NATIONAL FORUM ON DEVELOPMENT OF HORTICULTURE

07 October, 2019

The Problems and Development Perspectives of Horticulture Sector

Yerevan 2019

The conference is organised in the framework of Horticulture Market Development in Gegharkunik and Vayots Dzor Marzes project that is being implemented since 2018. It is funded by Swiss organization HEKS-EPER and jointly implemented by Shen and Syunik Development NGOs. The purpose of the conference is to address the issues related to the horticulture sector and to summarize the recommendations proposed by the sector stakeholders as well as to recap the possible development directions for all the value chain participants and overall the horticulture in Armenia.

Contents

1 Foreword

During the last 5 years, Syunik-Development NGO and Shen NGO have jointly implemented Improving the Livelihoods of Vayots Dzor and Gegharkunik Marzes through Horticulture Development project funded by the Swiss Inter-Church Relief Organization (HEKS/EPER). The project supported the development of commercial links between farmers, big buyers (intermediaries) and processors. Thus, this intervention is the third phase of the HMDP.

The objective of HMDP is to create enabling conditions for more income generation for many more farmers both women and men in Vayots Dzor and Gegharkunik marzes from fruit sales.

The project anticipates three outcomes:

- **Outcome 1. Production**: Farmers expand and/or rejuvenate aged gardens using modern technologies (with no adverse environmental and climate impacts).
- **Outcome 2. Market access**: Farmers increase their income selling 2nd and 3rd grade high-quality fruits through guaranteed commercial links with markets and adding value through sorting, storing and processing of grown fruit.
- **Outcome 3. Improved business environment**: Conditions for the development and income generation of fruit growers are improved by engaging them in dialogue and effective participatory policy with horticulture value chain participants in Armenia.

1.1 BENEFICIARY PROVINCES AND THEIR SELECTION CRITERIA

Horticulture is one of the main subsectors of agriculture in VD and GK as well, especially fruit growing and winegrowing. Favorable weather conditions contribute to the development of good quality fruit of significant yield. Due to its location (around 2000 meters from sea level) fruits in VD become available for harvest later than in other regions of the country, which enables farmers from the region to sell their product at higher prices and thus, provides additional incentive to develop horticulture in the area. An-other positive aspect for horticulture development is availability of lands for expansion.

Previous project phase experience indicates that farmers are apt to use their lands for horticulture development. Historically, pome and stone fruits (apricots, pears, apples) from these regions are known and well received by customers in Armenia. In that regard, pear variety 'forest Beauty' from GK region is one of the most demanded fruit variety in the country.

VD Province has a favourable geographic position; connects other provinces with Syunik, Nagorno Karabakh and Iran. It occupies 7.8% of the total area of Armenia but has only 1.7% population and it is the most sparsely populated region in the country.35.6% of the local population is considered as vulnerable, among them are disabled, elderly, large families, refugees and un-employed.

With the Soviet industrial infrastructure, completely defunct, the people in the region lost their economic opportunities. Only about 20% of the adult population is in formal employment.

Vayots Dzor is agricultural region. 65% of the population lives in rural communities. Agriculture is the major sector of the regional economy, which is about 1.23 times higher than the per capita ratio. In the region, the agriculture production mainly is organized at rural households and through business entities. As of 2015, 11439 rural households and 11 business entities are involved in horticulture production in VD; such as cultivation of pome and stone fruit and grape production.

There are 1627,7 ha of orchards in VD and 758 ha in GK respectively, which represents around 1.2 % of the total available agriculture lands in both regions. In last several years an overall area of orchard lands has been increased in VD Marz (from 1297 ha in 2013 to 1627,7 ha in 2015).

GK province is the largest region of Armenia. The Lake Sevan occupies a large area in the region. The lake is one of the largest pool of fresh water of the world. GK province is situated in the East of the territory of the Armenia. Its surrounded by mountains Geghama, Vardenis, Areguni, East Sevan, Sevan and Pambak. It borders Lori and Tavush provinces from the north; from the East it borders the state border of Azerbaijan; from the South – VD region; from South-West – Ararat region and from the West – Kotayk region.

Irrigation water is governed by regional Water Users Associations in Armenia. There is no major water reservoir in Vardenis sub-region and main sources of irrigation water are mountain rivers and creeks. There are also 60+ deep wells (each deep well may irrigate 25-30 ha of lands) in the region. Overall, the access to irrigation water is not sufficient though different villages of Vardenis sub-region have different level of access.

Access to agricultural technical knowledge in Vardenis sub-region for the local farmers is not satisfactory. The main institution mandated to provide technical information and extension services, regional ASCs, because of limited human resources hardly could reach the farmers in the region. Moreover, the Government decided to severely cut the staff of all ASCs in the country. During last years the farmers of Vardenis sub-region could learn on farming techniques, pest management issues and farm management from 1st phase of the current project Farm and Veterinary Service Centre is equipped with information materials and posters (provided by the Project) on horticulture and other fields of crop production.

In GK, HHs have 10 to 30 fruit trees, whereas up to 10 trees - 21%, between 11 and 30 trees – 45%, 31-100 trees-22% and more than 100 trees - 5%. Yet, some 7% have no tree at all.

According to a survey conducted by Shen NGO in 2014 among the local farmers in Vardenis sub-region the average share of horticulture in the total households incomes comprised 3% (potato and cereals – 17%, animal husbandry – 11%) though in case of the farmers more intensively developing their or-chards it may reach up to 50%. However, the most important argument for the development of horticulture in the region is the fact that the income from potato production has get decreased. More specifically net profit from 1 ha comprises 700,000 to 1 mln AMD that equals to the income from 50 pear trees. Furthermore, cultivation of potato is much more labour intensive vs to production of fruits thus labour productivity in horticulture is four times higher.

Map of target regions

Vayots Dzor

Territory - 2,308 sq.km
Population - 56,000
Urban Population - 19,300
Rural Population - 36,700
Urban communities - 3
Rural communities - 41 (52 villages)
Height of above sea level - 3,250 m
Center - Yeghegnadzor
Agricultural land - 209,260 ha
including: arable land - 16,217 ha
The main branches of economy - industry, agriculture

Gehgarkunik

Territory - 5,348 sq.km
Population - 242,400
Communities - 92
Rural communities - 87 (97 villages)
Urban communities - 5
Rural Population - 197,700
Urban Population - 82,700
Center- Gavar
Height of above sea level - 1,325-3597 m
The main branches of economy - agriculture, industry, mining industry

1.2 THE ROLE AND SIGNIFICANCE OF HORTICULTURE SECTOR

In agriculture horticulture is a high yielding and leading sector. Armenia is one of the oldest centres of horticulture, with more than 20 types of fruit plants being cultivated here.

Generally, 60% of the country's gross agricultural output comes from crop production and 40% from animal husbandry. Certain deviations of this proportion in different years are mainly conditioned by the fluctuations in crop production due to climatic conditions. The main agricultural regions of the country are specialised in crop production. Thus, the share of crop production in the Ararat region's gross agricultural product is 80%, in Armavir - 75% and in Gegharkunik - about 70%. The data for fruit production does not reflect the true picture as orchards established in recent years are not yet registered. It is interesting that the pear and cherry production is noticeable in Gegharkunik province, which is not known as fruit growing region compared to Armenia's other regions.

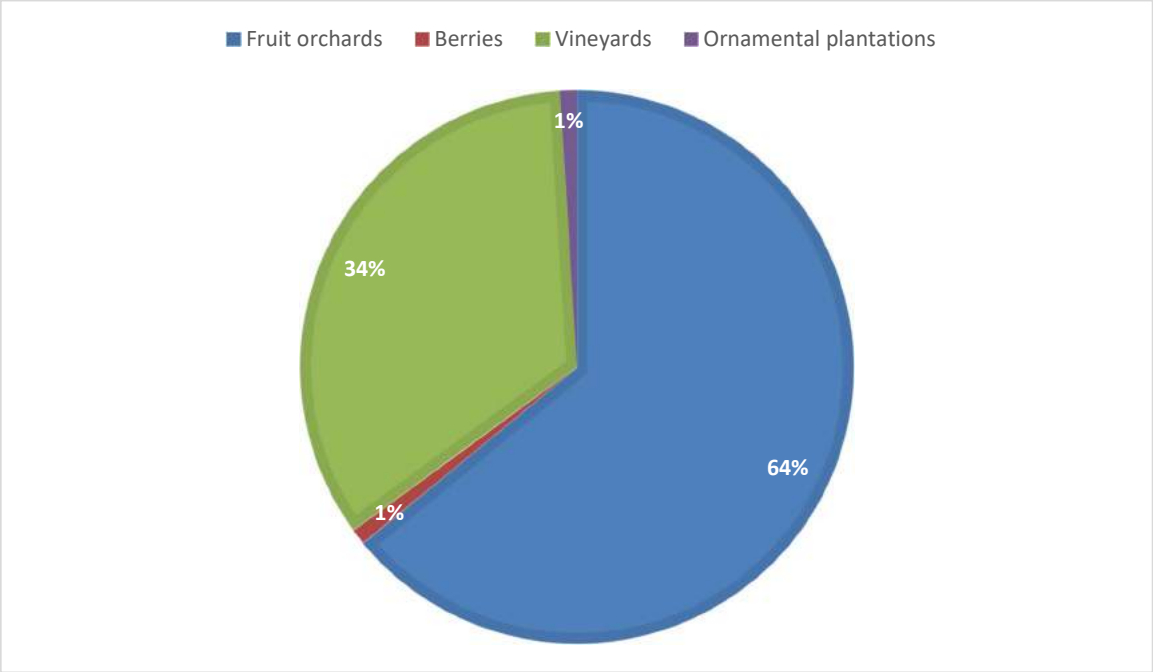
According to the 2014 Agriculture Census, the total area of agricultural lands owned by households in Armenia is 534.4 thousand hectares (493.9 thousand hectares without homestead lands). It makes up 18% of the territory of the Republic of Armenia.

Perennial plantations and homestead orchards make up 11% of the country's total agricultural lands under cultivation.

Perennial plantings mean trees and shrubs that occupy the soil and yield a few consecutive years (usually more than five years).

The total area of the perennial plantations of the Republic of Armenia is 44,274.17 ha, which according to the main types of perennial plantations have the following distribution:

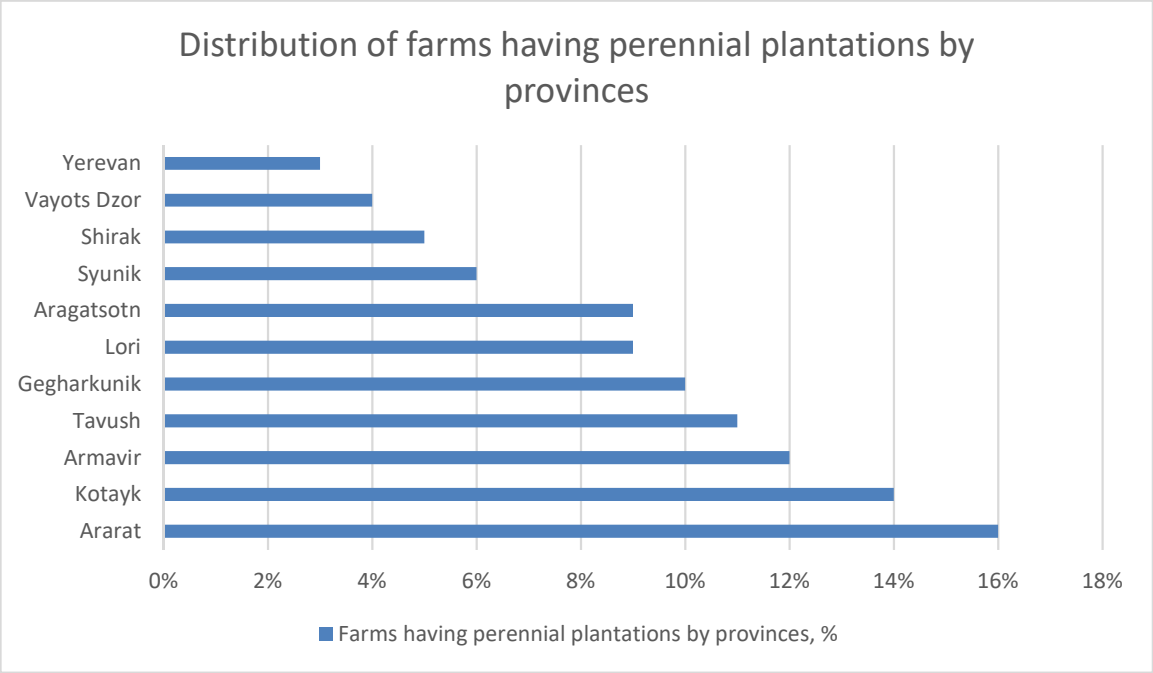
- 28,690.32 hectares of fruit plantations in orchards and homestead lands, including nurseries
- 15,166.20 hectares of vineyards in orchards and homestead lands, including nurseries
- 399.40 hectares of berries plantations in orchards and homestead lands, including nurseries
- 18.25 hectares of ornamental plantations in gardens and homestead land



It is important to note that 75% of the total area of cultivated perennial plantations (44,274.17 hectares) is located in orchards (30,145.30 hectares) and 25% in homestead plots (11,128.87 hectares).

99.97% of the farms with multi-year plantings are natural persons (214,416 households) and 0.03% are legal entities (60 households).

More than half of farms with perennials are concentrated in four provinces: Ararat (16%), Kotayk (14%), Armavir (12%) and Tavush (11%). (Perennial Plants in the Republic of Armenia / K. Turtoy, H. Davtyan 2019 ENPARD/FAO).



Fruit plants, according to biological characteristics, origin and structure of the fruit, are classified into the following groups:

1. stone fruits: apricot, peach, plum, flax, cherry, non-commercial fruits: blackthorn, damson, wild plum, cherry laurel;
2. pome fruits: apple. pear, quince, non-commercial species: medlar, hawthorn, Mountain-ash, black rowan berries, Shadbush
3. nuts: walnuts, hazel, almond, pistachio, chestnut, pecan
4. berries: strawberries, wild strawberries, raspberry, blackberries, currant, gooseberry, sea buckthorn
5. dry subtropical fruits: pomegranate, fig, oriental persimmon, olive, kiwi, feijoa, Japanese zircon, non-commercial species: cornelian cherry, Silverberry, black and white mulberry, Jujube, Japanese quince
6. juicy subtropical fruits: lemon, orange, tangerine, grapefruit, pomelo, lime, citron, Kinkan fruit, kumquat.
7. Tropical fruits: pineapple, banana, coconut palm, coconut, Indian nuts, cashew, avocados, mango, guava, anonas fruit, mangosteens, Lychee, passion fruit, pitaya, jackfruit.
8. Technical fruit trees, whose fruits are used as raw materials for food production, meet the various nutritional needs of humans: coffee tree (coffee), chocolate (cocoa), palm oil, cola nuts, nutmeg, cinnamon, cardamom.

The following fruit plants are cultivated in Armenia: apricot, peach, plum, prune, cherry, sweet cherry, apple, pear, quince, walnut, pistachio, hazelnut, currant, strawberry, raspberry, blackberry, fig, pomegranate, persimmon, olive, cornelian cherry, mulberry, silverberry.

1.3 PURPOSE OF THE STUDY

The overall goal of this Study is to explore and reveal the problems in horticulture, existing opportunities and make recommendations to the players in the area.

This Study intends to address and identify key factors hindering the development of different fruit value chains in the country (including the climate, lack of equipment, shortage of skills, issues relating to marketing of products and services, etc.). The scope of the Study covers the general description and comprehensive study of Armenia's fruit/berry processing, input supply/provision/ ներդրանքի մատակարարման, consulting and education, infrastructures, internal and external markets.

The description of barriers and problems could not be an end in itself; the Study is supposed to provide complex solutions and recommendations to address existing problems.

The targeted goals of the Study include:

- Describing of value chain players,
- Identifying problems in horticulture,
- Outlining steps for the development of the area and specific recommendations to implement them.

1.4 METHODOLOGY OF THE STUDY

During the Study, various research tools and methods were used, including statistical and primary data collection (quantitative and qualitative surveys, interviews, etc.) from farmers, processing companies, relevant government stakeholders and industry experts.

In this respect, the Project engaged a number of organisations to conduct diverse surveys among the target groups:

- Horticulture farmers,
- Processors,
- Input providers,
- Scientific and educational centres.

Along with Shen and Syunik-Development NGOs' experience in horticulture a number of studies and analyses contributed to this Study as well, namely:

- Analysis of horticulture value chains in Vayots Dzor and Gegharkunik marzes of Armenia, with a special focus on the cultivation and marketing of apple, pear, plum and cherry, Tobias Joos, Independent consultant of HEKS-EPER, 2015
- Surveys of horticulture farms in Gegharkunik and Vayots dzor 2017-2019 – Mosaic Research House

In addition, by the initiative of Shen NGO in 2018 "Argument" Consulting Bureau LLC conducted "Fruit Market Development Project: Survey of Processing Companies" analysing 36 fruit processing enterprises along the way. Complete materials are available at www.shen.am and www.syunikngo.am.

Along with the abovementioned, three workshops were organized 17-19.12.2019 with three target stakeholder groups (meetings/discussions with representatives of 22 organisations):

- International and local organisations, educational institutions
- Processing companies, particularly dried fruit producers
- Agricultural input suppliers, service providers and scientific centres.

During the meetings, the project team identified a number of problems specified by industry players, but most importantly, recommendations for substantial improvements in the sector were discussed.

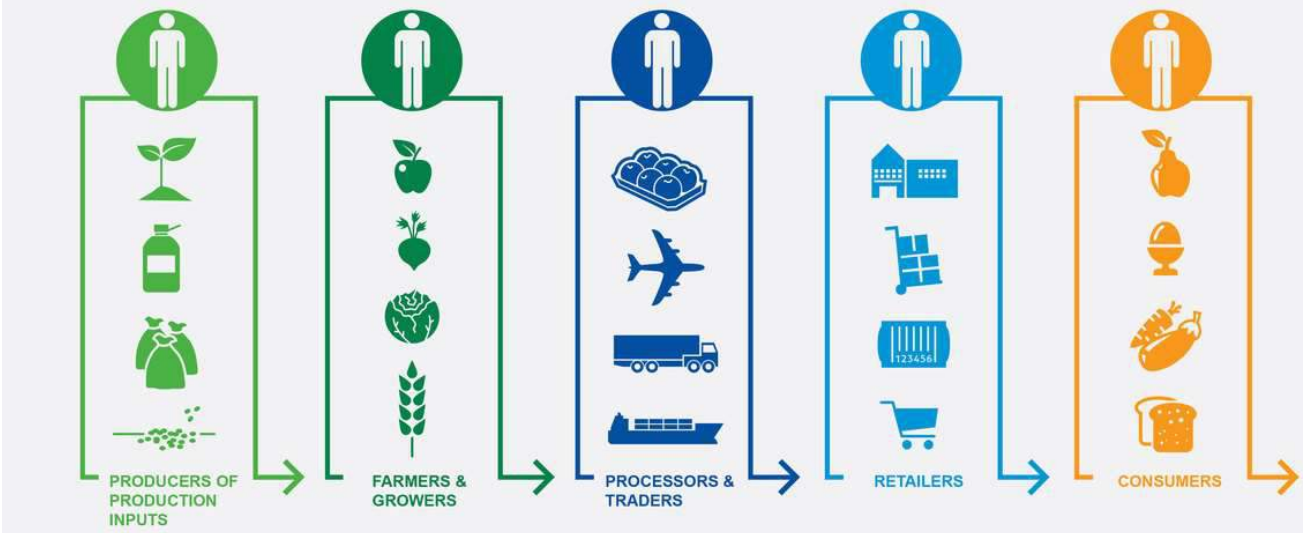
The principal research method selected was face-to-face interviews with representatives of processing companies, horticulture farmers using semi-standardised questionnaires. General meetings with diverse industry players also were held. Key questions in the questionnaires and at the meetings related to existing problems in horticulture from production to sales – supply of quality inputs, past and planned volumes of procurement, prices of procurement and methods of payment, procurement problems, expected support from the project and the Government, sales and marketing data. Information sources included industry experts and senior executives well informed about procurement, sales in their companies and generally the sector.

1.5 HORTICULTURE VALUE CHAIN PLAYERS

In horticulture, it is very important to study the players in the value chains and clarify their role in the development of the sector.

Analyses of the value chain actors are important for economic development of rural communities and overall understanding of the sector problems. Such studies help to clearly understand the market and inter-market relationships, as well as substantial barriers hindering the development of products or services, opportunities and interventions for their development, which could have sustainable and large-scale impact.

The following are key actors in various types of value chains and several options of interaction between them:



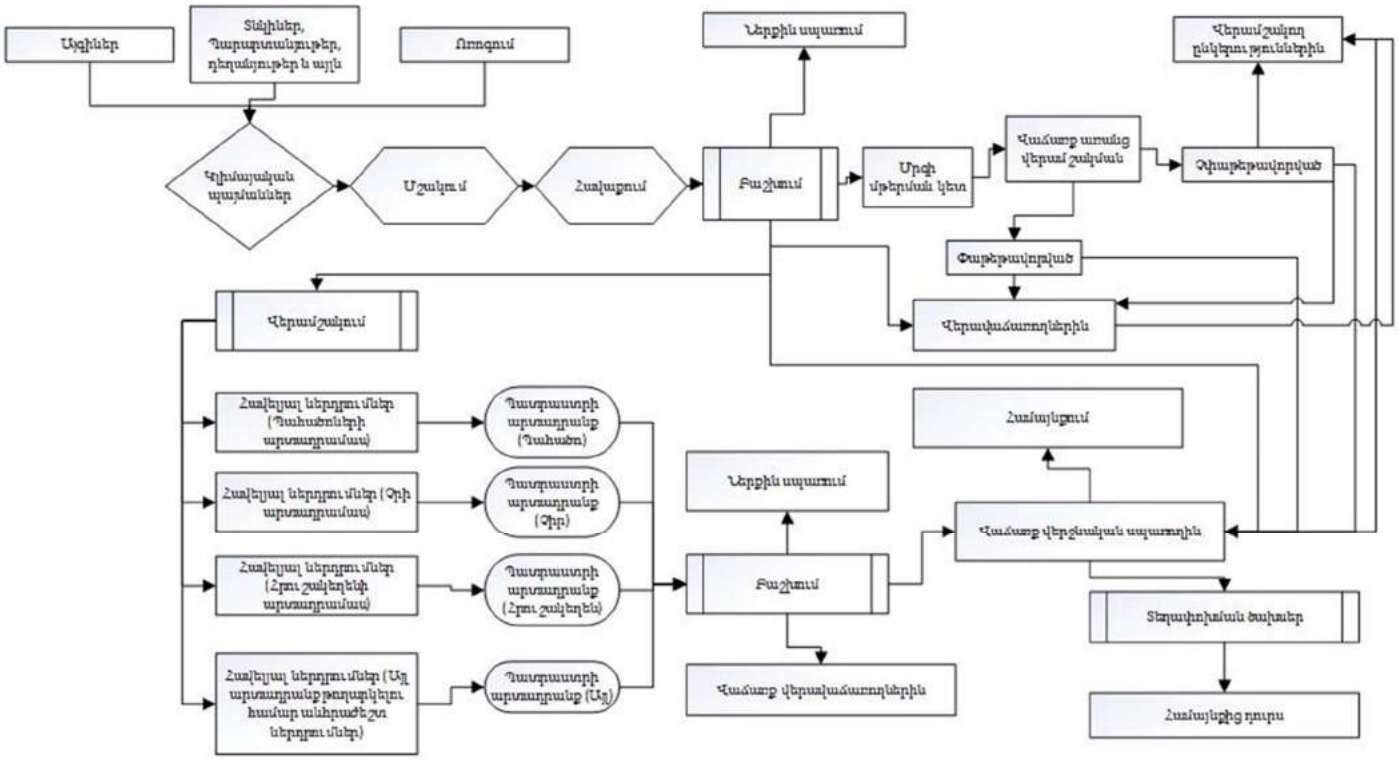
Agri-input producers and sellers: saplings, fertilizers, equipment, etc.

Farmers, producers, growers

Cold chains, wholesalers, middlemen, processors

Retail outlets: stores, supermarkets, green markets, etc.

Consumer



Օժանդակող կառույցներ

Պետական կառույցներ (Օրինակ Գյուղատնտեսության նախարարություն)	Արտահանումը խթանող կառույցներ	Ֆինանսական կազմակերպություններ
Միջազգային և տեղական աջակցող կազմակերպություններ	Բեռնափոխադրող կազմակերպություններ	

1.5.1 Agricultural input producers and sellers

Of great importance in horticulture is the role of agri-input suppliers; their main groups are specified here. The significance of the role of this segment should clearly be stated not only because it ensures accessibility of agri-inputs, but also it is a window of opportunity for provision of professional advice.

- Pest management, fertilizers and seeds
- Agri-machinery and tools
- Irrigation systems
- Anti-hail netting

1.5.2 Fruit producers

The producers of fruit are mostly small farmsteads; however, there are also large farms – legal entities growing diverse fruits. This segment of the value chain is responsible for quality crop growing, cultivation. Strategically, support to this segment contributes to cultivation of quality produce. With the establishment of producers' groups/cooperatives this segment could become more competitive and even export its produce, negotiate with sales outlets or even be accessible for end consumers,

1.5.3 Wholesalers, middlemen

1.5.3.1 Cold chains, processors

In each fruit value chain, this group is interconnected differently (see possible options in the chart).

For fresh fruit marketing the following arrangements could be applicable:

- Producers – middlemen – sales outlets
- Producers – middlemen – cold storage – sales outlet

For processed food:

- Producers – middlemen – processors – sales outlets – consumers
- Producers – processors – sales outlets – consumers

Wholesaler/middlemen segment is very important particularly for small-scale fruit producers being an actual market for them. The intermediary segment per se is comprised of diverse fruit buying and reselling markets: wholesale markets (Malatya, GUM, Hovtashat, etc.), retail sales outlets (supermarkets, stores, fruit kiosks, etc.), cold storages, processors (canneries, fruit spirits producers, dried produce manufacturers confectioners, etc.).

Here the role of primary storing and processing becomes important for it means adding value to fruits.

As fruits are perishable raw material, cold storage is essential for their quality maintenance and efficient sales.

Cold chains serve as markets for producers; additionally they can serve as suppliers for sales outlets/exporters.

In processing industry three types of companies are considered as main – canneries, wine/vodka (alcoholic beverages made of fruits) producers and dried food producers.

Canneries use processed fruits and berries to make jam, confiture/preserves, juice, compote, etc. However, along with fruits and berries they process also vegetables, herbs, in some cases milk, and seldom are canneries that process only fruits and berries.

Producers of alcoholic beverages use fruits and berries to make vodka or wine. They have been involved in this process recently, as their main produce is grape wine, which also accounts for small volumes of fruit and berry procurement.

Regarding dried food producers, fruit procurement is their main function. Other types of produce (e.g. dried vegetables, herbs, etc.) mainly serve to expand the variety of products and satisfy the higher demand of the market. These additional product varieties are complementary for producers of dried food.

1.5.4 Retail outlets

This group includes supermarkets, grocery stores, fruit and vegetable kiosks, all points of direct contact with consumers. The market price of products for consumers is set at retail outlets. Here value is added through branding, packaging, proper presentation of the produce.

1.5.5 Exporters

The most efficient and profitable way to sell fruits is their export. Export of a fruit type has a significant impact on defining the sales price. Exporting provides an opportunity of expanding the surface of cultivation of fruit types, pay closer attention to quantity and quality. The main export destination is the Russian Federation, though Gulf States, Georgia, Kazakhstan, Belarus, Europe and the USA have a great potential too.

1.5.6 Consumers

Consumers/buyers play a decisive role in definition of produce standards. From this viewpoint, consumer preference of various sorts, tastes, appearances is a serious stimulus for all value chain segments meant to meet consumer demands. Over years, older sorts of some fruit types have become inexpedient for cultivation, as they do not meet consumer demands.

Study of value chain actors, needs assessment and design of impacts strategy in horticulture may well facilitate the development of the sector. By joining forces, small producers/farmers might be able to get closer to the consumers, which will help to increase their incomes and further the development of the sector.

2 Results of the Study

2.1 PROBLEMS OF THE HORTICULTURE SECTOR

Identification of the problems related to horticulture in Armenia is important from the point of view of their mapping, proposing effective and comprehensive solutions.

In order to identify the issues, it has become necessary to receive suggestions from different actors and stakeholders in the field. The surveys and group discussions were conducted with the following groups:

1. **International and local organizations, educational institutions;**
2. **Processing companies, in particular dried fruit producers**;
3. **Agricultural input providers, service providers, scientific centres**.

As a result of the discussions the following main issues hindering the development of horticulture in our country were identified.

Fruit production

- Prevalence of old, economically inefficient orchards. Lack of new orchards cultivated using new technologies
- Limited capacity of state subsidy programs for establishment of new, intensive orchards
- Unsatisfactory statistics on existing orchards in the RA, thus it does not reflects the real picture
- Land fragmentation, low land use rate (many owners have never cultivated land since privatizing it)
- Limited number of organic orchards or organically cultivated orchards
- Problems with access to irrigation water, inefficient management of water resources and high tariffs for water
- Irrigation water tariffs and land tax as a problem for new (yet non profitable) orchard owners
- Inadequate implementation of farming techniques and integrated pest management
- Natural disasters - hail, frostbite, etc.

Access to saplings

- Limited access to quality saplings
- Poor quality information/advice to clients provided by nursery farms
- No system of licensing nurseries
- Inadequate phytosanitary control system imposed to nurseries, especially for viral diseases
- Inadequate legislation regulating the import of planting material
- Lack of studies on the international market for fruits in demand that will help to import respective varieties of fruit saplings

Provision of quality agricultural inputs

- Lack of professional capacity and advice in installations for drip irrigation systems and anti-hail networks
- Limited information on the use of combined fertilizers provided by agricultural input suppliers
- Limited number of consultants on agricultural input

Fruit processing

- Prevalence of mixed sort apricot orchards, which makes difficult procurement of quality raw material for dry fruit production
- Lack of information for nursery owners on the production of saplings of demanded varieties for the production of dried fruit
- Orchard owners lacks basic knowledge on irrigation, nitrogen fertilizer application and timely harvesting for dry fruit production
- Lack of functional body to raise and solve dry fruit producers' problems
- Lack of customised financial resources, loans for dry fruit producers
- Lack of application of innovative fruit drying technologies
- Issues related to branding, packaging, marketing in case of exporting Armenian dried fruit
- Inappropriate tax policy
- Lack of quality control of dried fruit during export, that results in formation of general negative stereotypes about Armenian dried fruits
- Lack of control over the amount of residual pesticides, which subsequently becomes a serious problem during export

Education and consultancy

- Severe lack of knowledge, qualified professionals, and consultancy
- Lack of R&D for efficient development planning
- Lack of information

Market

- Lack of information on rather competitive fruit varieties and sorts in international markets to cultivate them and lack of competitive varieties orchards in Armenia
- Problems of packaging, promotion and marketing
- Small volume of quality fruits and few opportunities for market diversification
- Difficulties at entering new markets and lack of information on it

2.2 NECESSARY STEPS LEADING TOWARDS THE DEVELOPMENT OF HORTICULTURE

- ❖ During state subsidies for the establishment of drip irrigation, hail protection networks and intensive orchards, do not force farmers to buy from specific companies. The agriculture businesses consider this as a tendency of non-competitive pricing policy.
- ❖ Promote establishment of large orchards for economy of scale.

- Promote of state planning of establishment of orchards by geographic zones, as well as in long-term outlook analysis of export market
- Half reduction of irrigation water tariff for newly established orchards for at least 5 years until productivity is ensured
- Presentation of agricultural entrepreneurship in educational institutions as a sound development potential of the country and transfer of relevant knowledge and skills
- State support to introduce the certification process for seeds and saplings
- Establishment of biotechnology centres that ensure production of virus-free saplings and seeds
- Provide state support for the training new specialists on the basis of plant protection who will later become agricultural input supplier-consultants
- Promoting establishment of agricultural cooperatives: tax benefits and special by-laws
- Establish state-funded unified crop protection system in the regions specialized in horticulture: a farming technique, biological and chemical unified control system. Carry out chemical fight in a scientifically justified timeframe and against all pests and diseases
- Create a pesticide use accountability system
- Introduce Agricultural Insurance System
- Establish weather stations and introduce their unified analysis system that will contribute to the effective implementation of timely combat measures.
- State subsidies for the import of environmentally friendly pesticides and organic products: pheromone traps, organic substances, etc.
- Simplification of the procedure for importing agricultural machinery, as a result of which the importer will avoid excessive storage fees.
- Development of professional capabilities of local businesses producing and importing drip irrigation, anti-hail protection nets
- Exempt processors from VAT
- Strengthen the state control over the quality, packaging, branding of agricultural products exported from Armenia
- In case of a certain volume of export of dried fruit, employ cashback for those businesses to promote the export.
- Encourage participation in local and international exhibitions.
- Organise trainings for farmers supplying raw materials of appropriate quality and type for the production of dried fruits.
- Provide information to farmers on intensive single-sort orchards.
- Promote the use of compound fertilizers
- Broadcast agricultural advisory programmes on various TV companies
- Promote import of electrical and gas drying facilities
- Establish logistics centres for fruit harvesting in the regions
- Set quotas and raise customs taxes on dried fruits imported to Armenia to promote local produce.

2.3 RECOMMENDATIONS

- ✓ Develop sector-specific proposals through the Congress of Horticulture Development and/or Agricultural Alliances and submit them to relevant government agencies
- ✓ Involve experienced NGO professionals in the process of development and implementation of various agricultural strategies.
- ✓ Provide professional information to all segments of value chains (experts, literature, trainings, demo tests, research, etc.)
- ✓ Active participation of NGOs in discussions on sector development strategy, subsidy system design and other relevant issues
- ✓ Pilot testing, localization and demonstration of innovative technologies
- ✓ Develop and implement nursery certification projects
- ✓ Improve the conditions of subsidized loans to processors
- ✓ Legislative reforms related to labelling of agricultural products
- ✓ Assistance to the Armenian Agrarian University in the development of practical knowledge and skills of university students

The document can serve as a guide for developing and implementing various strategic plans in the field of horticulture.

This analysis will serve as a basis for the implementation of the horticultural development projects implemented by Shen and Syunik-Development NGOs over the coming years. Shen and Syunik Development NGOs are ready to work with all stakeholders that see edges of potential partnerships for solving issues identified by this Study.