



2012

## Table Grapes Value Chain Baseline Screening



AgBiz Program

**USAID AgBiz Program** ([www.agbiz.com.mk](http://www.agbiz.com.mk)) overall objective is to increase incomes for all participants in selected Macedonian agricultural value chains by increasing sales (domestic and exports), improving productivity, enhancing the agricultural business environment, and increasing access to finance. AgBiz builds off of the existing capacity and expertise of Macedonian professionals and lead firms and farms to create a new understanding in the market for imbedded business development services and fee-based service delivery. EPICENTAR International is selected and responsible for implementation of the Fresh Fruits and Vegetable component as Lead Facilitator.

**EPI Centar International** ([www.epicentar.com.mk](http://www.epicentar.com.mk)) is a consulting company, providing consultancy and expertise to strengthen the capacities of individuals, private companies and local communities, for achieving greater economic results.

The company provides services such as:

- Support in drafting and conducting Market/Sector/Product Specific Research, Analyses and Studies, Plans and/or other Strategic Documents essential for the success of an organization;
- Planning, Implementation Management and Monitoring and Evaluation of Donor and/or Agency Funded Projects;
- Assistance in locating the most suitable business partner in Macedonia and business representation in the country;

Positive changes are a compound part of the work and are achieved through raising people's awareness, capacity building approach and direct community interventions.

EPICENTAR's ultimate objective is to become a reliable "partner of choice" for the implementation of donor and/or agency funded Projects.

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## List of Acronyms

FF&V	Fresh Fruits and Vegetables
VC	Value-Chain
Ex-YU	Ex Yugoslavian
HORECA	Hotels Restaurants Catering
MFN	Most Favoured Nations
LA	Lead Actor
LF	Lead Facilitator
FGD	Focus Group Discussion
FFRM	Federations of Farmers of Macedonia
CMO	Common Market Organization
PDO	Protected Designation of Origin
PGI	Protected Geographical Indication
TSG	Traditional Specialty Guranteed
CEFTA	Central European Free Trade Agreement
WTO	World Trade Organization
LPIS	Land Parcel Identification System

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## I. Objective

USAID supports economic growth in Macedonia through programs that strengthen and improve competitiveness of Macedonian agribusinesses, improve the business environment, and encourage local economic development. The objective of AgBiz extension is to build up the existing capacity and expertise of Macedonian professionals, lead firms, and farms to create a new understanding in the market for embedded services and fee-based service delivery. The provision of the services will be delivered sustainably by local partners well beyond the anticipated graduation of the USAID Macedonia program.

AgBiz value chain upgrading work will focus on supporting FF&V value chain participants to more effectively and efficiently link themselves to viable markets, identify possible new market entry opportunities and expand their export sales. EPI CENTAR was selected as the Lead Facilitator that will implement an activity package that will lead to better coordination between suppliers of raw material and inputs and traders/exporters to implement activities to encourage development of highly productive and competitive Integrated Supply Chains, overcome key constraints at both the pre-harvest and post-harvest levels and enhance the value chain's productivity and competitiveness. One of the initial activities is preparation of FF&V VC Baseline Screening and setting up a mechanism for regular discussion and information exchange between LAs and their farmers on the VC performance progress at the primary production level through established Focus Groups. This VC Baseline Screening is a product of the detailed analysis based on relevant desk and field research data received and discussed with all the relevant VC players.

## II. Background

Export markets for the table grapes are traditionally Ex Yugoslavian<sup>1</sup> (Ex Yu) countries, but recently this is changing. These markets are opening for products from other countries and in the last few years, there is also a trend of change in the consumers' habits. The current investments in the primary production of Fresh Fruits & Vegetables Value Chain (FF&V VC) in Kosovo and Serbia will present a serious threat to Macedonian producers. Considering that Kosovo and Serbia are the two most valuable export markets for the majority of the FF&V products as well as table grapes, the increased domestic production on these markets and increased number of competitors will have serious impact on the Macedonian domestic primary production. This will be a big challenge, since at the moment; the Macedonian production is not yet fully ready for EU markets especially regarding the post-harvest handling and packaging practices. The Russian market is also an option that is becoming relevant especially in the past few years. Poorly developed links with the local traders and big risks related to working on these markets, will have to be considered as well.

Under these circumstances, the key constraints, that impedes FF&V and table grapes producers and exporters to make optimal export decisions, is weak vertical integration and coordination and lack of market information flow between traders/exporters and farmers, but

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<sup>1</sup> Referring to the countries formerly being part of the Yugoslavian Federation in the period 1945-1992 consisted of six republics: Bosnia and Herzegovina, Croatia, Montenegro, Slovenia, Serbia and Macedonia which are all independent states today as well as Kosovo which used to be autonomous province.

also not having relevant VC data, and overview that will provide a clear, updated picture about the VC players, performance analyses, constraints and potentials, VC dynamics that can be utilize in developing specific interventions for Improving Competitiveness and Productivity and Increasing Domestic and Export Sales of FF&V products. Therefore, EPICENTAR as FF&V Lead Facilitator together with FFRM (Federation of Farmers of Macedonia) as a subcontractor implement an activity that includes the development of a Baseline Screening of the FF&V VC with the emphasis on three product groups: (apple/fruits, table grapes, and pepper/vegetables). It provides ready to use data and overview of the overall performance of the FF&V VC and serves as a tool for VCLAs (Value Chain Lead Actors), their suppliers and all other VC stakeholders but also for EPICENTAR, FFRM and AgBiz Program to understand the latest specifics of the domestic production, and the most current issues related to the FF&V VC export competitiveness.

The overall objective of this activity is the preparation of FF&V VC Baseline Screening and setting up a mechanism for regular discussion and information exchange between LAs and their farmers on the performance progress on the primary production level through established Focus Groups.

The methodology used is based on the research from both primary and secondary data sources.

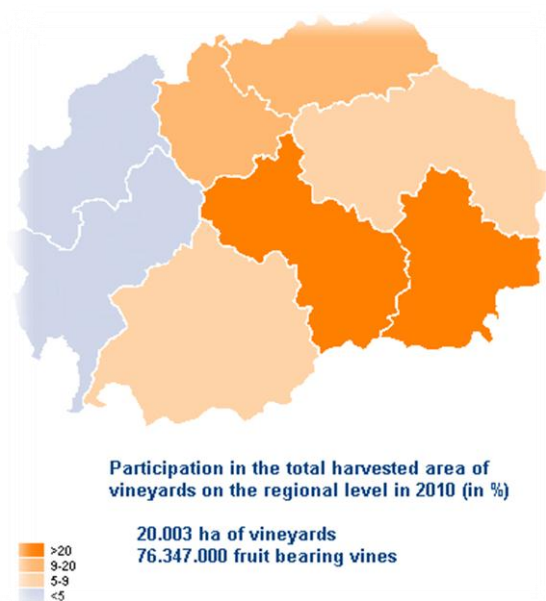
The secondary data sources used in the research were collected initially through desk research. The desk research was based on data available from State Statistical Office, State Customs Office, FAOSTAT, EUSTAT, reviewed reports and documents from various institutions and organizations.

For further improvement of the study and focused in-depth analysis, in order to increase the quality and credibility of the study EPI CENTAR used primary data collected through interviews with relevant VC players and Focus Group Discussions (FGD).

The data collected has been thoroughly analyzed and reviewed by the EPICENTAR Team, respective Academic and Market experts in the area and Federation of Farmers of Macedonia (FFRM) especially at the policy level. All the data received and analyzed has been cross-checked in order to provide relevance and consistency.



### III. Introduction to the Macedonian Table Grapes VC



The table grape value chain has a very important role in the Macedonian agribusiness as the export income from its output is large in its proportion (4, 7 million € in Y2010 or around 8% from the total export) and important for a number of producers and businesses involved (15.489 primary producers in Y2010<sup>2</sup> or 9% of the total producers in the evidence of the Ministry of Agriculture).

The viticulture in the country has a long tradition and experience. Viticulture and winemaking are especially important for the development of rural Macedonian hilly areas, labor engagement and use of the agriculture land which is unsuitable for other agricultural sub-sectors. Macedonia has a developed wine industry that is exposed to strong competition on the European markets, especially those emerging in the last five years. For this reason, large parts of the vineyards owners change their production to table grapes instead of wine grapes.

The main advantages of the Republic of Macedonia for table grapes production are favorable natural conditions, production skills and experience, considerable interest of the domestic and foreign investing companies for table grapes, as well as very close vicinity to the main European Union (EU) markets in comparison with the global completions (South Africa and South America).

<sup>2</sup> State Statistical Office of Republic of Macedonia, 2011, <http://www.stat.gov.mk/Publikacii/5.4.11.01.pdf>

## IV. Producers and production trends

### 1. Input Suppliers

#### 1.1. Main inputs

The establishment of table grapes vineyards consists of a number of inputs and operations that lead to a successful production. The operations used include selection of locations, preparation of fields, cleaning of the vegetation, deep ploughing, marking of parcels and seeding locations, seeding and growing.

The soil composition is very important for the quality and growth of the grapes. The grapes need good internal soil drainage to grow. Wet soils restrict root growth and respiration, resulting in weak growth, reduced yields and small vine size. Coarse-textured and gravelly soils have excellent soil drainage, but heavier soils, or soils with perched water tables often need drainage tiles to remove excess water and improve internal soil drainage. Air flow is an important factor in choosing a vineyard site. Cold air, similar to water, runs down hill, and collects in low areas, or areas where trees or hedgerows obstruct airflow. Good air flow will also promote faster drying of foliage which will reduce the duration and frequency of disease infection periods.

During the table grapes growth, various types of organic and mineral fertilizers are used for plant protection (disease and pests). In order to maintain the optimum soil moisture conditions and provide development of plant, irrigation is also mandatory.

#### 1.2. Main input suppliers (domestic and import)

There is significant number of companies registered as suppliers of agriculture inputs. The supplies of planting material are either produced in the country or imported. The imported seedlings are of different species, varieties and rootstock. There are few domestic companies engaged in the production of fertilizers, pesticides and phytohormones used in agriculture, and most of the registered companies are representatives of foreign manufacturers. Thus, the agriculture is highly dependent on imports of production inputs, such as fertilizers, pesticides, seedlings etc., including agricultural equipment (such as irrigation, anti-hail and anti-frost systems etc.), and other input supplies.

#### 1.3. Planting material and varieties

The table grapes market destination is one of the primary factors when deciding on the variety, regardless of the management strategy chosen. Several considerations for the table grape production are: the variety's relative resistance or susceptibility to fungal diseases in relation to the growing environment, the potential negative impacts of repeatedly applying copper and sulfur, and the potential for complete crop loss if the primary diseases of grapes are not controlled. The susceptibility to black rot should be one of the major considerations when choosing a variety to grow.

There is a limited number of companies and small family agriculture households that are involved in the production and trade of vine-planting material. They produce mainly non-certified material, with only one third being certified, which makes the certified planting material production insufficient (especially for indigenous varieties). In the last few years, the GoM has supported the production of table grapes planting material through establishing a table grapes planting material production center in Trstenik, near Kavadarci. In addition, new Regulations for the Production and Trade of Planting Material have been approved in 2011 that precisely regulate the steps for the production and trade in the country and the imports. The import of planting material from EU (following their list of approved table grapes varieties) is duty free which makes the most popular and market demanded table grapes varieties available to the Macedonian producers.

#### 1.4. Quality and certification

The two most important characteristics of the table grapes planting material are the identity and purity of the variety or the clone<sup>3</sup> that have an impact on the quality of the planting material. The level of tolerance in the purity and identity is only 1%, with minimum 96% technically correct planting material. The *unacceptable* planting material is considered to be:

- partially or completely dried;
- damaged, bent or injured ;
- damaged by hail or frost, or crushed or broken

The vine, which is used as a planting material, should be fully matured. The level of harmful organisms should be reduced to the lowest possible level. Planting material that has clear signs of harmful organisms that can not be cured should be destroyed.

There are four types of planting material, allowed for trade in the country:

a) **Initial planting material**, produced according to the accepted practices and standards for planting material that will be further used for the production of basic (prime) certified material;

b) **Basic (prime, mother) planting material**, produced from the initial planting material according to the standards and practices for basic planting material which is virus- and infection-free;

c) **Certified planting material** (for reproduction), produced from the basic (prime) or mother planting material which is mainly used for reproduction or for direct production of table grapes;

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<sup>3</sup> A clone is defined (Hartmann, et al., 1990) as a genetically uniform group of individuals derived originally from a single individual by asexual propagation (cuttings, grafting, etc.). All grape varieties are propagated by asexual means to preserve the unique characteristics of the variety. But slight genetic variations commonly occur among the many billions of cells that make up a grapevine. If a new vine is propagated from a cane that grew out of such variant tissue, it may exhibit somewhat different characteristics than the original vine. If the difference is desirable, for example, the new vine ripens its fruit a week earlier; the vine could be further propagated to perpetuate the new characteristics. Thus, a new clone is born and it is assigned a number or given a name to distinguish it from other clones.

d) **Standard planting material** (for reproduction), produced for reproduction or for direct production of table grapes;

All different types of planting material are tested by the appropriate entity (that was licensed for such operation according to Law), with a predetermined procedure which confirms the quality and safety of the planting material.

Different colors are used for the label of the planting material: white with purple diagonal stripe for initial material, white for basic (prime or mother) planting material, blue for certified material and dark yellow for standard material.

## 2. Producers and Production

### 2.1. Production Trends in the last 10 years

The total grape production in Macedonia in the last ten years was 232.03 million kg. This value strongly varies in the last decade, from 118.9 million kg in Y2002, 254.6 kg in Y2004, 209.7 million in Y2009 and in 2010 it raised to nearly identical amounts of grapes of about 253 million kg in Y2004. Except in 2002, when the low production was the result of the very bad environmental conditions, the environmental conditions were favorable for the development of vines and production of quality table grapes in the other years.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
<b>Production of table grapes in million kg</b>	229.8	118.9	243.8	254.6	265.7	254.3	209.7	236.8	253.4	253.3	232.0

Table 1: Production of table grapes in million kg, stat.gov.mk

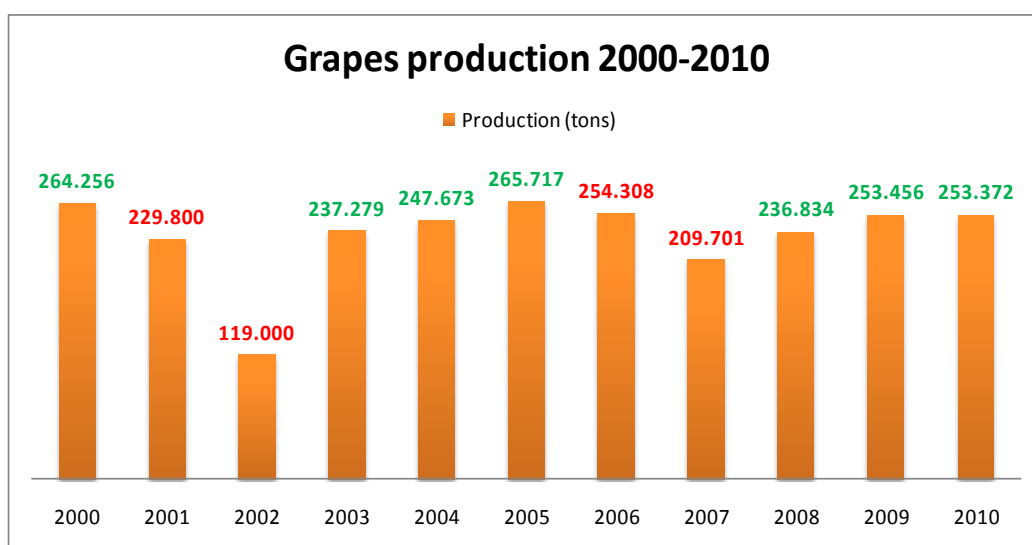


Chart 1: Grapes production 2000-2010 in tons (MT), FAOSTAT

The grapes production base, in spite of considerable investments in the last decade and strong support by the state (GoM direct subsidies and rural development program) is still weak. Vineyards are more than 15 years old on average and have passed their peak. Most vineyards are small (between 0.5-1.5 ha) and scattered, used largely for individual production, without contract-based farming that will define the varieties, quantities and price range for the agriculture output. Nevertheless, the grapes production and especially the table grapes in Macedonia is maintained and slowly increasing, represented by new market demanded varieties, improved production technology and increased productivity.

Production of grapes in tons by regions						
	2005	2006	2007	2008	2009	2010
<b>Republic of Macedonia</b>	212.102	254.308	209.701	236.834	253.420	<b>253.372</b>
Vardar Region	108.459	124.741	97.524	125.552	132.250	<b>134.740</b>
Southeast Region	44.497	64.349	57.259	50.042	51.951	<b>48.213</b>
Skopje Region	19.883	19.904	12.232	16.404	20.842	<b>21.682</b>
Northeast Region	16.477	16.594	16.146	13.427	18.025	<b>18.679</b>
East Region	8.226	10.412	8.507	12.342	11.540	<b>10.871</b>
Pelagonija Region	6.390	10.147	9.352	10.177	8.260	<b>7.966</b>
Southwest Region	7.731	7.708	8.291	8.438	10.094	<b>10.754</b>
Polog Region	440	453	390	451	458	<b>467</b>

Table 2: Production of grapes in tons by region (2001-2010), stat.gov.mk

On a regional level, the grapes production varies; the leading production region in the country is the Vardar region where over 50% of the total produced grapes are grown. It is followed by the Southeast region with around 19%, the Skopje region - 9%, the Northeast region - 7%, while all the other regions grow below 5% of the total grapes. These regions, including the Southwest region, have a tendency of increasing the production in the last decade, while the other three regions have reduced and almost unimportant production quantities. On a municipal level regarding the produced quantities the first three are Kavadarci, Negotino and Skopje, while the most productive in 2010 were Valandovo (18,5 t/ha), Bogdanci (17,1 t/ha) and Kavadarci (16,02 t/ha).

Top ten municipalities by production in tons in 2010			
		ha	tons
<b>1</b>	Kavadarci	4.442	71.181
<b>2</b>	Negotino	1.690	25.262
<b>3</b>	Skopje	1.287	16.819
<b>4</b>	Valandovo	741	13.727
<b>5</b>	Rosoman	881	12.907
<b>6</b>	Kumanovo	843	12.811
<b>7</b>	Vasilevo	745	7.757
<b>8</b>	Gevgelija	563	7.701
<b>9</b>	Bogdanci	437	7.512
<b>10</b>	Bosilovo	530	7.329

Table 3: Top ten municipalities by production of table grapes in 2010, stat.gov.mk

## 2.2. Production area in ha last 10 years

The total harvested area under vineyards in Y2010 was 20.032 ha. In the last decade the total area of vineyards varied from 27.000 ha in 2001 down to 19.900 in 2009.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Fruit bearing vineyards in '000 ha	27.1	26.2	25.7	24.8	25.0	24.3	21.3	21.8	19.9	20.03

Table 4: Production area in ha (2001-2010), stat.gov.mk

The fruit-bearing vineyards have decreased for around 7.000 ha in a decade or for around 700 ha per annum. In comparison to 1985, when Macedonia had around 35.000 ha of vineyards, the total harvested area has a drastic decrease of over 15.000 ha in a 25 year period. Numerous factors influence the decrease among which three are main factors:

- Privatization of the large agriculture production enterprises, bad transition and unsecured business environment in the early 90's, which resulted in old, abandoned vineyards for almost one decade. This led to decreased production as well as lower penetration and demand on the ex-Yu markets (partly due to the wars in the region and political and economic embargos to Serbia).
- Improved production technology and replacement of the old vineyards on smaller areas by the newly established wineries and larger producers. From late 90's up to 2005, the number of wineries in the country increased from 20 up to 58 registered wineries, oriented to the production of high quality and premium wines, demanding high-quality grapes in limited quantity. At the same time, the wave of new (small and medium) wineries has seriously affected the few larger producers of grapes and wineries that had large areas under vineyards, reaching 4-5.000 ha<sup>4</sup>.
- Low buy-out prices, long, almost one year payment delays by the buyers (mainly wineries) and unsecured market demand by the Macedonian wineries or exporters of table grapes. From 2007 the crisis in the grapes and wine industry has been seriously felt both by the exporters (of wine and grapes) and the primary producers. In 2008 the crisis reached its peak, resulting in large quantities of wine grapes that could not be sold to the domestic processors, as their cellars were full with wine from previous years and the market demand was limited. In addition, in 2009 the wineries started to have serious problems with the export of wine under the Macedonian brand (country of origin: Macedonia being internationally protected by Greece) due to the name dispute caused by Greece and imposed over the wine industry. As a result of these events, the primary producers started first to convert the wine grape production to table grape production, and later on, to convert the table and wine

<sup>4</sup> In this period some of the largest wineries and producers such as Lozar -Veles, Lozar- Bitola, winery Ohrid, winery Kumanovo, Povardarie-Negotino etc. decreased their production or almost have stopped their operations.

grape production to more favorable products for the export markets, such as peach orchards. Unfortunately, this trend has not stopped and it still represents an overall serious threat to the grapes industry.

### 2.3. Average annual yields

The average yield in the country is 9,8 t/ha, calculated on the basis of statistical data for the last decade (Y2001-Y2010). The lowest yield was noted in Y2002 with only 4,5 t/ha, partly because the vineyards were mainly old and partly due to the old production technologies. In the following years the yields increased and reached 12,5 t/ha in Y2010.

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
<b>Yield of grapes in t/ha</b>	8.5	4.5	9.5	9.5	13.0	10.5	9.8	10.9	12.7	12.5	9.8

Table 5: Yield of grapes, t/ha in period 2001-2010, stat.gov.mk

The main reasons for increased yield or overall improvement of productivity are:

- Improved (modernized) production technology, considering investments in drip irrigation systems, adequate and systematic appliance of agro technical measures (pest management);
- Enlarged and standardized parcels of uniformed varieties by the newly established enterprises and lead farmers (possessing over 5 ha of vineyards);
- Introduction of new, more productive and market demanded varieties with a better quality, shelf life and better disease resistance;
- Improvement of the quality of planting material used (certified planting material) which is tested and virus free, mostly in the larger vineyards owned by the enterprise or lead farmers.

### 2.4. Number and size of producers

Over 25.000 primary producers and approximately 60 agricultural enterprises are engaged in the grapes production. Before Y2000, the agricultural entities were operating on 9.7 thousands ha vineyards, while today they operate on 5.4 thousands ha vineyards. The decreasing tendency of areas covered with vineyards is also noted in the individual production sector, although not so drastic (from 17.3 thousands ha in Y2000 to 16.3 thousands ha in Y2009). Some of the reasons behind for this trend are the insecure markets, low buyout prices and the delayed payment period.

The total vineyards of the individual agricultural entities producing wine grapes are three times larger than the vineyards of the agricultural enterprises. In contrast, the table grapes vineyards of the agricultural enterprises are bigger for only 300 ha than the total size of the individual agricultural producer's areas. The agricultural enterprises have total vineyards

area of 7.500 ha, of which 5.700 ha are wine grapes and 1.700 ha are table grapes; the ratio being 3:1 in favor of the wine vineyards.

The individual agricultural producer vineyards of wine grapes are ten times larger than the total size of the table grapes ones. According to the state statistical office data, filed research, experts review and FGD discussions, the table grapes vineyards are estimated to be around 3.100 ha, from which 1.700 ha are owned by agricultural enterprises, while 1.400 ha are the property of individual agricultural producers. The average size of the vineyards is around 0,7 ha.

Four types of vineyards can be distinguished in the country:

- Small family vineyards with the size of around 0,3 ha that are not for commercial production;
- Small to medium-sized vineyards, between 0,3 – 3 ha, that belong to grape growers whose focus is on grape production for buy-out (traders and export companies);
- Large, leading farmers (producers) that have over 3 ha of table grapes vineyards with a modern production technology, new market demanded varieties, and who usually make pre-contracts (at least oral agreements) with the traders/exporters;
- Large vineyards, ownership of agriculture/agribusiness companies where the size of the vineyards is over 8 ha, with a modern production technology, market demanded varieties and organized sales on the export markets;

## 2.5. Varieties and production technology

In the total amount of vineyards, the wine varieties account for 70%, among which 60% are red, while 40% are white wine types. The most popular red wine varieties are “Vranec” and “Kratoshija”, while among the most popular white wine varieties are “Smederevka”, “Zilavka”, and “Chardonay”. In the National Wine Variety Catalogue of the Republic of Macedonia 32 table grapes varieties, 51 wine varieties, and 10 rootstocks are listed as recommended.

Among the recommended table grapes varieties on the list are:

1. Kardinal / *Cardinal* n
2. Super ran afus ali / *Super ran bolgar* b
3. Kralica na lozjata / *Reine de vignes* b
4. Demir Kapija / *Demir kapija* b
5. Julski muskat / *Perle de csaba* b
6. Blek mexik / *Black magic* n
7. Srbija / *Srbija* n
8. Viktorija / *Victoria* b
9. Matilda / *Matilde* b
10. Chaush bel / *Tchaouche blanc* b



11. Chaush rozev / *Tchaouche rose* rs
12. Shasla bela / *Shasselas dore* b
13. Shasla crvena / *Shasselas rouge* rs
14. Muskat hamburg / *Muskat de hambourg* n
15. Palieri / *Palieri* n
16. Ribier / *Alphones lavallée* n
17. Afus ali / *Dattier de Beyrouth* b
18. Italija / *Italia* b
19. Aleksandriski muskat / *Muscat d'alexandrie* b
20. Agadaj / *Agadaj* b
21. Manastirsko belo / *Manastirsko belo* b
22. Konchanka / *Konchanka* n
23. Crven valandovski drenok / *Crven valandovski drenok* rs
24. Crn valandovski drenok / *Crn valandovski drenok* n
25. Don marijano / *Don mariano* n
26. Belo zimsko / *Belo zimsko* b
27. Moldavija / *Moldova* n
28. Sultanina / *Thompson seedless* b
29. Beogradska besemena / *Beogradska besemena* b
30. Flem sidles / *Flame seedles* n
31. Rusalka - 3 / *Rusalka - 3* n
32. Kishmish moldavski / *Kismis moldavski* n

All the varieties listed are *Vitis vinifera* or originate from hybrids of this variety or some with similar genus.

The most common table grapes varieties in the Republic of Macedonia are: Afus Ali, Cardinal, Ribier, and Muscat Italy, followed by the Muscat Hamburg, Palieri and Victoria.

- **Afus Ali** is the most common variety in the Republic of Macedonia, with approximately 4,000 ha vineyards. This is the most common table grape variety in the world, known under different synonyms, as Regina in Italy, Dattier de Beyrouth in France and England, Havzali and Razaki in Turkey, Rosaki in Greece, Karaburnu in Russia, Allepo in Romania, Stanbolese in Albania, Blanca uva de real in Spain, Waltham cross in South Africa, Datteltraube in Germany etc. It originates from Middle East. The grape is pretty big with a long extended shape. The shell is tenacious, colored greenish yellow, juicy with high sugar content plump. In the Republic of Macedonia, it is harvested around September 1<sup>st</sup>. It is grown on *trallice* support construction or *pergola tendone* support construction. It has high yields with over 30 t/ha and premium fruit quality.
- **Muscat Italia** is a Pirovano variety from Italy, a combination of Bikane and Muscat Hamburg. The Muscat variety of grapes of the species *Vitis vinifera* is widely grown for wine, raisins and table grapes. Its color ranges from white to nearly black. Muscat almost always has a pronounced sweet floral aroma. Muscat grapes are grown all over the world. The breadth and number of varieties of muscat suggest that it is perhaps the oldest domesticated grape variety, and there are theories that suggest that most families within the *Vitis vinifera* grape variety descend from the Muscat variety. The grape is big, with for the shape of an overturned egg, wider at the top.

The shell is characteristic with a specific dark red color. The yields are very high, with average grape weight of 400-500 grams. It is excellent for transport and maintenance in cooling facilities.

- **Victoria** - a variety of table grapes with an early ripening period, created in Romania by the picker Victoria Lepadatu. The grapes are big, cylinder-conical, winged. The grains are very big, white or green-yellowish, with amber bronze, oval-oblong. It has a dense and fleshy pulp - dense, with a sweet pleasant taste. It contains 2-3 seeds. This variety has a high transportability and a very attractive look. Taking into account that it is a new variety, recently created, it has become quite popular in the countries of Southern Europe, being considered as one of the basic white varieties of early ripening, which contains seeds. It is a very interesting variety for the Republic of Macedonia, ripening in a season when there are no other varieties.
- **Palieri** - a variety with very attractive violet-black bunches, appreciated by the consumers because of the pulp sweetness. The bunch is cylindrical-pyramidal shaped with an average weight of 600 – 800 grams; the berry is almost large, ovoid, with medium-thick violet-black pruinous skin, the pulp is crunchy, firm and juicy, the taste is neutral-sweet. The yield is good and continuous and the grapes ripen during the first ten days of September.

Around 60% of the vineyards are older than 15 years, with 38% of the total vineyards fields approaching the end of their productive life.

The use of mechanization in the production of vineyards is inconsiderable (currently the mechanization that is used is only for cultivation of the soil and for appliance of pesticides). No mechanization is used for the application of ampelo-technical measures. The existing tractors and supplementary equipment are technically and economically outdated with frequent breakdowns and high consumption of fuel and oil. Hence, it is necessary to renew the mechanization and specialized equipment used for the cultivation of vine in order to reduce the production costs, make the production cheaper, improve the quality and perform all the necessary measures and operations in the viticulture.

In the long run, small and fragmented parcels of vineyards, even with the production of medium intensity, do not allow a more intensive modernization and use of mechanization, which leads to a less competitive production on the market. In recent years, several companies operating in other economical sectors, unrelated to agriculture, have started to invest in vineyards and wine production.

As a result of these investments, the vineyards are restored in some of the well known areas, especially on the fertile soils in the Tikves and Gevegelija-Valandovo vineyard region. In these areas, the production of grapes in the individual sector is increased.

## 2.6. Classification of production by quality (I-III category)

The fruit weight for almost all table grapes varieties is around 400 grams on the average i.e.

taking into account all the fruits on the vine. According to the EU regulations for grapes quality, the minimum weight for a fruit on a bearing vine should be 200 grams.

European standards for table grape quality (fruit size)		
Category (Class)	Table grapes in vineyards	
	Big grains	Small grains
Extra	200 g	150 g
I (First) category	150 g	100 g
II (Second) category	100 g	75 g

Table 6: European standards for table grape quality

The table grapes varieties produced in Macedonia belong mainly to the first category, satisfying the demands for the grapes weight. However, when it comes to other characteristics that determine the category of the production, the Macedonian table grapes have a lower performance in relation to the form, color, maturity of the grape, sugar content and acidity.

The Macedonian exporters follow the European quality standards in order to satisfy the demands of the export markets, including Serbia and other Ex-YU countries. In the last decade, considerable knowledge transfer to the producers and some success stories have been identified, mostly as a result of the USAID support to agriculture and agribusiness projects as well as other efforts of the donor communities in the country. The producers have been given ample opportunities to follow the instructions of experts for the improvement of the production quality during the growing, harvesting and post-harvesting period through organized study visits, direct contacts and close cooperation with the few larger buy-out companies. However their number is limited and most of the production is still inadequately handled which results in a shorter shelf life and easier conversion of the grape to a lower category in a very short period, from a couple of days to one week, limiting their market opportunities in the EU countries.

## 2.7. Production cost structure (unit cost)

The investment in table grapes vineyards and their maintenance are expensive in the first three years. Depending on the type of support construction, the investment varies from 9.000 Euros for trallice up to 20.000 Euros for pergola tendone. From the fourth year, the annual maintenance cost decreases and it is approximately 2.000 Euros for trallice and 3.500 Euros for pergola tendone.

#	Land preparation Costs in MKD	Unit price	Costs for 1 ha	Costs for 5 ha
1	Cleaning the vegetation	2.500	2.500	12.500
2	Deep agrimeliorative ploughing	30.000	30.000	150.000
3	Ploughing	2.000	4.000	20.000
<b>Total</b>			<b>36.500</b>	<b>182.500</b>

Table 7: Land preparation costs comparison for 1 and 5 ha in MKD, Field Interview

#	Parcelation Costs in MKD	Units per 1 ha	Total for 5 ha	Unit price	Costs for 1 ha	Costs for 5 ha
1	Markers for rows (70cm)	80	400	3	240	1.200
2	Markers for seeding locations	2.667	13.335	1	2.667	13.335
3	Markation wire for row	100	100	70	7.000	7.000
4	Markation wire in the rows	120	120	70	8.400	8.400
6	Daily wage in MKD	5	25	700	3.500	17.500
<b>Total</b>					<b>21.807</b>	<b>47.435</b>

Table 8: Parcelation costs comparison for 1 and 5 ha in MKD, Field Interview

#	Planting Costs in MKD	Units per 1 ha	Total for 5 ha	Unit price	Costs for 1 ha	Costs for 5 ha
1	Planting material	2.667	13.335	70	186.690	933.450
2	Water m <sup>3</sup>	8	40	5	40	200
3	Fertilizer	10.000	50.000	1	10.000	50.000
4	Superphosphate	318	1.590	70	22.260	111.300
5	Kaliumphosphate	80	400	100	8.000	40.000
6	Insecticides	8	40	300	2.400	12.002
7	Daily wage in MKD	12	60	700	8.400	42.000
8	Hydrobur	1	5	2.000	2.000	10.000
9	Transport of planting material	1	5	4.000	4.000	20.000
<b>Total</b>					<b>243.790</b>	<b>1.218.952</b>

Table 9: Planting costs comparison for 1 and 5 ha in MKD, Field Interview

#	Support Construction Costs in MKD	Units per 1 ha	Total for 5 ha	Unit price	Costs for 1 ha	Costs for 5 ha
1	Construction trellis	1	5	145.925	145.925	729.625
2	Transport	1	5	9.000	9.000	45.000
3	Daily wage in MKD	57	285	700	39.850	199.250
<b>Total</b>					<b>194.775</b>	<b>973.875</b>

Table 10: Support construction costs comparison between 1 and 5 ha in MKD, Field Interview

#	TOTAL INVESTMENT COSTS for 1 ha	IN MKD	IN EUR	IN %
1	Land preparation Costs	36.500	593,5	7%
2	Parcelation Costs	21.807	354,6	4%
3	Planting Costs	243.790	3.964,1	49%

4	<b>Support Construction Costs</b>	194.775	3.167,1	39%
<b>Total</b>		<b>496.872</b>	<b>8.079,2</b>	<b>100%</b>

Table 11: Total Investment costs for 1 ha in MKD, Field Interview

#	TOTAL INVESTMENT COSTS for 5 ha	IN MKD	IN EUR	IN %
1	<b>Land preparation Costs</b>	<b>182.500</b>	2.967,5	8%
2	<b>Parcelation Costs</b>	<b>47.435</b>	771,3	2%
3	<b>Planting Costs</b>	<b>1.218.952</b>	19.820,4	50%
4	<b>Support Construction Costs</b>	<b>973.875</b>	15.835,4	40%
<b>Total</b>		<b>2.422.762</b>	<b>39.394,5</b>	<b>100%</b>

Table 12: Total Investment costs for 5 ha in MKD, Field Interview

The total investment costs for a table grapes vineyard of a 1 hectare market demanded variety (in this calculation, Muscat Italy) are 496.872 MKD in total, or 8.079,2 Euros, while for a 5 ha market demanded variety it is 2.422.762 MKD, or 39.394,5 Euros. In both cases the most significant part in the investment is the planting cost with around 50% of the total cost and the support construction costs (tralicce) with 40% of the total costs.

As illustrated above, the total investment costs are relatively high and the expected time for full use of the vineyards is after the fourth year, for a total period of 15 years.

The table below shows the maintenance costs on an annual basis calculated for 1 ha of Muscat Italy, with labor costs included - the total of 347.867 MKD, and the variable costs, calculated on the present market prices.

In addition, the sales income of the grapes harvested is calculated on the present grapes buy-out prices, where a total of 600.000 MKD is projected as an income, for around 40.000 kg of grapes, out of which 30.000 kg belong in the first and second categories.

The annual profit from 1 ha of Muscat Italy table grapes vineyard is 252.133 MKD.

INCOME	Quantity	Price/MKD	Total
<b>Muscat Italy Table Grapes</b>	30,000.00	18	540,000
<b>Leftovers – non quality grapes</b>	10,000.00	6	60,000
			<b>600,000</b>
VARIABLE EXPENSES			
<b>MATERIALS</b>			<b>110,892</b>
<b>Rope – kg</b>	10.00	150	1,500
<b>Harvesting Boxes</b>	3,333.00	24	79,992
<b>Fuel</b>	400.00	71	28,400

Other materials	-	-	1,000
<b>FERTILIZERS</b>			<b>61,620</b>
Fertilizer NPK kg	500.00	35	17,500
Ammonium Nitrate kg	220.00	26	5,720
<b>PESTICIDES</b>	8.00	4,800	<b>38,400</b>
<b>MECHANIZATION</b>			<b>35,550</b>
Transportation services	7.00	3,000	21,000
Tractor services	0.17	3,000	510
Autumn ploughing	0.50	3,000	1,500
Spring ploughing	0.50	3,000	1,500
Cultivation (4)	1.48	3,000	4,440
Fertilization	0.60	3,000	1,800
Spraying (6)	1.60	3,000	4,800
<b>TRANSPORTATION</b>	7.50	3,000	<b>22,500</b>
<b>OTHER EXPENSES</b>	1.00	3,000	<b>3,000</b>
<b>LABOUR</b>	1.00	137,525	<b>137,525</b>
<b>TOTAL VARIABLE EXPENSES</b>			<b>347,867</b>
<b>PROFIT</b>			<b>252,133</b>

## V. Post Harvesting

### 3. Traders (Storage and Packaging)

#### 3.1. Buy-out and post-harvesting

The traders in the country are usually the ones that export the table grapes quantities to the main export destinations. The trading business has been developed in the last two decades and different companies specialized in specific sub-sectors. Still, very few of them are specialized in the packing and exporting of table grapes only. Predominantly, they are companies that are involved in the export of various agricultural products and hence, the table grapes segment represents only 10-20 %<sup>5</sup> of their overall business in terms of volume and value.

The exporters mainly cooperate with individual producers and in rare cases, with enterprises that do only the buy-out or table grapes produce. The producer's responsibilities in the buy-out process include: harvesting, classification and loading in big plastic boxes, as well as transport to the buy-out facility.

On the other hand, the cleaning, checking and control of the classification, packaging, labeling, storing, loading and transport of the table grapes are organized by the trader (exporter). In some operations, trimming, color sorting, and a first quality sorting may also be performed. After packing and lidding, grapes are palletized.

When the packing and labeling is finished (which in most cases requires 10-12 hours) the grapes are loaded on to cooling trucks and transported to the export destination.

In rare cases, the table grapes are stored, only for shorter period of time, in cooling warehouses. Few of the traders and/or exporters own cooling and storing facilities appropriately used to maintain the table grapes for some period. Some of the exporters, on rare occasions, rent cooling facilities for limited quantities of table grapes.

Traders and exporters of table grapes from Macedonia operate mainly on regional markets. For that reason, only some of them have implemented appropriate food safety/food quality certificates. This represents a serious concern for the future development of the sector and targeting of other non-traditional markets, which have stricter standards in regards to the requirements related to food standards and consumer safety.

#### 3.2. Post harvesting facilities

The EPICENTAR field research has shown that only two companies in the Kavadarci area (Peca komerc and Kav komerc), out of the 12-15 table grapes companies traders in the

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<sup>5</sup> Profile of the Macedonian Table Grapes Value Chain, MCG, Agbiz, USAID, 2008

country, are fully specialized and dedicated to the table grapes business, trying to cover the whole process from production to consumer markets. The investments in their business operations are high in the last decade and the quality of their operations has improved.

These two companies have their own cooling facilities with modern equipment and technology adapted to their needs. However, neither has introduced a controlled atmosphere cooling facility.

Other companies such as Altra, Euromilk, own cold stores and provide services to other companies for storing their table grapes. These storing/cooling facilities originate from the larger agricultural state owned companies from the late 70's and 80' that were privatized in the transition period in the 90's. In some of them, the production technology is improved; however, many of them operate with repaired equipment from that period. In this aspect, the quality and safety of the old storing/cooling facilities to maintain the table grapes quality are questionable.

According to the exporters, among the most important reasons that limit the development of the table grapes industry are lack of post-harvesting equipment and poor post-harvest skills and practices.

### *3.3. Post harvesting operations*

The quality of table grapes is usually considered as a combination of appearance and flavor during shelf-life. A decrease in quality during postharvest handling of table grapes is generally associated with water loss, respiration, browning of the cluster stem and shelling of the grapes.

The table grapes are rarely received at the packaging facilities (traders, exporters owned), they are usually harvested and packed directly on the field in packages provided by the exporters and then transported to the cooling facility. In very rare cases, the traders/exporters provide plastic boxes for the produces to pack the harvested grapes by the late morning hours and then transport them to the traders' packing facilities. The transport to these facilities takes not more than 45 minutes from the most distant fields and it is organized by tractors or trucks.

The plastic boxes are received on the loading access ramp and weighed on large industrial scales according to the classes of the table grapes. After weighing, the grapes are gently loaded off from the plastic boxes and put on a calibration and packaging trail where in rare cases the temperature is controlled.

Grading is organized mainly in two-three categories, depending of the grapes variety and the end market. The grading understands checking on the grape size, color, and sugar and bunch weight as well as assumed presence of defects. According to the grading, the grader puts the grape bunches in adequate containers. The containers are wooden boxes or cartons, depending on the market demand.



After being placed in containers, the table grapes are weighed again and further packed gently, to ensure that there are no crushes or bruising of the grapes. Some companies pack the grapes in plastic liners which are micro-perforated.

Before labeling, the weight of the boxes is checked again before closing. Some of the companies practice putting an absorbent paper sheet on top of the grapes. According to the traders, the labeling is becoming very important. For that reason, the labeling of boxes or cartons is organized very carefully as this is what the end buyers see first and they will unconsciously form an opinion even before they open the box and see the grapes.

Post harvest grapes are susceptible to fungal infection even when stored at the optimal temperature of 0.5°C. Some of the newest trends on the domestic market are to use sulphurous sheets, which do the fumigation. However, traders are aware that this process should be handled very carefully since very high concentrations of sulphurous dioxide cause grape injury, visible as bleaching of the skin color.

The challenge of using sulphurous sheets to fumigate grapes is a commonly used practice by Macedonian traders since it will enable a longer shelf life for the products and targeting of different markets in different sales seasons.

## VI. Markets

### 4. The Domestic Markets

#### 4.1. Total consumption on the domestic market (quantity); domestic and imported

The domestic consumption of table grapes is currently estimated at around 2,5 kg/per capita. This estimate comes close to what can be derived based on the domestic sales (buy-out) and import quantities. Compared to other countries, such as Italy, with 10-15 kg/per capita, the Macedonia consumption of table grapes is very low. Even though Macedonia is among the largest producer of table grapes in the region, the consumption traditionally has a seasonal character, which lasts for a month and a half. This is closely connected to the historical tradition of buying fresh fruits and vegetables on the open green markets in the past (habit that is rapidly changing in the last decade in the favor of large supermarkets). Today the fresh table grapes can be found all the year round in the supermarkets, but it's out-of- season price is relatively high for the Macedonian consumers, which makes the consumption limited.

When it comes to the consumption habits in the country, the quality standards are similar to those of the region, i.e. the sugar content (sweeter-better), and size of the grape (bigger-better).

#### 4.2. Varieties market trends

The varieties used are mostly seed grapes (Affus Ali, Victoria, Cardinal) as well as traditional old "domestic" varieties, specific for some of the Macedonian regions (such as Valandovski drenok in Valandovo-Gevgelija vineyard region, Belo zimsko and crveno zimsko in Tikves and Pelagonija etc).

Besides the old varieties, the new Macedonia market trends classify the table grapes in two categories:

- Grapes with seeds, about 95% of all grapes sold belong to the seeds varieties. The seeds varieties are divided into:
  - **White varieties:** Afus ali, Moldavia, Ribier, Kardinal, Victoria, Muscat Italia
  - **Red varieties:** Michel Pallieri, White winter, Melnik & Queen, Muscat Hamburg,
- Seedless Grapes, only one company in Macedonia produce seedless grapes including the following varieties: Crimson Seedless, Rali, and Red Globe.

As for specific market trends, the majority of customers prefer seed grapes, although the seedless grapes have a good perspective on the market, but the price out of and during the season is very high and most of the domestic consumers can not afford it.

The Afus Ali, Ribier and Kardinal varieties are very popular among the domestic consumers. Sometimes, the Viktoria variety is sold under the Afus Ali brand, because most of the customers are not familiar with the new variety brand and it is much easier to sell it on the domestic market, if the name of table grape is recognizable by the customers.

Macedonian consumers prefer both red and white varieties of table grapes. The imported variety is present on the market mostly during the out-of season period in very limited quantities. The quality of the imported table grapes is excellent, but the price is very high for the Macedonian standards.

The imported quantity during the period January to August is around 2 tons per month, which is sold mostly in the larger supermarkets in Skopje, as well as in the HORECA (Hotels, Restaurants and Catering) facilities in the country (mostly in the “casino tourism” places in Dojran, Gevgelija, Bitola all the year round, as well as in the Mavrovo ski resort and Ohrid lake during the limited tourist season).

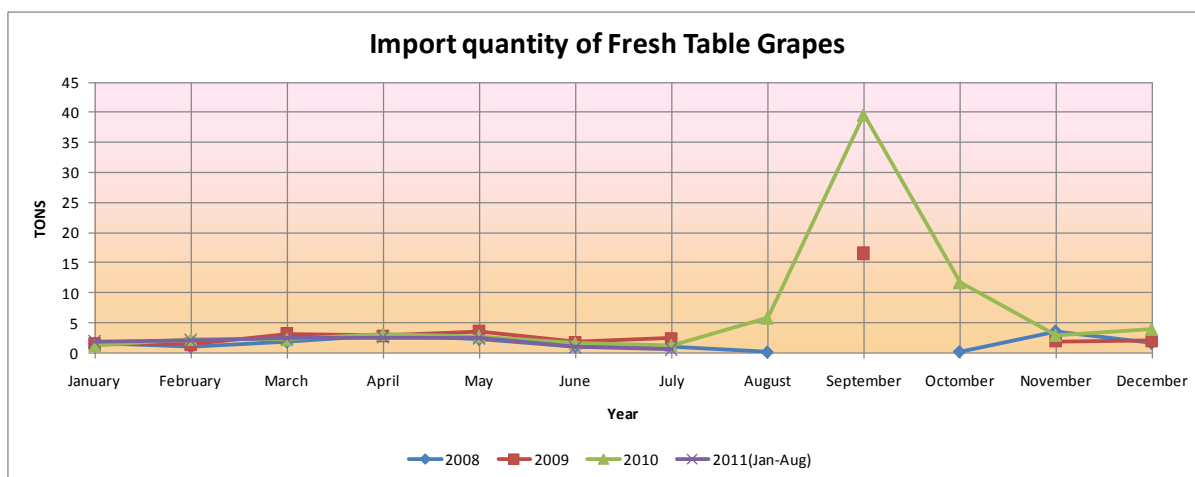


Chart 2: Import quantity of Fresh Table Grapes, stat.gov.mk

The import price ranges between 0,7-1 Euro/kg in the period January-August, reaching the highest price in January and February, and the lowest in July. In the period October-December the highest price is in December 0,8 Euro/kg. The import in the period August-October is insignificant and as illustrated on the chart below, almost nonexistent, except in 2010, when most probably the imported quantities were re-exported since they were relatively high (40 tons) for that period of the year.

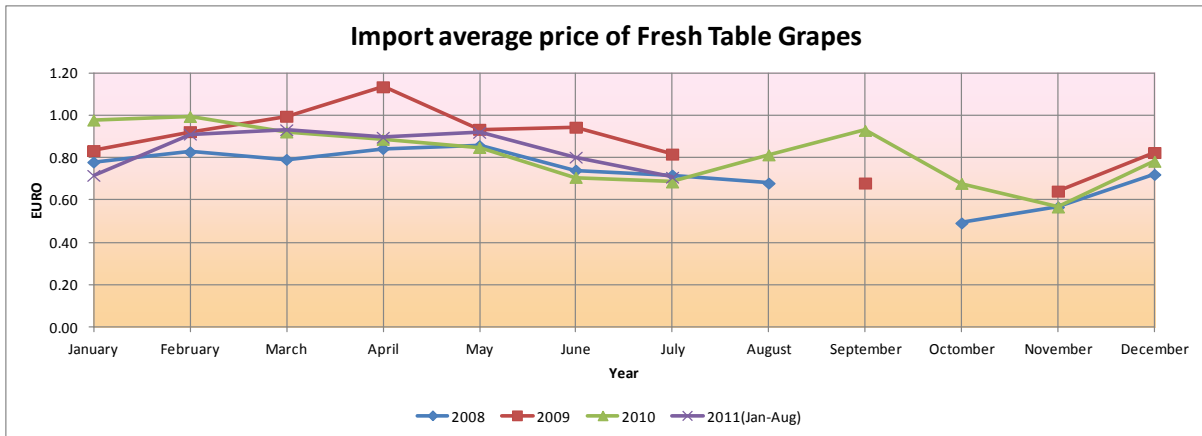


Chart 3: Import average price of Fresh Table Grapes, stat.gov.mk

The import price in the last four years does not show trends of extreme increase/decrease being the highest in 2009. The import price is determined on the global market, where Macedonia has no influence, especially in the mentioned period (January-August) when there is no production of grapes in the country.

#### 4.3. Retail prices and retail markets players, market share

In recent years, there have been major changes in the marketing of fruits and vegetables in Macedonia. Small local shops and open markets still comprise the largest number of outlets but they are increasingly being replaced by large supermarkets.

The most important retail markets players are Tinex and Vero. The price is set according to the quality, variety and packing of table grapes.

The major suppliers of the local markets are GD Tikves, Venec, Suklev Company, Peca Commerce, Ledra Agro, Badzo, Agrolozar, and other smaller producers.

Each of Macedonia's leading retail groups has a different business structure, purchase and distribution system.

Direct sale to Macedonia's leading retailers is typically very difficult; as most retail buyers are not interested in taking on the added responsibility or time and resources necessary to organize the supplies of table grapes.

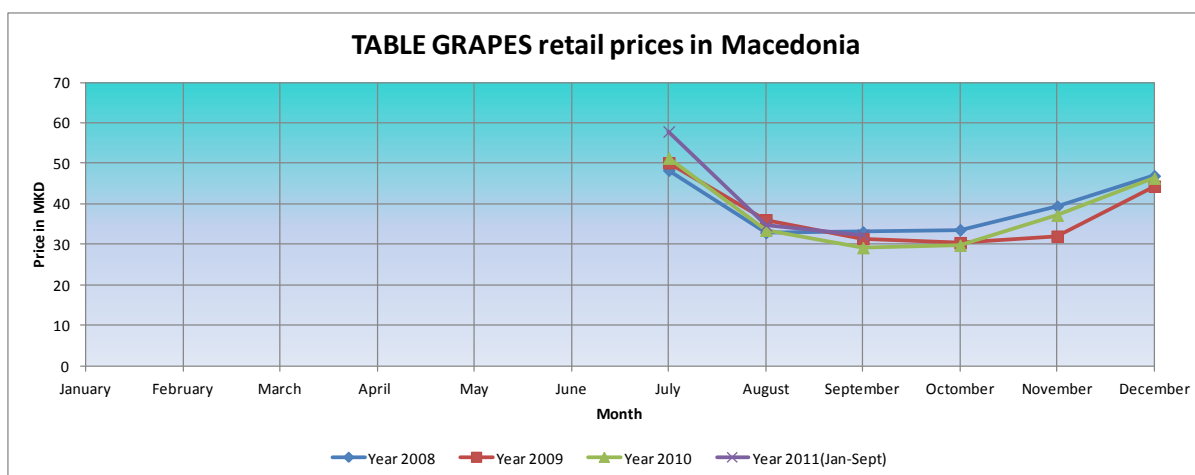


Chart 4: Table Grapes retail prices in MKD in Macedonia, stat.gov.mk

The retail prices of table grapes on the domestic market are recorded by the state Statistical Office only in the period July-December (under the assumption that most of the consumption of table grapes in this period is of domestic origin); when, as illustrated in the chart above, the highest prices are achieved in July, around 1 Euro/kg.

#### 4.4. Wholesale prices and wholesale markets and players, estimated market share by type

The buy-out quantities of table grapes as recorded by the State Statistical Office in the last five year period are decreasing which is contrary to the production trends recorded on the field by EPICENTAR and by the experts involved, which show an increase, at least in the period 2004-2010. On the other hand, the exported quantities of table grapes are much higher (around 13.000 tons in the same period Y2008-2011), than the buy-out quantities presented in the table below. There are at least two reasons for this discrepancy:

Year	2004	2005	2006	2007	2008	2009	2010	Average
Buy out of grapes in million kg	82,8	107,6	37,9	81,3	32,7	91,5	40,2	67,71
<b>Buy out of table grapes in million kg</b>	<b>15,1</b>	<b>12,8</b>	<b>5,5</b>	<b>5,8</b>	<b>4,8</b>	<b>6,4</b>	<b>2,5</b>	<b>7,56</b>
Buy out of wine grapes in million kg	67,7	94,8	32,4	75,5	27,9	85,1	37,7	60,16

Table 13: Buy-out quantities of grapes in the period Y2004-2010, stat.gov.mk

- Some of the wine grapes varieties are exported as table grapes, especially in the ex-Yu countries and are used for fresh consumption;
- The recorded quantities are not realistic and the recording system does not cover the whole trade of table grapes in the country

Both reasons indicate that there is a lack of appropriate system of keeping record of the whole VC, from production to end-consumers (absence of Vineyards Cadastre, effective and realistic Market Information System etc.)

Wholesale markets and wholesale companies cover approximately 35% of the fresh produce market. Major wholesale markets exist in Skopje and Strumica.

Their main customers are small shops, smaller supermarket, and open green markets. Wholesale importers/distributors, are significant buyers of Macedonian grapes, since most of their buyers have lower quality standards.

The price depends mainly on the grape variety and packaging. The cheapest variety is Afus Ali table grape, with the wholesale price of 0,35 - 0,4 Euro in 2011, while the most expensive varieties are Viktoria, Muscat Hamburg, Muscat Italia and Michel Palieri. The price of these varieties has never gone below 0,50 Euro.

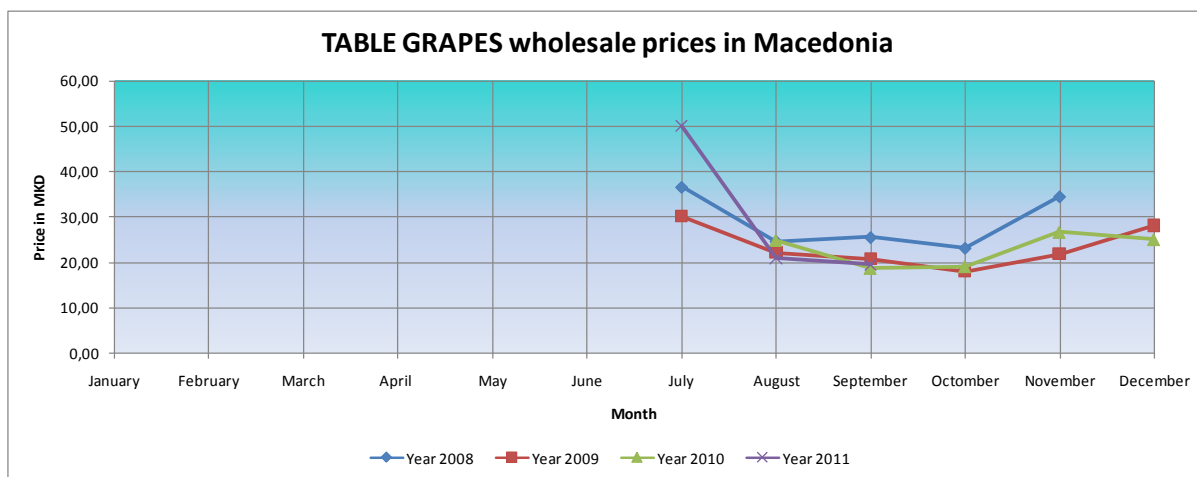


Chart 5: Table Grapes wholesale prices in MKD in Macedonia, stat.gov.mk

The compared retail and wholesale prices on a national level in the graph below show that the price difference (gross margin) varies from 26% in August up to 46% in December. This is again an indicator how high the retail price can be in the “out-off- season” production and how important the appropriate post-harvesting is (cooling and storing) for extended shelf life.

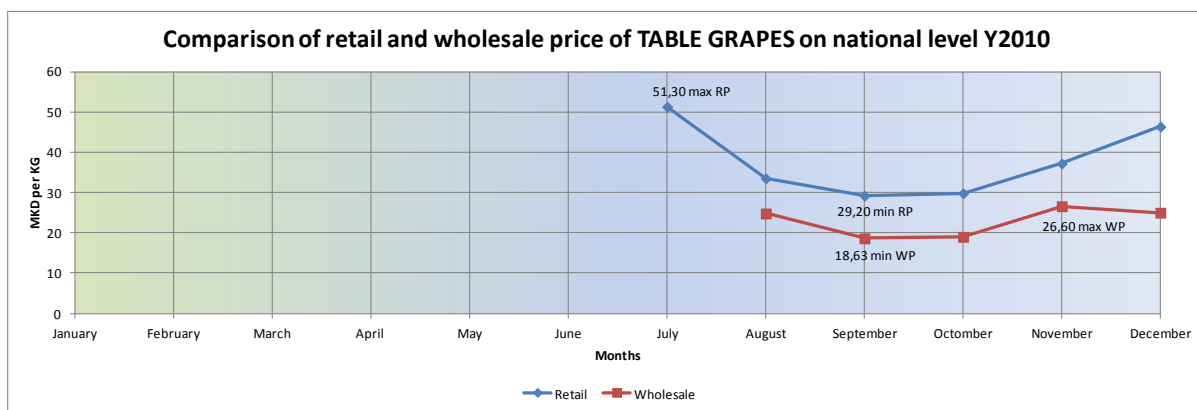


Chart 6: Table Grapes comparison of the retail and wholesale prices in MKD in Macedonia, stat.gov.mk

#### 4.5. Characteristics of the supply (size, type of packaging, quality, color)

Packaging plays an important role in ensuring safe and efficient transport of a product and conforming to handling requirements, uniformity, recyclable material specifications, proper storage needs and even attractiveness for marketing purposes.

Table grapes are usually packed in wooden boxes, as in the case of “Extra Class”, and in a single layer.

According to the field interviews with the export companies, the buyers require grapes packed in boxes of 9kg, 8kg, 5kg and 4.5 kg, depending of the type of customers.

Retail packaging in 1kilo fresh-keeping plastic bags or transparent plastic trays, 10 packs per carton, is not very frequent.

The following slight defects may be allowed by the importers - slight defects in shape, slight defects in coloring, very slight sun-scorch affecting the skin only - these should not affect the general appearance of the produce, the quality, the maintainance quality, and appearance in the package:

##### Size is determined by the weight of bunch

- Extra Class: 400 - 150 gr (open grown)
- Class I: 150 - 100 gr
- Class II: 100 - 75 gr
- 

Some of the interviewed importers also classify grapes according to the uniform size of the grapes as follows:

##### Size determined by the grape size

- Grade one: 26mm - 28mm
- Grade two: 24mm - 25mm
- Grade three: 22mm - 23mm

## 5. The Export Market

### 5.1. Export markets by value, quantity and average price for last 5 years

Macedonian exports of fresh grapes are destined to three major regions: Ex- Yu, Russia and EU. Serbia absorbs around 75% of the total export of fresh table grapes, while 25% are absorbed by other countries.

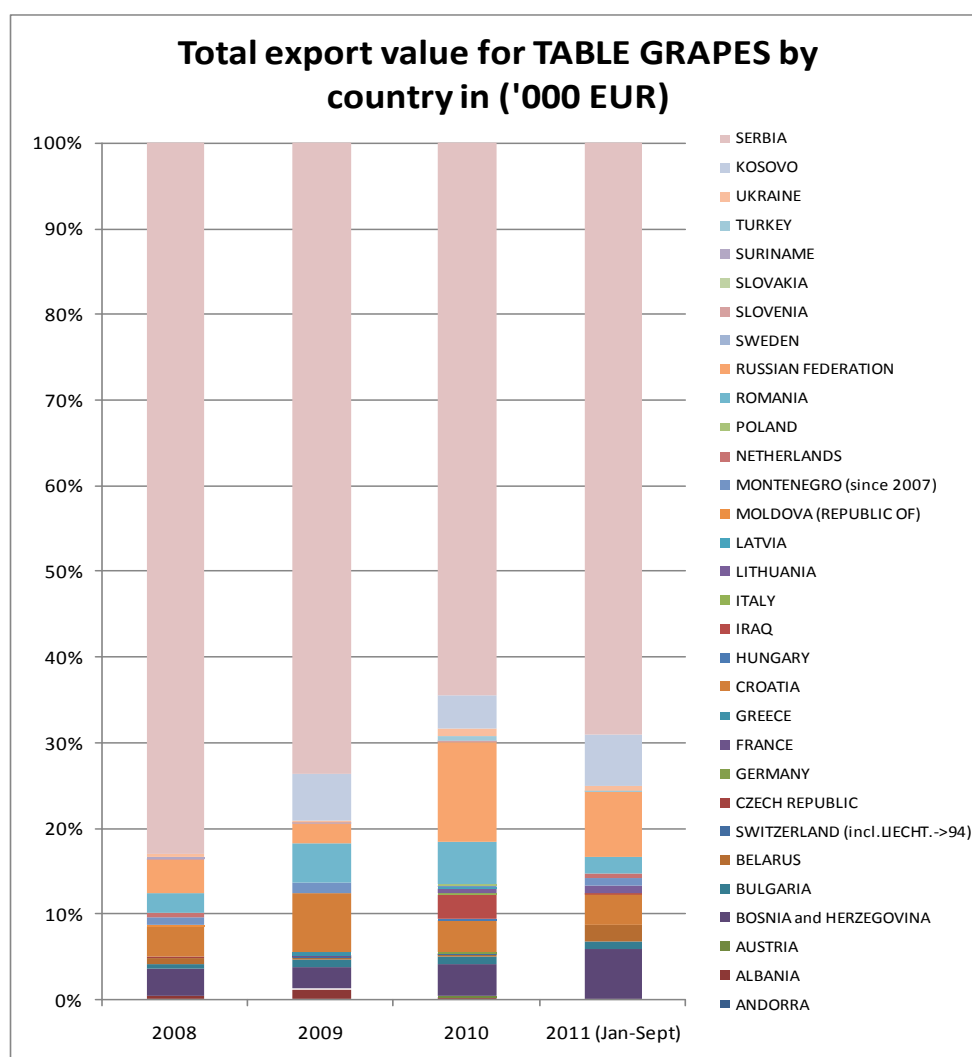


Chart 7: Total export of table grapes by country in '000 Euro, stat.gov.mk

The Russian Federation is becoming a potential market for the Macedonia table grapes in the last decade as their absorption of the Macedonian table grapes quantities is unlimited. The main barrier for export is the high import taxes for the Macedonian fresh products, which restrict a significant increase of the export on this market.

In recent years, Russia has become the second most important export destination for the Macedonian table grapes. However, to truly penetrate the Russian market, it is crucial to achieve sufficiently large volumes and meet Russian market standards.



Other potential markets have to be found in the region and beyond. For example, traders from Romania, Belorussia and the Baltic countries have already some trade contracts with Macedonia that could be further explored.

The Macedonia table grape in the last 7 years has big problems with the competition on the export markets, especially from Italy, even on our traditional markets such as Serbia and other ex-Yu countries.

The reasons of losing traditional markets are:

- Poor quality of delivered table grapes;
- Old varieties recognized only in the close region markets;
- Unattractive packaging of grapes;
- Short shelf life of the grapes;
- Inadequate classification ;
- Inadequate cooling and storage.

The main target market of table grapes, the Ex-YU region, at the moment and in the upcoming period decreases its absorption of the Macedonian table grapes due to the consumers' preference of the appearance and the convenient packaging of the table grapes according to the EU (western) buyers' requirements.

In addition, the varieties of table grapes are outdated and unpopular and thus uncompetitive for the EU markets. The new target markets as well as the old Ex-YU markets demand new popular varieties such as Michele, Victoria, Thomson seedless, Crimson seedless, Red Globe, Black Magic etc, which are of standard quality and appearance in consumer ready packaging of around 500 grams rather than an inconsistent product which does not meet EU standards referring to quality and appearance and is packaged in wooden crates.

For this reason, the exporters' main challenge is achieving significant visible results for competitiveness and productivity improvement in a short-term period in order to maintain the existing and target new markets.

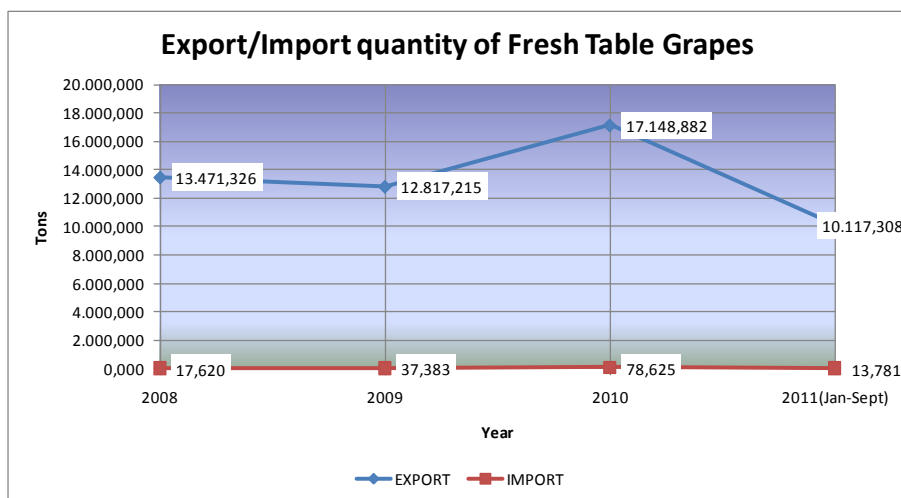


Chart 8: Export Import quantity of Table Grapes, stat.gov.mk

The total export quantity of fresh table grapes from Macedonia in the last four years has increased from 13.471 tons in 2008 to 17.148 tons in 2010, while the estimate for 2011, up to September, amounts to 10.117 tons with the tendency to increase by the end of the year, reaching at least the 2010 figure. The export in overall has an increasing trend, while the import quantities are insignificant and range from 17-78 tons per year in the analyzed period Y2008-Y2011.

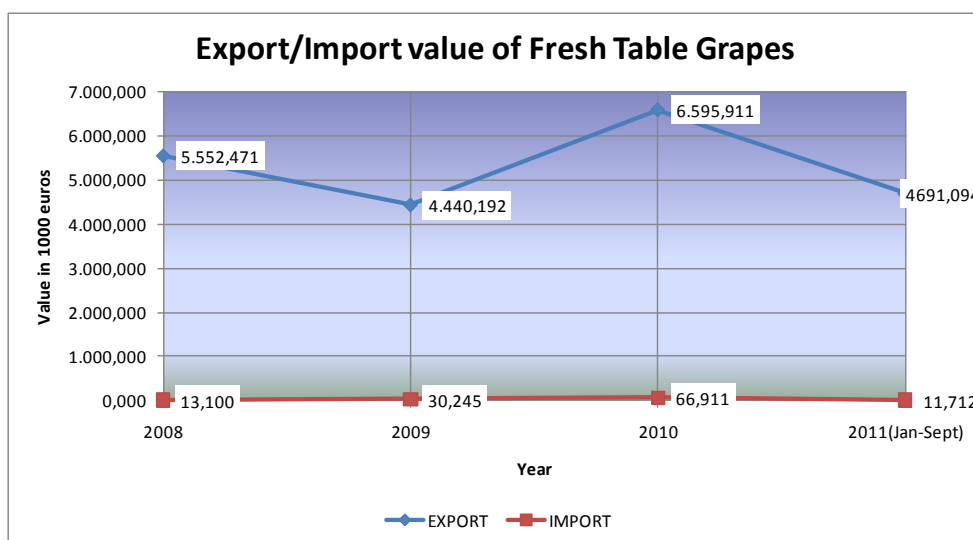


Chart 9: Export Import value of Table Grapes, stat.gov.mk

The total export value of fresh table grapes from Macedonia in the last four years has increased from 5,5 Mil Euro in 2008 to 6,6 Mil Euro in 2010, while the data for 2011, till September, show export of about 4,7 Mil Euro, which will increase by the end of the year when all export arrangements will be completed. The export value in overall has an increasing trend, while the import value is symbolic, form 13.000 Euros in Y2008 up to 67.000 Euros in Y2010.

## 5.2. Seasonality of export (monthly) by value, quantity and average price

The season for fresh table grapes in Macedonia runs for about four months. It starts in July, with a peak in September and closes in October. Early season regions are Gevgelija and Valandovo. Late season grapes constitute 65% of the production and come from the Kavadarci and Strumica regions.

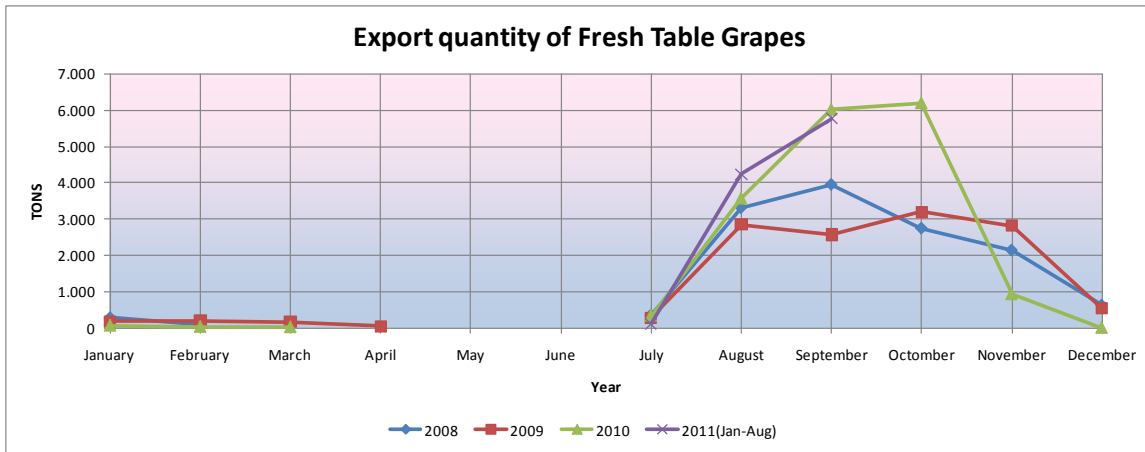


Table 14: Export quantity of Table Grapes, stat.gov.mk

The export is mainly organized in the period July-December with its peak in September. The exported quantities in October reached up to 6.000 tons in Y2010, while in Y2008 and Y2009 it was around 3-4.000 tons. The export starts in July when the quantities exported are below 500 tons, increases in August and September to 2-3.000 tons and decreases in November and December below 1.000 tons. The export in the period January-April is insignificant in quantity and value.

The price of table grapes is high at the beginning and end of the season. After the end of the table grape season, few of the trading companies have their own capacities for grape storage and succeed to extent their shelf life for around two months, selling for double price of the full season price. As indicated in the chart below, the price of the Macedonia table grape shows a slow increase in the last two years but is still lower compared with the table grape from Italy.

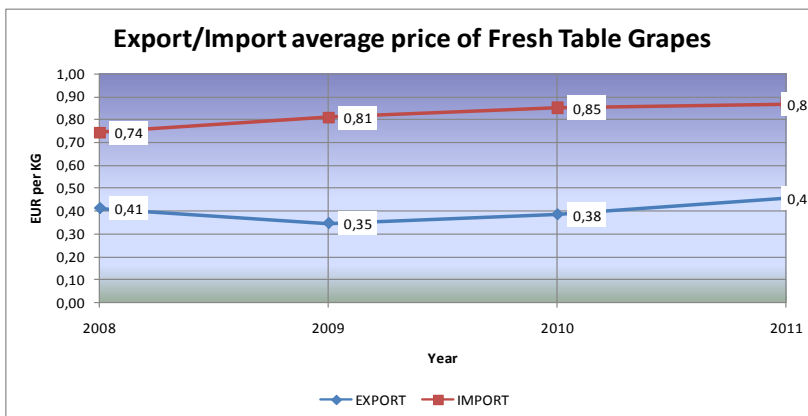


Chart 10: Export/Import average price of Table Grapes, stat.gov.mk

## VII. Regulatory Framework and access to finance

### 6. Legal Framework regulating the table grapes market

Regarding the organization of markets of agricultural products of plant (and animal origin), the Ministry of Agriculture, Forestry and Water Economy (MAFWE) has enacted the Law on Quality of Agriculture Products (Official Gazette of the Republic of Macedonia no. 140/2010)<sup>6</sup>, selecting the most important products in terms of their participation within the overall agriculture production in the country, and regulating them within the broader CMO frame. For the first time, the areas of marketing and marketing standards of main agriculture products, as well as the quality schemes for PDO/PGI and TSG are regulated in accordance with the EU CMO's Acquis.

Based on the Law, marketing standards and general marketing of table grapes are already fully regulated through the enactment of the relevant by-law<sup>7</sup> - This by-law regulates the specific areas of minimal quality requirements, classification and size of products, acceptable deviations, packaging and products labeling requirements.

The second law that covers most of the horizontal aspects of the CAP that are relevant for the markets of agricultural products, including the respective sub-sector, is the Law on Agriculture and Rural Development (Official Gazette of the Republic of Macedonia no 49/2010). Namely, toward achieving more equal income distribution within the food chain by improving market relations and alleviating the significant tensions in contractual relations between actors of the chain, the law defines the basic principles and manners of trade with agriculture products stipulating the conditions to trade with agriculture products.

In addition,, the Rulebook on Agriculture Market Information System (Official Gazette of the Republic of Macedonia no 79/09) enabled the Ministry to start operating with web based Agriculture Market Information System (AMIS) that collects the market data on prices from agricultural markets for key products, including table grapes, from representative markets in term of influence made on the prices based on traded quantities.

### 7. Food Trade Policies (CEFTA and WTO) and import tariffs

As a result of WTO accession in 2003, most of the traditionally used price and trade policy instruments were either phased out or reformed based on principles of restriction of market distortion practices and interventions, and in general free formation of the prices for agricultural products. Tariff protection for Macedonian producers has been reduced significantly, which places an increasingly competitive pressure on domestic producers and processors. For the majority of agricultural products, a gradual reduction of the tariffs applied through the transitional period between 2003 and 2007, has been projected. As a consequence, Most Favoured Nations (MFN) tariffs for agriculture products were reduced from 24,87% to 13,75%. Import tariffs have been reduced for the most of traded products,

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<sup>6</sup> Adopted by the Parliament of the Republic of Macedonia on 15 October 2010

<sup>7</sup> Book of rules on minimal standards for quality of fruit and vegetable meant for processing and specific market standards for quality of fresh fruits and vegetable meant for consumption (Official Gazette of the Republic of Macedonia No.91/6.7.2011).

though moderate-to-high tariffs remain in place for highly sensitive commodities, such as vegetable and processed agricultural products<sup>8</sup>.

Price premiums ("prelevman") introduced for agricultural and food products, essentially as seasonal protection most recently applied to wheat, were identified as a prohibited variable levy and therefore requested to be converted into ad valorem or specific tariffs.

Although Macedonia provided export subsidies in the base period of 1998-2000, it practiced export without subsidization upon accession.

The establishment of area of free trade by 2011 started by the removal of all barriers to the entry of Macedonian agricultural goods into the EU markets, but baby beef, fish and wine import are regulated by a quotas regime. Subsequently, Macedonia agreed on gradual liberalization for EU imports; namely, for semi-sensitive products transitionally by 2011 and for highly sensitive products the protection remains or is partially regulated with preferential trade quotas.

The overall economic impact of the agreement is considered to be limiting, given the gradual nature of the reduction in tariffs agreed, the on-going protection of certain sensitive products and the concessions already granted under WTO (which were considered to have a far greater impact on the sector in the short to medium term).

The Free Trade Agreement with CEFTA 2006 countries is a very important step in the creation of a fully liberalized regional trade zone with Macedonian traditional most important trading partners. The agreement signed in 2006, and ratified in 2007, basically provides full trade liberalization between the member states. Under this agreement, the trade between the Republic of Macedonia and Republic of Serbia, Bosnia Herzegovina, Montenegro, and Kosovo is fully liberalized, while with Croatia only few products are traded within the free-trade quotas and with 45% of MFN out of quota tariffs. From November 2011, a full free-trade regime started with Albania. And finally, with the ratification of changes in the agreement with Moldova, full liberalization of trade relations will be also established with this country, with the exception of wine that is regulated with a free-trade quota regime.

Free trade agreements with Turkey and Ukraine are more restrictive in regard to selected agricultural and food products on free-trade quotas or quotas with a reduced tariffs regime and MFN tariff-based trade for out of quota quantities.

Tariffs for table grapes on import in the Republic of Macedonia as regulated by the provisions of the actual free-trade agreement are presented in the table below.

Tariff number	Description	Custom's rate for import in RM	Regime	EU	CEFTA	Croatia	Turkey	Ukraine	Moldova
0806 10	Grape, Fresh								
0806 10 10 00	Table Grape	50%		50%	50%	0%	50%	50%	50%

Table 15: Tariff regime Import of table grapes, Guide for custom clearance 2011, State Customs Office

The table above shows that the table grape is protected with high customs rate during import (50%). Furthermore, the regime for import and export licenses for table grape products is

<sup>8</sup> Document number WT/ACC/10/Rev.1, note by the Secretariat: The number of tariff lines bound at the peak rate of 60% dropped from 142 tariff lines upon accession to only 6 tariff lines at the end of implementation period. One third of the tariff lines are higher than 15%.

liberal, meaning that there are no administrative limitations (except for the seed, for which health/medical certificate is required).

According to the Agreement for Stabilization and Association with the countries members of EU, and the agreement with most of the CEFTA countries, the customs tariff of the export of products and their processings to EU and the markets of CEFTA countries equal 0%.

Only with a few countries, with which Macedonia has signed agreements for free trade, certain quantitative limitations (quotas) can be observed that are applied during the export by the so called preferential customs rates. For example, in the FTA with Ukraine, the export of:

- table grapes, tariff code 0806 10 10 00, and apples, tariff code 0808 10, is regulated at applicable MFN rate without any additional preferences.

The Macedonian exporters do not face any problems exporting table grapes in the countries covered with the FTA and subject to other bilateral regulations as mentioned above.

## 8. Existing state support

### 8.1. AFSARD Subsidies

The Agency for Financial Support of Agriculture and Rural Development (AFSARD), established in 2007, by the beginning of 2008 started implementing the annual programs for financial support by establishing an accredited institution for the implementation of pre-accession funds for rural development (IPARD). MAFWE formulates the policies and acts as IPARD managing authority. The necessary infrastructure for Integrated Administration and Control System's elements, such as Farm Register and Land Parcel Identification System (LPIS) are established and maintained by the MAFWE.

Vineyard and orchard registry, as a part of the Permanent crop registers (nut and olive registry included as well) are integrated within the LPIS, including specific detailed information related to each registry e.g. area, varieties, year of planting, distances between and within rows, irrigation system, root type etc. Attributes are inserted in the MAFWE local offices, separately from the attributes in LPIS, supported with a graphic representation of parcels from the LPIS data base. The registration is still in progress and the full functionality of this data-base is expected in the next two year period.

Општини со насад : ...    Достапни типови на насад : ...

Општ.	ИД на парцела <sup>CS</sup>	Користење на земја	Тип на насад <sup>CS</sup>	Површина (кв. метри)	Код на сорта <sup>CS</sup>	Год. на насад	Аном.
NG20 - КУРИЈА (NG)	2264446	410	Лозје	684	Шардоне	1998	
OD10 - ЛИВОИШТЕ (OD)	2263145	422	Јаболко	4.208	Акане	1998	

по страна : 20    [Промени](#)

Тип на насад : Лозје

Детали за насад

Површина (кв. метри) : 684

Сорти на винско грозје : 101 Шардоне

Година на насад : 1998

Растојание помеѓу редови (цм) : 2

Растојание во редови (цм) : 2

Систем на насадување : На чокот

Систем за наводнување : Бразда

Корен : ...

[Промени](#)    [Назад](#)

*Permanent crop registry example*

**Direct support** to agriculture is implemented through the Annual Program for Financial Support in Agriculture. This program consolidates direct payment schemes and measures for technical assistance. The Annual Program for Financial Support for Rural Development, along with the IPARD program, is the second set of documents to implement policies on agriculture and rural development in respect of schemes for capital grants and other measures for technical assistance related to problems of rural development.

The largest amounts of payments are made per hectare of vineyards to farmers who are directly engaged in agricultural activities and have a secured right to cultivation of claimed land (through ownership or lease with or without financial compensation).

Agricultural holdings can apply if they satisfy the minimum land size criteria for eligibility for subsidies. The amount and criteria for permanent crops (vineyards and orchards) are different for perennial crops.

In order to stimulate a higher usage of agro-chemical analyses, support of 70% coverage of the cost of agro-chemical soil analyses, not exceeding 9,000 MKD per beneficiary, is offered. In addition to this measure, individual farmers registered in the scheme of social insurance are also granted 5% increase in the overall amount of subsidies from all measures of support.

The following support measures for direct payments are relevant for respective sub-sectors for 2012 as continuation of similar measures applied in the last five years\*:

<b>Table grape</b>		
<b>Direct payments per area for the maintenance of permanent vineyards registered in the Vine Cadastre</b>	40.000 den/kg 100% up to 5 ha, 60% for area from 5,1-30 ha, 30% for area from 30,1-50 ha, 10% above 50 ha	- minimum claimed area of 0,2 ha - vineyard areas since the second year after the planting registered in the Vine Cadastre
<b>Direct payments for the establishment of new vineyards</b>	160.000 den/ha	- minimum claimed area of 0,2 ha - varieties in accordance with the Rulebook of approved and recommended varieties - compulsory chemical soil analysis - provided long-term contract with vinery for purchase of grapes - minimal number of seedlings per ha required
<b>Input subsidy</b>		
<b>Direct payments for the production of vine and orchard seeding material</b>	15 den/seedling	subsidized material should be provided by producers of certified seed and seedling material registered in the MAFWE
<b>State aid for insurance of agricultural production</b>	60% of the value of insurance policy	- maximum allowed per beneficiary: Up to 5 ha of vineyards and orchards Up to 2 ha of vegetables

\* The projected values still needs to be made official by the Government by the first half of January 2012



Table grape	2008			2009			2010			2011
Measure	per unit	total amount paid MKD	farmers	per unit	total amount paid MKD	farmers	per unit	total amount paid MKD	farmers	per unit
<b>Direct payments per area for maintenance</b>				7.500	108.828.723	9.890	40.000	514.314.844	14.958	40.000
<b>Direct payments for establishment of new vineyards</b>	120.000	65.035.588	284	140.000	91.432.812	472	140.000	55.286.347	315	140.000
<b>for table grapes</b>	120.000			140.000			140.000			160.000
<b>total</b>		65.035.588			200.261.535	10.362		569.601.191	15.273	

Table 16: Direct Subsidies for table grapes producers in the period Y2008-Y2011, AFSARD, 2011

As illustrated in the table above, the support to the grapes sub-sector is increasing reaching a total of 569.601.191 MKD or 9,2 Mil Euros, covering a total of 15.273 producers in 2011. The support to the grapes sub-sector helps significantly the producers in the process of investment and maintenance covering almost 30% of the costs in the investment phase, and 30% of the costs in the maintenance phase.

The table grapes sub sector is also eligible for **IPARD support**, which should additionally improve the performances in the production and competitiveness of the product. Investments proposed should be for:

- Rehabilitation of the existing vineyards older than 20 years through the replacement of planting material (national classification of vine varieties and hybrids), the work of third parties included;
- Rehabilitation of irrigation systems (on-farm) with a proven source or availability of water;
- Farm equipment for fertilizer application, plant health protection, cultivation and hail protection nets;

Applicant must prove ownership or at least a 10 year-lease contract and a vineyard size between 0,5 – 20 ha (individual persons); 0,5 – 50ha (legal entities, cooperatives) located in defined vine growing areas;

## 9. Access to finance (products, terms, providers etc.)

The opportunity to support agricultural producers in obtaining financial assets was presented in the form of loans at favorable terms offered by the Agricultural loan and Discount Fund (ACDF). The fund is responsible for the payment of loans based on the Agreement/Memorandum of Understanding between the Government of RM and the financial institutions for joint financing of which 80% of the ACDF assets were mainly made through IFAD1 and IFAD 2 PSDL EIB loan arrangements and 20% by the financial institutions.

The following loan categories are financed through ACDF:

- Loan for purchase of capital investment and operating costs for primary agricultural production up to 100,000 Euros per user, with an interest rate of 4% per year if the loan is disbursed through commercial banks or 6% if paid through saving houses.
- Loan for purchase of capital investment and operating costs for small and medium businesses with primary activities in the agro-food processing, up to 200,000 Euros per user, with an interest rate of 5% on annual basis if the loan is disbursed through commercial banks or 6, 5% if paid through saving houses.
- Loan for purchase of capital investment and operating costs for small and medium enterprises, with export activity of agro-food products up to 200,000 Euros per user, with an interest rate of 5% on annual basis if the loan is disbursed through commercial banks or 6, 5% if paid through saving houses.

Repayment terms and the repayment period is the responsibility of financial institutions in accordance with their credit policy. The regular repayment period is 7 years for capital investments, including a 3 year grace period and for operating expenses, the repayment period is 3 years with a 1 year grace period.

According to the decision of the Government, as of 7/1/2010, the ACDF credit line is administered within the Macedonian Bank for Development Promotion (MBDP), which is regulated by the Administration Agreement concluded between the Ministry of Finance and MBDP.

The total number of financial institutions involved in the implementation of ACDF credits is around 11, of which 9 are commercial banks and 2 saving houses, which, through their networks of subsidiaries and branches throughout the Republic of Macedonia, allow easier access to potential beneficiaries to these resources.

The implementation of credit activities within the Agricultural Credit Discount Fund started in October 2003, and by December,12 2011, the Status of Refinanced Loans approved total loans in 2.456 cases, amounting to 43 million Euros.

The distribution of loans by purpose and (where data were available) in the grapes sub-sector is given in the table below. Loans approved to viticulture also include the loans for wine growing grapes, which are supposed to be prevailing.

Purpose of the loan	Number of Approved Loans	Percentage of Total Number of Approved Loans	Total Amount of Approved Loans (EUR)	Percentage of Approved Loans Amount	Average Amount of Approved Loans (EUR)
Viticulture	323	13	2,872,236.69	7	8,892.37

Table 17: Number and size of loans in the viticulture sector, MBDP, December 2011

In addition to the loans offered through ACDF, the loans for the grapes sub-sector are also offered by commercial banks through their own credit lines, but with a higher annual interest rate (between 8 and 11%).

## VIII. Sub Sector Dynamics

### 10. Trends and Drivers

The table grapes **development trends** in the last decade show an increase in the total harvested vineyards size, increased investment in the sub-sector as well as increase in the export quantities.

The sub-sector is heavily supported by the state through a direct support (subsidies) as well as indirectly through the rural development program and the IPARD program opportunities, especially for the larger businesses. In addition, in the last decade, the donor community in the country has supported the sub-sector through programs for increasing the capital investments (equipment and production technology) as well as improvement of skills and know-how techniques (study visits, trainings and workshops). Moreover, the knowledge of the market opportunities, market demand and identification of the potential buyers has been increased through donor project supported activities.

Moreover, the state has additionally invested funds in the development of a planting material production center in Trstenik, Kavadarci, and adopted a new legislation that regulates the quality and process of planting material production. The new legislation for agriculture and viticulture enables a better organization of the sub-sector, traceability and better quality of all VC levels.

Besides the domestic efforts and funds in the support of the sub-sector, the market trends have changed the position of the Macedonian table grapes in comparison to the competition.

The global market players' investments in the post-harvesting operations, extended shelf life, packaging, and labeling as well as in direct marketing for the end buyers have improved the position of some of the largest producers such as Italy, Chile, South Africa, Greece and Spain. In addition, the varieties are also changing and the Macedonian traditional seed grapes varieties do not respond to the global markets and rarely satisfy their requirements. The market becomes more demanding in terms of quality and safety of the final product. This makes each stage of the post-harvesting process eligible for further investments that will guarantee both quality and safety of the product.

The constraints from both internal and external perspectives are to:

- Create more productive table grapes vineyards of market demanded varieties
- Introduce appropriate post-harvesting techniques and equipment that will make the table grape product competitive in regard to safety and preserved quality on a global level.

The **key drivers** to successfully approach these two main challenges include:

- Organization of the production of high-quality planting material of the most demanded table grapes market varieties
- Continuation of a direct support by state investments in the sub-sector and its categorization and specification according to the type of producer needs ( medium and large producers)

- Improvement of the productivity of the vineyards through the implementation of modern ampelo-techniques, use of diversified mechanization in all growing and harvesting processes, appropriate monitoring and treatment of the vineyards etc.
- Know-how knowledge and improvement of producers' skills through study visits and appropriate training and in the area of post-harvesting process for the traders.
- Identification of the new market opportunities, development of market linkages and elaboration of the market possibilities among the domestic traders/exporters
- Promotion of investment possibilities in the sub-sector and improvement of the access to funds

## 11. SWOT Review

<i>Inputs Level</i>	<i>Production Level</i>	<i>Post-harvesting Level</i>	<i>Marketing Level</i>
<b>STRENGTHS</b>			
The existing planting material production center in Trstenik and the know-how and skills among the experts represent important preconditions for the development of quality planting material production;	The production is improving in the last decade, farmers replace the wine grapes with table grapes, large companies invest in table grapes; Farmers own 70% of the vineyards;	The traders/exporters are aware of the investment in the post-harvesting equipment and storing facilities (ULO);	The ex-Yu markets still recognize the Macedonian “brand” for table grapes even though the competition is very high;
	The production is organized in four main regions (Tikves, Southeast, Skopje and Northeast) which, due to the different climate specifics, have the potential to extend the production seasons and variety diversification	New investments in the post-harvest facilities are evident and the access to funds for this equipment are easier, especially through MBDP;	
<b>WEAKNESSES</b>			
Inadequate quality and variety of planting materials, the production of grapes planting materials is poorly organized, the producers do not use certified mother plants planting material;	The production plots are small and parceled, which causes low productivity;	Limited post-harvesting knowledge and equipment, make the production quantities less competitive;	The production is exported on few, mainly regional, ex-Yu markets with a high market dependency;
	The extension service provision is weak, the level of know-how and skills transfer is limited and the business service providers need further improvement in terms of knowledge of the new production technologies;		

	No use of anti-hail nets and anti-frost systems, high vulnerability to weather conditions—late frosts, long droughts, and heavy hailstorms decrease the yields		
	Rare examples of drip irrigation systems – inadequate irrigation leads to lower yields, a higher risk of diseases and inadequate long-term maintenance of vineyard		
<b>Inputs Level</b>	<b>Production Level</b>	<b>Post-harvesting Level</b>	<b>Marketing Level</b>
<b>OPPORTUNITIES</b>			
The list of registered planting material varieties is large, covering all EU registered varieties, so the production, in terms of market demanded variety, can be organized easily;	The production of table grapes generally satisfies the domestic consumption demands, as Macedonia is considered as a low consumption country per capita;	Necessary investments in cooling and storage facilities to enhance the sector and improve its competitiveness;	The export of table grapes is increasing, and it has a high potential to improve the quality, increase volume and target new markets;
	The first harvest is after 3 years depending on the climate conditions, production technology;	The packaging of table grapes is mostly in wooden crates for the domestic market and more appropriate for the export markets;	The table grapes seasonality is very important and represents one of the competitive advantages of the country; more extensive research of this perspective, including all Macedonian regions, has to be implemented;
	Limited managerial skills of farmers and associations- the improvement of these skills will lead to better and more effective use of the funds available		Standardization of table grapes and traceability of the product are very important aspects that need to be further developed and

	and improvement of the production		monitored;
<b>THREATS</b>			
The imported planting materials from Serbia are of a low quality but because of their low price, they are extensively used;	The quantity of grapes produced is limited to be offered on larger export markets, such as Russia;	Poor post harvest practice knowledge limits the shelf life of the products and leads to damages, so it is critical to load and organize the transportation in cooling vehicles, maximum 12 hours after harvesting if the harvested grapes are not appropriately stored and cooled;	The global grapes market trends change the market demand very quickly, which the Macedonian exporters find hard to follow.
The new EPPO regulations on the use of certified planting material will terminate the work of the Macedonian planting material producers;	The producers are poorly organized in effective groups, and their performance and activities are limited;		



## IX. Monitoring VC Impact Matrix

Based on the findings of the study and the Focus Groups Discussions concerning the lack of data necessary for any sector and VC analyses, the following monitoring matrix was suggested as a method of a more appropriate monitoring of the sub-sector development.

<i>MONITORING MATRIX FOR VC Table Grapes</i>						
<b>#</b>	<b><u>Indicator</u></b>	<b><u>Source</u></b>	<b><u>Indicator Type (qualitative &amp; quantitative)</u></b>	<b><u>Time for indicator collection</u></b>	<b><u>Frequency of collection</u></b>	<b><u>Responsible Organization</u></b>
1	<b><i>New vineyards in ha and variety</i></b>	AFSARD	Qualitative and Quantitative	After subsidy applications	Annually	FFRM
2	<b><i># sold domestically produced plants (planting materials) by variety</i></b>	Seeds and Planting Material Office	Qualitative and Quantitative	December	Annually	FFRM
3	<b><i># sold imported plants (planting materials) by variety</i></b>	Seeds and Planting Material Office	Qualitative and Quantitative	December	Annually	FFRM
4	<b><i>Price of pesticides</i></b>	Statistics Office	Quantitative	March	Annually	FFRM
5	<b><i>Yield per ha and by variety on spallir</i></b>	FFRM - Model Farms	Quantitative	December	Annually	FFRM
6	<b><i>Yield per ha and by variety on tendone</i></b>	FFRM - Model Farms	Quantitative	December	Annually	FFRM
7	<b><i>Variable costs on spallir</i></b>	FFRM - Model Farms	Quantitative	December	Annually	FFRM
8	<b><i>Variable costs on tendone</i></b>	FFRM - Model Farms	Quantitative	December	Annually	FFRM
9	<b><i>Retail price on domestic market by variety</i></b>	Model Farms	Quantitative	End of month	Monthly	FFRM
10	<b><i>Wholesale price on export markets by variety</i></b>	3 Traders Exporters different by size	Quantitative	End of month	Monthly	FFRM
11	<b><i>New storage facility with controlled atmosphere m<sup>3</sup></i></b>	AFSARD	Quantitative	After completion of each IPARD call	Annually	FFRM
12	<b><i>New storage facility with normal atmosphere m<sup>3</sup></i></b>	AFSARD	Quantitative	After completion of each IPARD call	Annually	FFRM

## **Appendix 1: List of input suppliers**

### **(1) List of key players – Pesticides Suppliers**

1. TD MAGAN MAK LLC – SKOPJE
2. HROMOS Pesticidi, LLC – SKOPJE
3. HEMOMAK pesticidi, LLC- VELES
4. TDPTDU AGROJUNIKOM, LTD SKOPJE
5. DPU AGRIMATKO, LTD SKOPJE
6. DPP Agrohemija KOMERC, LTD SKOPJE
7. DPPU RADOMAK, LLC – SKOPJE
8. DPTU HERBOS town, LLC – SKOPJE
9. DTPTU Algina, LTD SKOPJE
10. DPVNTAGROPIN, LLC SKOPJE
11. DPTU HERB –HEM, LLC SKOPJE
12. AD OHIS Biljana SKOPJE
13. MAKTRADE-92, LLC SKOPJE
14. DPPU-UNIVIGO, LTD SKOPJE
15. DPTU PRIMATEKS, LLC – SKOPJE
16. DPPAgrohemija, LLC- SKOPJE

### **(2) List of key players – Fertilizer Suppliers**

1. TD MAGAN MAK DOO SKOPJE
2. HEMOMAK PESTICIDU, LLC-Veles
3. DPU AGRIMATKO, LTD SKOPJE
4. TDPTDU-AGROJUNIKOM, LLC SKOPJE
5. FITOHEMIJA-SVETI NIKOLE
6. ICE TALJO, LLC-Negorci GEVGELIJA
7. ZK-PELAGONIJA-Bitola
8. MV-FLORA GARDEN-SKOPJE
9. AD Alkaloid, Skopje
10. GEOTERMIKA-Strumica
11. DUBROVI-NEGOTINO
12. DPTU HERBA HEM, LLC, SKOPJE
13. Evora -KOMERC-Krivogastani, Prilep
14. HIT-73, Kamenjane, Tetovo
15. Holland-FARMING MACEDONIA, LLC- Strumica
16. ZOI UNION, LLC – NEGOTINO
17. FER PROKOM – Kocani
18. Agro UNIJA – SKOPJE
19. SOKOL LLC – Veles
20. MEGA-PLAN 2001 – GEVGELIJA
21. PRONEX HEM – Strumica
22. Agro Produkt Ltd- Strumica
23. Agro-PELAGONIJA – Prilep
24. Agro-ZIMAK Trajce, Rosoman