own representatives who buy fresh apricots from farmers, no middlemen is present in the chain. Another retailer – Yerevan City, asks farmers to transport their fruits to its warehouses. At green market price of 300 AMD/kg the retailers ask about 400 AMD/kg of apricot. So the retailer’s margin comprises about 25%. Retailers tend to sell higher quality products so that their profit margin is high. Prices fluctuate during the season – higher prices in the beginning and end of the season and lower in the mid-summer.

3.4.3 Retailer farmers

Another seller of fresh apricots to final consumers in green market is farmer. They bring apricots to agricultural markets and sell it usually overnight. Since there is no cool storage in agricultural markets farmers can't keep the apricots for more than two or three days. After two days selling in the market farmers have to sell the damaged fruits at the lowest prices that go for production of home-made jams and/or juices.

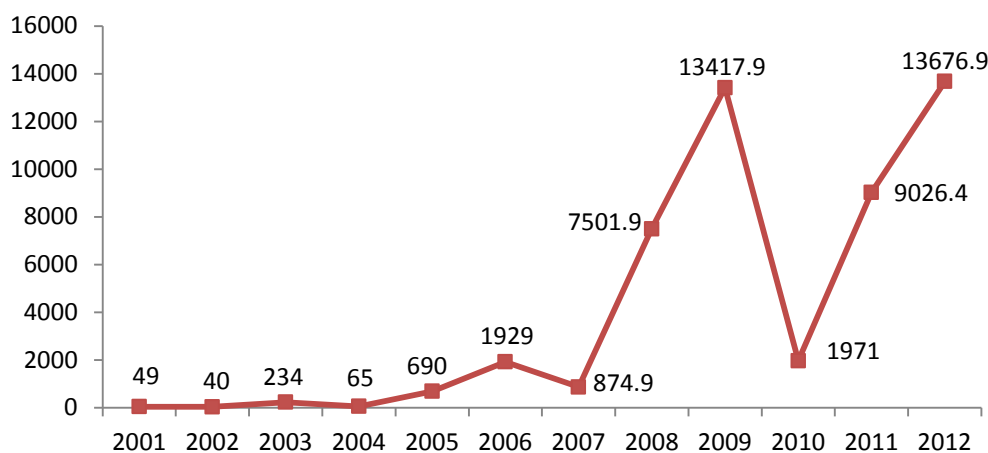
There are farmers who also barter their apricot with other agriproduce being sold by other farmers (e.g. apricot vs. potato).

3.5 Export

Over the past several years food and agricultural produce exports from Armenia have accounted for about 12 percent of Armenia’s growing export sales. Main export markets for fresh fruits are Russia and CIS countries. About 80% of fresh fruits export share takes fresh apricots export¹⁶. Prior to 1999 Armenia did not consider EU and other countries as export markets for its agriproduce. However, the easing of blockade over the years, particularly with political stability established in Georgia and increased co-operation with Iran as a trade route, the cost of transport has reduced and trade has facilitated with EU and Middle East countries. However, still small volumes of fresh fruits are being exported to those countries partly because of distance but more importantly because many Armenian exporters cannot meet these markets’ quality and safety standards and minimum quantity requirements. It is also worth to mention that after dollar devaluation in 2006 import of goods to Armenia became more profitable than to export locally produced goods and agriproduce. Local agricultural produce for export increased in price and exporting companies currently hardly maintain their profitability as it was before 2006. However, due to low production costs, as compared to EU or Russian producers of fresh and processed fruits, Armenian producers are still offer Armenian agriproduce at attractive prices for export.

Armenian fruits, especially apricots, in the international markets are highly regarded and recognized for their unique flavour and taste qualities. Main markets for Armenian fresh apricots are Russia, Georgia and Ukraine. In 2011 fresh stone fruits were exported to those countries 7379, 949.9 and 89.5 tons respectively. About 20% of fresh apricots that was harvested in 2012 was exported. As it was mentioned during the interview with a large exporter from Georgia apricots could be imported to Georgia in greater volumes if not high custom clearance fees on Georgian border. It was also mentioned that Georgian consumers are unwilling to pay premium prices for Armenian apricots though the taste and quality of Armenian apricot considered to be better than those of Georgian apricots.

Figure 6: Export of fresh apricots from Armenia, tons



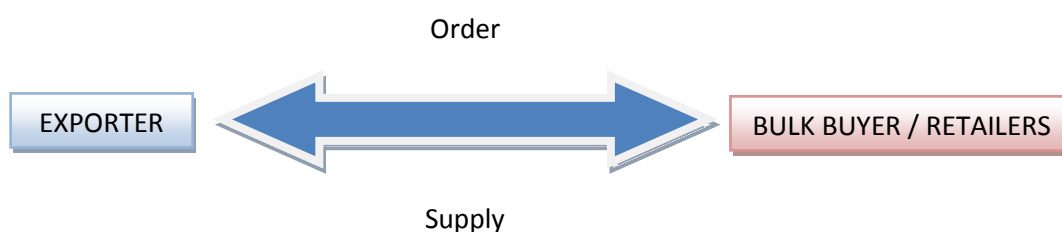
Source: Ministry of Agriculture of RA

Yet consumers in other FSU countries are ready to pay premium price for Armenian apricots. Often Armenian apricots in Russia fetch double the price of any other imported apricots. Moreover, as the demand is always higher than the supply in Russia many retailers sell the apricots imported from other countries deceptively offering it under the brand of “Armenian apricot”. The demand there is stable and always exceeds the supply. Export companies in Armenia try to supply Russian market with high quality fruits not to impair the reputation of Armenian apricots. In many cases big, firm and ripe apricots are being sent to Russia by airplane.

Generally exporters take care for postharvest handling as farmers are doing only picking and sorting of the product. They store the harvest in cool storages that are built close to the orchards area. Exporters come and procure the needed volumes from those cool storages. Although there are cool storages available in Ararat Marz, however their quantity is not sufficient for the Marz. In other Marzes it is

¹⁶<http://customs.am/Content.aspx?itn=csCIForeignTradeByProducts>

evident that there is a need for such cool storages. Sometimes exporters, usually individual entrepreneurs, send their own labour to orchards to sort the apricots. Exporters try to load their trucks as soon as possible and transport apricots to Moscow, the main market in Russia. The distance from Yerevan to Moscow by trucks is covered in three days. Actual losses of the apricots are not high if the storage requirements are preserved. An apricot can be stored at -0.5°C for 7-20 day in refrigerated environment (whether cool storage or refrigerated truck) and the loss will be 8% of its initial weight. Exporters sell their apricots in Moscow from the trucks in wholesale markets. In 2012 fresh apricots in Russian wholesale markets were sold for 65 Russian rubles per kg. Retailers in Russia have been selling the apricots from 90 (very small, damaged) to 250 Russian rubles per kg for firm and ripe fruits. Exporters do not do any forecasts for their products demand and supply it at orders. The interrelation of exporters and bulk buyers/retailers at local markets in Moscow can be drawn in the following way:



About 12.5% of fresh apricots export to Russia is shipped to Moscow by airplane. Because of high transportation costs exporters send only limited quantities. Fresh apricots are only sold at retail outlets and the price could be twice that of apricots imported by trucks.

The biggest exporter of agriproduce from Armenia is Spayka LLC. Spayka transports fruits and vegetables by refrigerator trailer trucks compliant with international standards. The biggest share of export of apricots from Armenia is also absorbed by Spayka LLC. Spayka buys apricots from farmers directly, bypassing the middlemen/wholesalers. In some cases they agree with farmers to buy whole orchards. All post harvesting activities – sorting, packaging and storing are done by Spayka. Currently they buy first grade apricots for export to Russia. In 2012 Spayka announced a USD 12 mln worth investment in a food processing plant to be built in the nearest future so that they will be able to procure fruits starting from late April of 2013. Spayka also plan to establish purchasing-distribution centres of agriproduce supposedly in different regions of Armenia.

4 SWOT analysis of Armenian fresh apricot value chain

<p>Strengths</p> <ol style="list-style-type: none"> 1. Tradition of cultivation indigenous apricot varieties 2. Favourable climate conditions for apricots cultivation 3. Most cultivated perennial crop that foster improvement of cultivation skills of all stone fruits 4. Self sufficient fruit in Armenia 5. Due to increased demand in overseas markets, farmers pay more attention to fruit quality 6. Established practices on effectively storing and transporting apricots to export markets 7. Well established practices on collection and packing in orchards 8. Business oriented farmers investing in planting new orchards 9. Several agricultural credit organizations in Armenia disbursing credits to farmers 10. Emerging agricultural cooperatives 11. Established market actors – processors, traders, exporters 12. 3 big agricultural wholesale/retail markets in Yerevan 13. Supermarket retail chains with large fruits/vegetables sections selling mostly local agriproduce 14. Low retail prices due to direct links existing between local retailers and farmers 15. Organic processed apricots production, which promotes Armenian products in new markets 16. Existing trade links for Armenian processors in the main export markets – Russia, Georgia, Ukraine 17. Established export routes to Russia and other CIS countries 18. Established brand in Russia, largest export market 19. Growing export 20. Emergence of a major exporter – Spayka 	<p>Weaknesses</p> <ol style="list-style-type: none"> 1. Inadequate technical knowledge base in communities cultivating apricot 2. lack of recourses to buy inputs, such as high quality fertilizers, or renovate existing agro machinery 3. Lack of new, frost resistant varieties of apricots 4. Poorly developed anti-hail systems thus high dependency on weather conditions 5. Lack of system for consistent renovation of planting materials 6. Non-stable sales at nurseries 7. Lack of R&D practices at nurseries and efficient links between them and national agricultural R&D institutes 8. Not enough cool storages in agricultural farms 9. Inconsistent quality and volume of grown apricots 10. Overreliance on one major market – Russia 11. Limited trade links between Armenian fruit processors and export markets 12. Limited number of retail outlets directly cooperating with apricot producers 13. Lack of cool storages in wholesale agricultural markets 14. Weak packaging in retail outlets including supermarkets 15. Non-stable export businesses due to currency fluctuations 16. Low number of disbursed agricultural credits by FI 17. Lack of effective national agricultural insurance system
<p>Opportunities</p> <ol style="list-style-type: none"> 1. Available land resources appropriate for planting apricot trees 2. Available inputs supply market 3. Room for increasing productivity up to three times in existing orchards 4. opportunity to significantly prolong the shelf life through construction of new cooling storages both in the farms and wholesale and retail outlets 5. Higher export volumes through promo actions carried in other major cities of Russia 6. search for new export channels and partners in Western European countries particularly for organic apricot 7. Signed intergovernmental agreement between Armenia and Iran on trade of Armenian agricultural produce in Iranian markets 	<p>Threats</p> <ol style="list-style-type: none"> 1. Overdependence on one market - Russia 2. dominance of Turkish apricots in Armenian market due to lower pricing in case Armenia-Turkey border is open 3. Monopolised position of Spayka in export markets 4. Unstable exchange rates 5. Unstable political/economical situation in Armenia 6. Unstable political environment in Georgia

5 Apricot VC support system

5.1 Input supply

Farmers who own bigger orchards apply inputs supplies regularly and on time. They are able to invite the agronomists who would advise them on plant protection issues. In almost every Marz of Armenia farmers can buy necessary whole range of pesticides, insecticides, herbicides and fungicides from local input suppliers. It is farmer's choice what type of pesticide to use in its orchard. The price of nature friendly pesticides is almost the same as the price of heavy chemicals, the efficiency of both chemicals is also the same. However, the nature friendly chemicals should be applied more frequently. Pesticides are mostly imported from Georgia, Russia, Iran and European countries. The price of chemicals depends upon origin country. In 2011 the Government of Armenia decided to eliminate the custom clearance fee for pesticide importers.

5.2 Technical assistance

Before the 90s every kolkhoz or sovkhos aka every rural community was equipped with agronomists, who were responsible for the cultivation, quality and yield of apricot orchards. After the lands privatization and devastation of the whole system of farm management, farmers lacked access to extension services and state support. In 2000 Regional Agricultural Support Centres have been established within the framework of the World Bank's Agricultural Reform Support Project aiming at provision of consulting services to farmers for development of agriculture the Marzes of RA. Although the idea was to gradually introduce the culture of using paid agricultural consultancy services still ASCs provide free extension services to farmers with subsequent insufficient quality and reachability. Today ASCs activities are subsidized by the Government of RA. Within the framework of the project about 2340 seminars had been conducted with participation of 44,000 farmers. ASCs provide paid extension services for private businesses. Thus most of Armenian farmers lack up-to-date knowledge and skills on farming techniques and management¹⁷. Since 2006 the extension services are provided by the Agricultural Academy of Armenia, the main state agricultural high education institute in the country.

Non-for-profits also contributed to that process (getting free of charge extension services) offering extension services for poor farmers to improve their livelihoods. The demand for technical assistance is significant but not all farmers are able to pay for such services. There are many non-governmental organizations which provide free extension services to farmers and agricultural cooperatives. Gradually the extension service provision is becoming profitable for private sector.

5.3 Financial assistance

Though the financial sector penetration in Armenia is higher than in the neighbouring former Soviet states it still needs to be developed especially outside of country's capital. Financial system is mainly dominated by bank. Banks account for 92% of the financial system's assets, while credit organizations account for 5.5%. Private sector credit ratio to GDP remains low at about 26%, compared to European and Central Asia average of 41.9%. Lending is concentrated in Yerevan: although about one-third of the adult population resides in Yerevan, but Yerevan accounts for 66 percent of bank lending and 56% for credit organizations.

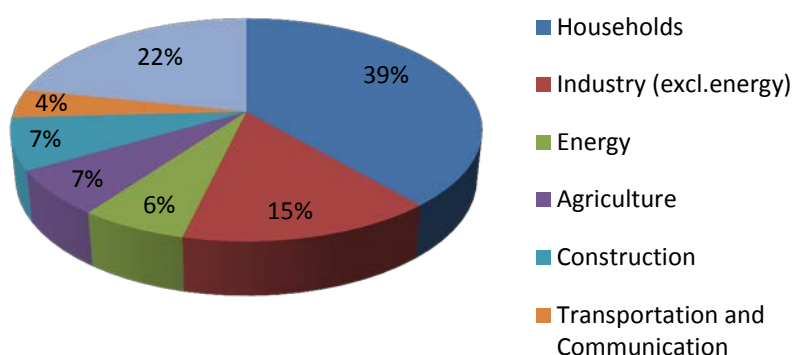
Micro, small and medium enterprises' (MSMEs) access to loans is limited due to lack of capacity. MSMEs often lack the necessary skills to be considered creditworthy. They may also either lack skills to produce reliable financial reports on which a lender can rely, or do not want to share financial information with a bank or a credit organization. Microfinance could be expanded by defining it more clearly, possibly rebranding its institutions (currently falling under the title of Universal Credit Organizations) so as to characterize some of their specialized functions, and promoting greater involvement of such institutions in donor and government credit programs¹⁸.

¹⁷<http://www.worldbank.org/eca/pubs/envint/Volume%20II/English/Review%20ARM-final.pdf>

¹⁸[http://lnweb90.worldbank.org/FPS/fsapcountrydb.nsf/\(attachmentwebFSA\)/Armenia_Update_FSA.pdf](http://lnweb90.worldbank.org/FPS/fsapcountrydb.nsf/(attachmentwebFSA)/Armenia_Update_FSA.pdf/$FILE/Armenia_Update_FSA.pdf) - Financial Sector Assessment of RA

To support the process of agricultural development and credits acquisition the Government of RA attracted foreign loans. In 2005 in coordination with the Ministry of Finance the Government of RA established Subsidized Agricultural Lending Program aiming at to support the agricultural activities in the country. The credits are given for 1-7 years and with the maximum amount of USD 150 thousand per one credit, with the maximum privileged period of 18 months. As whole credit risks are taken by the financial institutions, selection of beneficiaries, their credit, interest and grace period terms are determined by financial institutions. The average annual percentage of the agricultural credits given by the financial institutions founded by 'Subsidized Agricultural Lending Program' is 10-14%, in comparison with the established average 19% in financial market. However, this percentage is still high and the borrowers' trustworthiness is low. So that in 2011 in the breakdown of total loans disbursed by bank in RA the agricultural loans comprise only 6.5%¹⁹ (see Figure 7).

Figure 7: The breakdown of total loans disbursed by banks in RA



The only largest bank in Armenia with primary focus on agriculture financing is ACBA-Credit Agricole Bank that disbursed about 28% of its loan portfolio for agriculture development. About 96% of the Government's Subsidized Agricultural Lending Program in 2011 has been used by ACBA. Of its total loan portfolio in 2011, 28% is in agriculture, 22% in consumer loans, 4% in mortgages and 45% in business loans consisting of both loans to SMEs and big companies (the latter started in 2011)²⁰.

5.4 Nongovernmental assistance

Many projects have been implemented and still are active in Armenia during 20 years of its independence in the area of agriculture development, business or economic growth stimulation of Marzes or specific areas of activity. Those projects provide educational, capacity building and consultancy services for each level of agricultural value chain including input suppliers, producers, processors, wholesalers, retailers, and exporters.

The list of institutions and organizations providing financial and non-financial support to actors of agricultural value chain in Armenia is presented below.

Institution, Projects	Donor	Geography	Intervention areas
DAI (ASME)	USAID	All Marzes	Agribusiness enterprises such as canneries, dried fruit producers, meat processors, milk processors, poultry producers, and fish farms.

¹⁹ http://www.eib.org/attachments/efs/economic_report_banking_enca_en.pdf - Armenia

²⁰ Ibid.

World Vision Armenia	WV Germany, WV Ireland, EU	Tavush	Build the capacity of local farmer associations, businesses and community based organizations in promoting diversified and market-oriented agriculture as well as support off-farm income generating activities and community initiatives in infrastructure rehabilitation in order to improve people's living conditions.
ACDIVOCA Farmer-to-Farmer Program	USAID	All Marzes	Fruit and vegetable production (including greenhouse production and storage technologies, juice and preserves production, packaging and marketing, etc.) and agricultural support organization development.
FREDA	IFAD	All Marzes	Provides promising companies with working capital, financing for new equipment, business advice and technical support for rural food processors
DCA	USAID	Armenia	Increased access to credit to Armenian small & medium enterprises (SMEs), including agribusinesses
Water to Market MCA Armenia	MCC	All Marzes	Restructuring of irrigation water, road rehabilitation, farmer training in advanced agricultural practices, small loans to banks for agribusiness credits
Apricot Genetic Resources Conservation and Utilization	FAO UN	Armenia	Assist the Ministry of Agriculture in its effort to contribute to sustainable development through establishing the basis for the improvement and modernization of the apricot production sector which will lead to a significant increase in food security, employment opportunities and income generation.
Agricultural market development	USDA	Armenia	Focus is on identifying and solving quality assurance problems in the supply chain, developing technical and financial packages for farmers and agribusiness to ensure competitiveness and growth, and building government capacity for trade and formulating market-based agricultural policy
CARD	USDA	Armenia	Business development, market development, market intelligence projects, commodity sector analysis, and sales assistance in domestic and export markets
Rural Asset Creation Program	IFAD	All Marzes except Ararat Marz	1. Support the fruits and nuts sector and seek to increase poor smallholders' assets and incomes in the program area by linking them more profitably to the Armenian fruit and nut value chains. 2. Support investments for the construction or rehabilitation of public utilities that IFAD's experience in Armenia has shown to be critical for the economic development and well-being of rural communities
Farmer Market Access Program	IFAD	All Marzes except Ararat Marz	Make financing available to rural enterprises with good potential for rapid growth. It will help create opportunities for farmers to become more commercially oriented, and it will also increase employment prospects for rural communities
Irrigation Development Project	WB, MCCA	Ararat Valley	Irrigation infrastructure development, renovation

Rural Enterprise and Small-Scale Commercial Agriculture Development Project (RESCAD)	WB	Armenia	Development of agricultural extension services, providing grants under SME component of the project, besides over 100 loans have been extended for rural SME development, establishment of Seed Market and Legislation component under RESCAD to provide necessary furniture and equipment to the Seed Agency (a state non-profit organization created in 2005), sent staff abroad for training, and founded seed labs in five regions of Armenia
Shen NGO	EPER, WCC, ICCO, EED, IFAD	Armenia	Through planting of community orchards facilitates planting of private orchards in the communities of RA, develops agricultural extension services for farmers, farmer training in advanced agricultural practices, through Aniv UCO provides grants to SMEs, carries out researches on the plantations of apricot orchards

5.5 Microfinance Institutions

Currently there are 15 microfinance institutions in Armenia, including micro lending organizations, microcredit organizations and funds. The entire microfinance sector is serving for more than USD 496.8 million and to 181,336 clients of which about 40% are women borrowers. The quality of microfinance organizations is continuously improving and the quantity of disbursed loans increases.

All below mentioned MFI's operating in Armenia are engaged in financing agribusiness activity involved in supply inputs, input producers, machinery and processing operations. MFI's also finance construction and repairing activities of existing warehouses, working capital of retailers and wholesalers of agricultural products. These institutions managed to extend their services beyond the producers thanks to external guidance and technical assistance.

Table 4: MFI's and their performance, USD

Name	Date	Borrowings	Gross Loan Portfolio	Number of active borrowers ²¹
ACBA	2011	267,631,214	362,336,306	120,596
ANIV	2005	—	1,193,151	213
AREGAK Foundation	2010	9,109,627	23,365,529	28,886
AREGAK UCO	2011	7,644,802	25,133,135	26,660
CARD AgroCredit	2008	0	975,821	88
ECLOF - ARM	2011	1,896,671	3,163,554	1,468
Farm Credit Armenia	2012-03-31	—	7,440,940	1,386
FINCA - ARM	2012-03-31	—	38,291,748	47,695
Global Credit	2011	—	8,026,548	713
Good Credit	2011	40,076	448,048	69
INECO	2012-03-31	111,688,825	167,100,463	—
KAMURJ	2011	6,235,230	12,183,504	15,028
Nor Horizon	2011	3,856,860	5,025,648	3,284
ProCredit Bank - ARM	2011	33,904,068	62,393,744	—
SEF-ARM	2011	10,163,844	11,609,406	12,385

²¹<http://www.mixmarket.org>

6 Conclusions and Recommendations

According to a FAO assessment Armenia is the 27th among apricot producing countries. Yet Armenia has the potential to enlarge area and increase productivity of apricot orchards.

There are all preconditions to produce excellent quality fruits. Apricot harvest season can be extended up to 5 months (apricots ripen in early spring in Meghri region and late ripening varieties are harvested in Lori and Tavush Marzes). The quality of Armenian fresh and processed apricots has always been appreciated in FSU markets.

This assessment proves that there is an established and functioning value chain of fresh and processed apricots in Armenia that has a tendency of further growth.

The assessment revealed that all participants are facing various challenges:

- In case of proper orchard management farmers can increase productivity of their orchards up to 15 tons per hectare instead of present 5.2 tons annually.
- Productivity of existing orchards is possible to increase by about 1 ton per ha (20%) through optimal planting of trees and timely replacing the damaged ones (according to estimations currently 20% of total orchard area is not used).
- In order to secure the yield and increase the production of fresh apricots farmers need to invest in anti-hail systems and modern frostbite treatment/prevention practices.
- Given the limitedness of arable lands and also due to transportation problems it is advisable for the apricot producers to focus on export of high quality fruits.
- However challenging for Armenian producers to compete with industry leading countries as Turkey, Iran or Uzbekistan in terms of volumes of production, it is still rewarding and advantageous for them to constantly improve the quality of apricots. As Armenian apricots are highly valued, particularly in Russia, they should have their sound share in Russian market due to unfailing high quality.
- A major cause for the sharp decrease in production volumes are late frosts. After the collapse of the Soviet Union the Pomiculture Scientific Research Centre was left without state funding and very few researches on breeding new, frost-resistant apricot varieties was done. However, frost-resistant varieties are highly demanded and farmers comprehend the feasibility of investing in such varieties.
- Processors should start implementing elements of contractual farming practices. This will secure higher procurement volumes and, on the other hand, farmers will have finance for better cultivation of their orchards. Gradually those elements will transform into a basis for implementing contractual farming.
- Processors are operating and establishing contacts with retailers in limited markets. Now offering organic apricot juices they will have better chances to target new EU markets. Despite smaller volumes they still will be able to compete with other market players with the main emphasis on the quality of their products.
- Further attention should be paid on marketing strategies in export markets. In Russia apricots are mainly distributed in Moscow, although according to exporters there is a growing demand for apricots in other Russian cities too.

7 Annexes

Table 5: Biological properties of some apricot varieties

Variety	Growth and fruit characteristics
Yerevani	Tree is large; it reaches up to 8-10 m of height in 30 years of age. The crown is round with diameter of 11-12 m; leaves are large. Foliage is thick; bark is brown. One-year sprout is thick, with reddish brown colour. Fruits are very big with firm enough pulp. The tree is frost resistant. The best pollinators are Sateni, Khosroveni, Aragatsin and Hamban. At the climatic conditions of Ararat valley (800-950 above sea level), the fruits ripen from June 25 to July 10, and at foothills from July 5 to 10.
Satani	In 30 years of age, the tree has a height of 7-8 m and a crown diameter is 8-10m. Leaves are medium. Branches are medium. One-year sprouts are thin, flaccid, reddish brown. Fruits are medium, roundish; pulp is yellow, firm, and very sweet. The tree is frost resistant. The best pollinators are 'Yerevani' and 'Khosroveni.' The fruits ripen from July 10 to 25.
Khosroveni	Tree is large. In 30 years of age, the tree has a height of 7-10 m and a crown diameter is 8-10 m. One-year sprouts have medium thickness, reddish, shiny, internodes are short, and leaves are large. Fruits are from medium to big, elliptical; pulp is gold, with medium firmness. Tree is frost resistant, long living; the best pollinators are 'Yerevani' and 'Karmreni.' The fruits ripen from July 10 to 20.
Ghevondi (white apricot)	The tree is medium, in 30 years of age, it has 6.5 m height and crown diameter is 8 m. The one-year sprouts are thick, brown reddish, internodes are short, and leaves are large and roundish. The fruits are very big, roundish. Pulp is white, firm. Frost resistance of the trees is low. The best pollinators are 'Khosroveni' and 'Yerevani' varieties. At the climatic conditions of Ararat valley, the fruits ripen from July 20 to August 5, and at foothills from August 1 to 10.
Arinji	Tree has a weak growth, crown is broom-like, upright, branches are thin, dark brown, and internodes are short. Fruits are big and ripen from June 20 to July 5.
Araks	Tree is weak, branches are thin; crown is roundish and spread. Bark is brown, one-year sprouts are reddish brown; internodes are medium. Fruits are from medium to large; ripen in September 5-18.
Shoxer	Tree has medium growth, crown is roundish and spread, bark is brown; branches are light brown with short internodes. Fruits are very large and ripen from June 25 to July 15.
Marmari	Tree has medium growth; crown is proportionately rounded. One-year sprouts are greyish brown with short internodes. Fruits are very large and ripen from August 1 to 15.

Source: IFAD, Department of Agriculture

World leading apricot producing countries

The total area of apricots orchards in the world is about 400 thousand hectares producing 2.5 to 2.8 million t with yield per hectare averaging 6.4 t.

Apricot is mostly cultivated in Mediterranean Basin countries, although important producers include also Iran, Pakistan, USA, China, and South Africa.

According to latest FAO assessments Turkey and Iran are the leading producer countries of apricot in the world. Turkey is representing 13% of world apricot production. 40% of apricot orchards in Turkey are located in Malatia province which produces 75% of dried apricots in the world. In the last ten years the yield of apricots per hectare in Turkey averaged to 9.8 t/ha²².

Figure 8: Areas under cultivation in 2000-2010 in Turkey

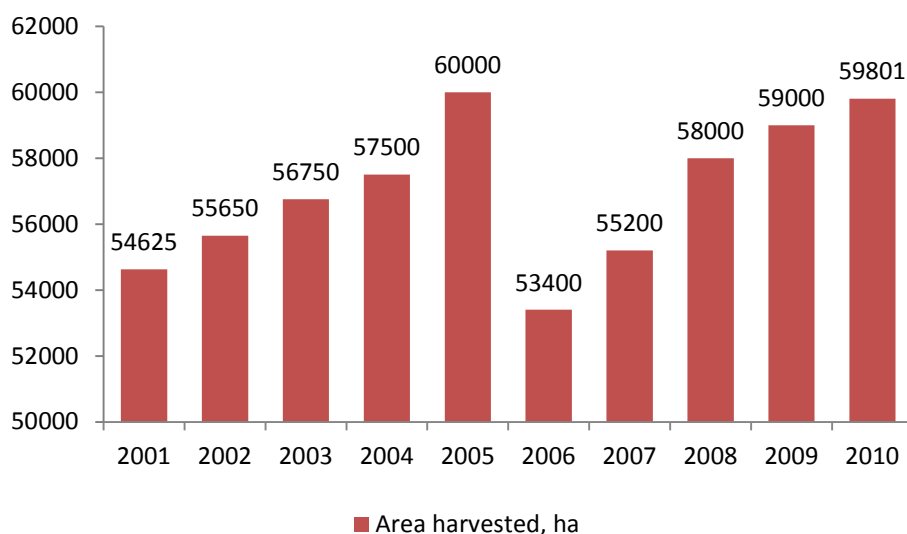
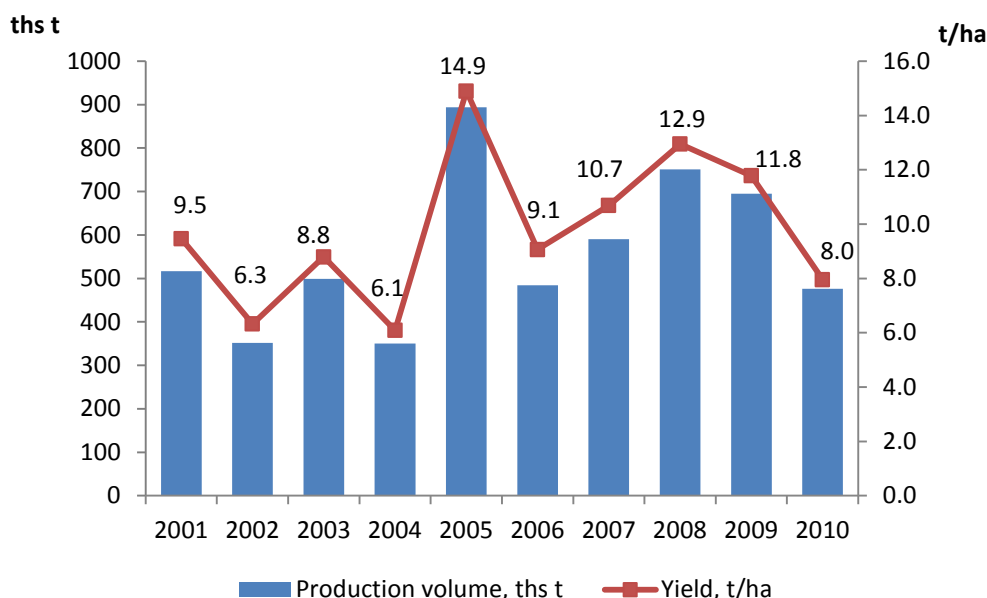


Figure 9: Apricot production volumes and yield per hectare in 2000-2010 in Turkey



²² <http://ressources.ciheam.org/om/pdf/c61/00800171.pdf>

Iran's share in world apricot production is 10%. The yield per hectare in Iran for the last ten year averaged to 7.4 t/ha and the trend shows that it is constantly improving. Iran is a large producer of dried apricots as well; about 5% of total share of dried apricots in the world is absorbed by Iran.

Figure 10: Areas under cultivation in 2000-2010 in Iran

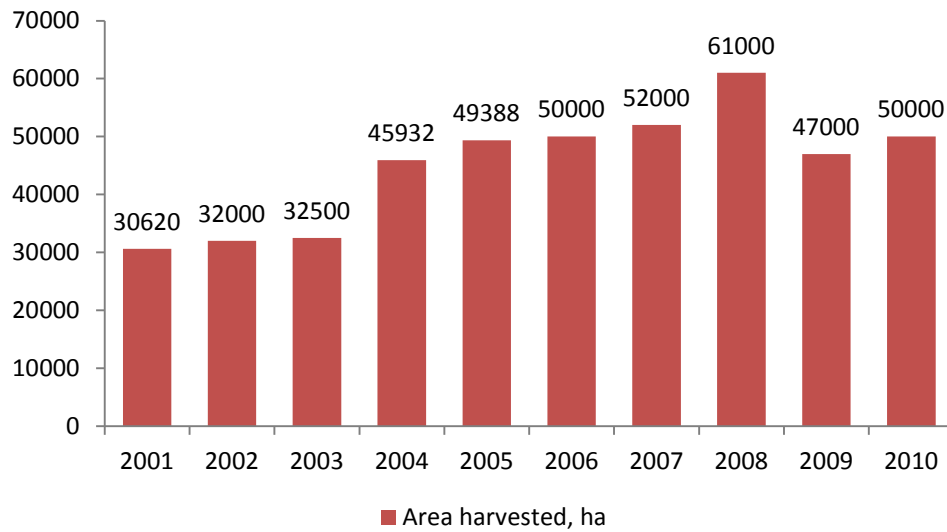


Figure 11: Apricot production volumes and yield per hectare in 2000-2010 in Iran

