



Profile of the Macedonian Fresh Vegetables Value Chain



Research & Analysis for Macedonia (1999–2007)

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1. Executive Summary

Agriculture for Macedonia will continue to be one of the main generators of employment and revenues for the local economy. Although the total agricultural sector participates only with 10.3% in the national GDP (Y2007)¹, it is providing economic livelihood to significant percentage (19% of the total employment²). If we factor in the seasonal workers, this numbers will further grow.

This study is making an attempt to analyze the performance of only one segment of the agriculture and that is the fresh vegetables segment. As mentioned in the study, only six vegetables (tomatoes, peppers, cabbage, cucumbers, melons and watermelons) were subject to analysis in the study. We are at the opinion that the main conclusions relevant for targeted products are also relevant for the other vegetables that were not subject to this survey.

From the total exports of food and food products from Macedonia of around 169 million Euro, 20.59% belongs to the fresh exports of these six vegetables³. In the last ten years, the total value of the exports for these six products had increased from 10.8 to 34.8 M. Euro. If we evaluate the growth individually product by product, the largest growth is observed in the tomatoes and cabbage, where the peppers are showing significant decrease in the exports. According to us, this is direct result from the growth of the domestic vegetables processing industry (where the pepper is one of the main products), and outdated varieties produced locally.

The main issues identified in the study connected with the production are:

- Insufficient infrastructure (old type greenhouse, heating equipment and inadequate energy sources, irrigation systems, equipment for replacement of manual labor...);
- Lack of extension services (use of fertilizers and pesticides and introduction of new growing techniques, traceability of the production - certification of the individual producers)
- Adjustment of the production with the EU markets (lack of suitable seedling center that could provide standard quality and uniform production among small individual growers)

There are lots of problems regarding the post harvest activities for fresh vegetable in Macedonia. In this moment it is fair to conclude that there is rarely any post harvest activities taking place since most of the products are sold directly from the field without any sorting, calibration, cooling or other post harvest activities say that they rarely exist which are needed for price improvement and compliance

¹ State Statistical Office (Y2007)

² State Statistical Office (2008 data)

³ Macedonian Customs and State Statistical Office (for tomatoes, peppers, cabbage, cucumbers, melons and watermelons)

with the European market demands. The main areas for development identified in the study related to the post harvest activities are:

- Supporting the process of creation of modern packing centers that will organize the small individual producers and change the traditional reimbursement practices (different prices for different quality), increase the shelf life of the products, and insure standards required by the EU markets;
- Grading and sorting (although equipment is existing, rarely done because of the specifics of the Ex-Yu markets)
- Cold chain (rarely exists mainly because of the specifics of the Ex Yu Markets)

Export markets for these products are traditionally Ex Yu countries, but as previously stated this is changing. These markets are opening for production from other countries and in the last few years are also changing the consuming habits. This for Macedonia will be a big challenge, since it is our opinion that Macedonian production in this moment is still not ready for EU markets especially regarding the post harvest handling and packaging. Russian market is also an option that is becoming relevant especially in the past few years. Not developed links with local traders and big risks connected working on these markets, will have to be considered.

The main conclusion of the study is that organized intervention should be carried out, supporting and transforming all segments of the VC. Long term dependency of the Ex-YU markets, had not allowed the players in the VC to start adapting the production and services according to the EU market requirement. The current accession process of Balkan into EU will for sure jeopardize the Macedonian exports in these countries. The decrease of exports in the last few years to Ex Yu markets is confirming this statement.

It is also further observed by the study that "local champions" are appearing on the local markets that are trying to change the traditional production and organize modern systems adequate for EU markets. These companies are organizing number of small individual producers, providing them support in production inputs, advanced in-kind crediting, providing technical support and organizing the buyout of their production. They are trying to assist them in transitioning their production to modern production system. It is our opinion that the future of the Macedonian production is depending directly from this companies and that efforts should be made for their direct support. As these companies grow their ability for supporting and organizing bigger number of individual producers will also grow.

The current issues with enforcing personal income tax to be paid in the name of the individual farmers by the buyers-traders is opening lots of questions and could potentially jeopardize the whole system since more than 90% from all producers are small unregistered farmers. The possible issue that may appear is for the prices to stay the same and the traders to reduce the revenues for the farmers by subtracting the personal income tax.

Although, as previously mentioned, we consider that steps for improving all elements of the VC should be undertaken, there are several priorities that according to us needs special and immediate attention:

- **Establishment of seedling center** - Unification of the production, introduction of market demanded varieties, provision of technical support in the production;
- **Establishment of modern packing centers** - Suitable post-harvest operations, organization of buyout from small farmers, packaging, calibration and sorting;
- **Government subsidies** - Consider adding the fresh vegetables production as one of the main agricultural and export products, to be supported by the governmental subsidy system (currently not supported) in order to motivate the individual producers to leave the traditional production inadequate for the European market, to assist in the increasing energy prices, etc.

2. Introduction

The study “Profile of the Macedonian Fresh Vegetable Value Chain” was conducted by EPI CENTAR International for the AgBiz Program within Macedonia. The study was conducted with the aim to provide more realistic and deeper analysis of the fresh vegetable value chain within Macedonia. The agricultural sector in Macedonia represents a significant area due to the fact that it employs a relevant number of the population; it is identified as one of the strategic as well as highly potential sector. The 2007 GDP expressed in million MKD is estimated to be 338,013 out of which 10.3% or 34,659 million MOKD belongs to the agricultural sector. The national external trade data for 2007 indicate total export of 3,356,248 ('000 USD) out of which 248,101 ('000 USD) are food products⁴ and at the same time total imports of 5,227,576 ('000 USD) out of which 513,942 ('000 USD) for food products.⁵ This shows that even though the food sector is identified as potential sector we are still facing a trade deficit in this area.

The 2007 has been a significant year for the agriculture in the county from the point of data collection. For decades there has not been any agricultural census in the country. In 2007 the state statistics bureau conducted agricultural census which provides a clearer picture of this segment based on a realistic data rather than assumptions. The available data form this census is used within this study to provide analyses based on official and updated data. In addition this study uses information and data form other institutions such as the customs office and the conveyed surveys (see methodology for more details).

The following study takes into consideration only limited number of the fresh vegetable products i.e. those considered as most significant in terms of production quantity and production area. Therefore in this study we are considering and analyzing data for: tomato, pepper, cucumber, cabbage, watermelon and melon. The period considered in this study is the period from 1999 to 2007. Provided that the study's objective is to focus on the potentials, opportunities and advantages of the sector on the international markets, the focus of the study is directed towards exports for each product considered, the export quantities, export markets and potential, opportunities and threats within this framework.

⁴ Food Products as statistical category including fresh products and processing industry Y2007

⁵ State Statistics Bureau - Publications

3. Objectives & Scope

The fresh vegetables industry plays a significant role in the Macedonian agribusiness sector which contributes with approximately 10% to the national GDP on annual basis. In addition the segment of fresh vegetables represents an important part of the agricultural exports, especially when it comes to the regional trade. Considering the importance of this segment in the agricultural sector an objective and updated “picture” for this segment through a comprehensive analysis and study is important. However, data related to this sector are difficult to find, due to the structure of the sector and its trading practices. Inline with the previously stated the AgBiz program has initiated the preparation of this study.

The objective of this study is to develop the profile of the fresh vegetable value chain in Macedonia and the scope of the study is to present a profiling the sector though the most significant fresh vegetable products which are produced and exported from the country. The selection of products considered in this study was done together with the AgBiz staff, considering the statistical data indicating the largest area planted production and export quantities. These are: pepper, tomato, cucumber, cabbage, watermelons and melons. Selection of this limited number of products will provide better analysis through focused and concise analysis depicting the more realistic picture of the value chain. The analysis is based both on quantitative and qualitative information available as described by the methodology used.

The analysis makes an attempt, as much as possible, to separate between the greenhouse/glasshouse production and open field production. The study also attempted to collect data on the employment within the sector i.e. making a difference between the full time and seasonal employees within the sector. The focus of the study is:

- the potential for fresh vegetable export,
- the identification of the major competitive advantages of the sector,
- current issues,
- potential opportunities
- possible threats of the sector for the near future as perceived by the “last” and “closest link” with the export markets i.e. the trader/exporters of fresh vegetables.

The study and the process elaborated have enabled us to come with results that clearly illustrate the trend of production and sales in the last several years, and that indicate where the government stimulation measures should be focused.

Implementation of such a study on annual basis would significantly influence the development of the sector, if the data gathered are used to identify the needs and support together with implementation of adequate appropriate stimulation measures.

4. Methodology

This study is based on a research from both primary and secondary data sources. The representative vegetable group taken into consideration in this study is: tomato, pepper, cucumber, cabbage, watermelon and melon.

- The secondary data sources used in the research were collected initially through desk research. The desk research was based on data available from number of sources.
 - Firstly, the 2007 agricultural Census for R. Macedonia was used as a source to identify data concerning the availability of land and the outputs of the concerned products. This resulted with an analysis defining the regional production, yields and potentials for production of each concerned vegetable.
 - The State Statistical Bureau of Macedonia was another organization providing additional data.
 - The State Customs Office of R. Macedonia as a data source was used to collect several types of data. The complete exports on annual basis for the period of 1999 to 2007 were identified by quantity and by export value. In addition the sales destination was identified aiding the analysis of main export markets and the trend of export from Macedonia to other parts of the world defined by relevant regions. In order to define the trend of exports on monthly basis i.e. to locate any changes toward organized off season production, for a period of three years in the same range, data for exports on monthly basis have been collected. The data received from the State Custom Offices is not in accordance with EUSTAT methodology.
 - EPI CENTAR has a significant experience in the area of business research and rural development and posses numerous studies implemented by EPICENTAR or other organizations in the past period. All this publications were considered during the preparation of this study.
- 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 two methods.
 - Questionnaire was designed for all the identified traders/exporters within Macedonia dealing with fresh vegetable exports. The questionnaire was comprehensive, covering the most relevant issues

regarding the exports of the concerned vegetables, the most frequent issues that traders face with the primary producers and the importing partners, the requirements on the fresh vegetable export markets etc. The questionnaire was sent to 19 exporters from Macedonia. However, only five of the exporters felt comfortable with answering the questionnaire. The low reply on the questionnaires is information for itself, meaning the interest for participation in such researches is limited, as well as the interest to share the data of the companies. However, in terms of maintaining the quality of the research, EPI Centar has increased the number of field interviews that compensated the smaller number of filled questionnaires.

- Interviews with 27 stakeholders and players within the fresh vegetable sector in Macedonia were conducted. These included interviews with representatives from different segments in the Value chain such as exporters, trader, producers, forwarder, transporter, producer's association etc. The interviews were structured and covered issues regarding the segments that each stockholders is most concerned off. The interviews provided high quality qualitative information to clearly define the value chain of fresh vegetables in Macedonia, the current problems within each chain segment, the possibilities from improvement, opportunities and threats.

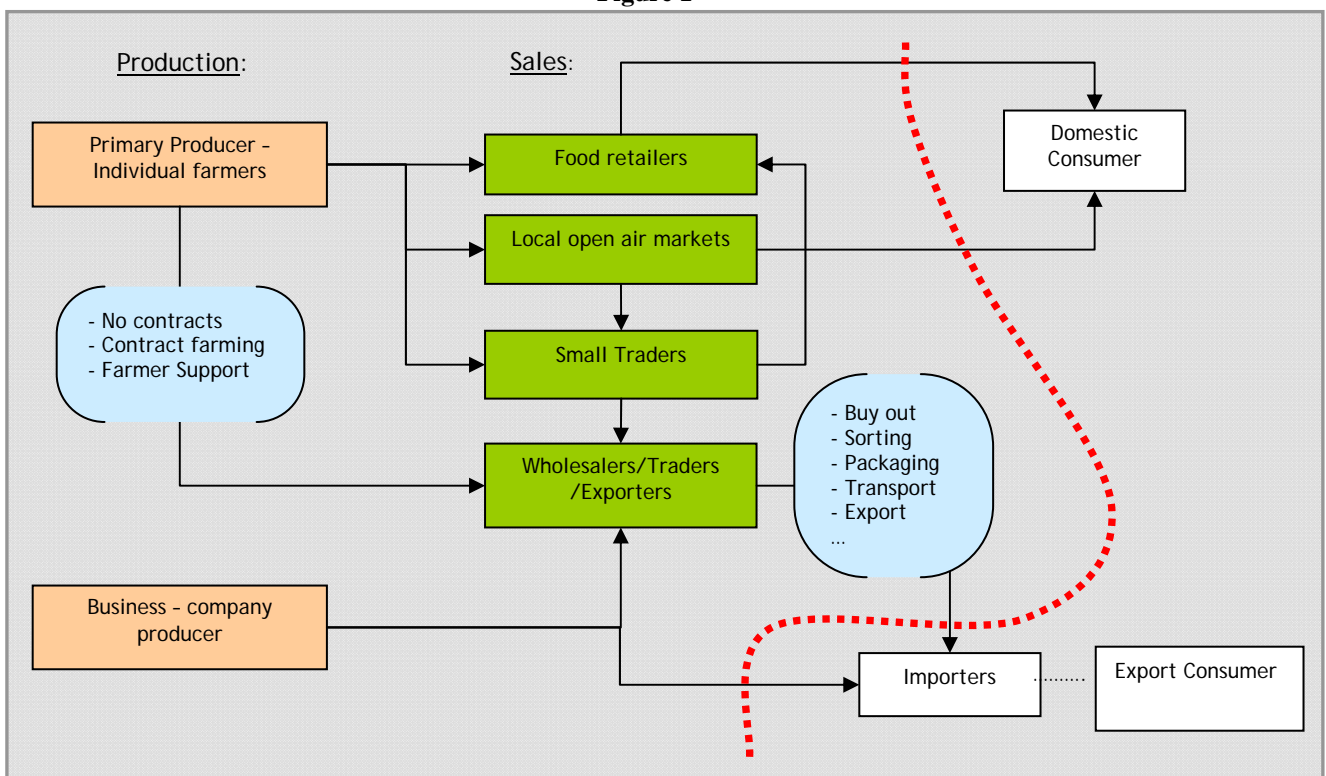
5. Findings and Analysis

5.1. Identification of the VC of fresh vegetable in Macedonia

5.1.1. Identification of the largest players and characteristics

The fresh vegetable value chain in Macedonia is comprised of number of players. The value chain of the fresh vegetable sector in its simple structure can be represented as:

Figure 1



The production of fresh vegetable in Macedonia is either done by individual farmers or agricultural companies. The number of the individuals i.e. farming households is by far larger than that of companies that is result for the size of the plots and the size of production. The table 1 also shows that from the total land used for production of vegetables (plough, gardens and home yards) the vegetables are produced on 9% (the ploughs, gardens and home yard's area represents 72% of the total agricultural land). The individual sector produces on 97% of the vegetable producing area while the business sector only on the remaining 3%. The table bellow also depicts the same picture on a regional level as well. The data is based on the Agricultural Census 2007 and indicated that the production is mostly done by individual producers - family businesses however not registered as legal entities for production of agricultural products but individual farmers.

In terms of number of legal entities dealing with production of agricultural production of vegetables, the 2007 Agricultural Census counts total of 50, while the

individual family businesses are 102,881 as a primary source of income. Having this information, a very rough estimation of the average size of an individual farmer plot producing vegetable will be around 0.21 ha, while average business plot producing vegetables is 12.86 ha. This differs among the eight statistical regions in Macedonia where the average business entity sector averages range from 0.2 ha in Polog to 38 ha in North East region. The individual sector plots of vegetables vary from 0.08 ha in South west region to 0.42 ha in South east region.

Table 1⁶

Total used ploughs, gardens, home yards and are of Vegetables in ha		Participation of the vegetables ha compared with total ha %	Individual Agricultural Businesses & Business Entities #)
	Total	Vegetables	Vegetables
Republic of Macedonia	240,969	22,695	9%
Individual sector	190,726	22,052	12%
Business sector	50,243	643	1%
Pelagonija region	60,822	3,016	5%
Individual sector	40,230	2,954	7%
Business sector	20,592	63	0%
Vardar region	14,946	1,418	9%
Individual sector	8,778	1,393	16%
Business sector	6,168	25	0%
North east region	35,939	2,094	6%
Individual sector	30,565	1,980	6%
Business sector	5,374	114	2%
South west region	12,871	972	8%
Individual sector	12,357	955	8%
Business sector	515	17	3%
Skopje region	19,460	3,190	16%
Individual sector	17,232	3,133	18%
Business sector	2,228	56	3%
South east region	30,170	6,696	22%
Individual sector	26,010	6,467	25%
Business sector	4,160	229	6%
Polog region	19,393	2,062	11%
Individual sector	19,143	2,062	11%
Business sector	250	0	0%
East region	47,367	3,248	7%
Individual sector	36,411	3,109	9%
Business sector	10,956	139	1%

⁶ Agricultural Census 2007 State Statistical Bureau

The individual farmers are usually producing on small plots and are rarely organized in full functioning associations or cooperatives which functions as an entity which could help the farmers in organization of the sales. The farmers are producing mainly varieties and products which they consider will be demanded by the buyers which most of the time are traditional and unfortunately outdated. Majority of the farmers are working with no contracts with the buyers that is they make incidental sales to the available and interested traders which makes their bargaining power low and their risks high since they are dependant on the traders terms moments before sales after the produce has been harvested. If we add to the fact that almost none of the farmers possesses post harvest storage facilities or other value adding facilities such as place and machinery for sorting, categorization and packaging of the produce, this problem become more significant. There is another type of buy out, contract farming where the farmers have contracts with the buyers on the quantity and price of the product. And the last type of cooperating with the traders is that where the traders supply the farmers with some type of support whether this is the seeds or other support however this type of cooperation is not always proven to be effective due to the failure of kept promises and enforcement of signed agreements.

The sales of the products are done through more than one channel. Either by the farmers themselves on the domestic markets through the local open markets or the local food retailers. The most significant sales which lead to exports are the large wholesalers which are acting as exporters as well. Knowing that the farmers are rarely equipped with any facility for value adding of the fresh vegetable production, it is the trader who is usually sorting, calibrating and packaging the products according to the needs and demands of the importers on the other side of the border i.e. the export markets.

The scope of the study for a better focus is mainly attempting to analyze this part of the sector because as the most direct link to the export market demand and perception of our products the traders which are at the same time the exporters of the products are most aware of the issues, advantages and opportunities and threats of the Macedonian fresh vegetable value chain.

This study identified 19 wholesaler traders / exporters which are dealing with fresh vegetable exports. This number is significantly higher since it is often the case when larger producers are acting as traders.

Figure 2⁷

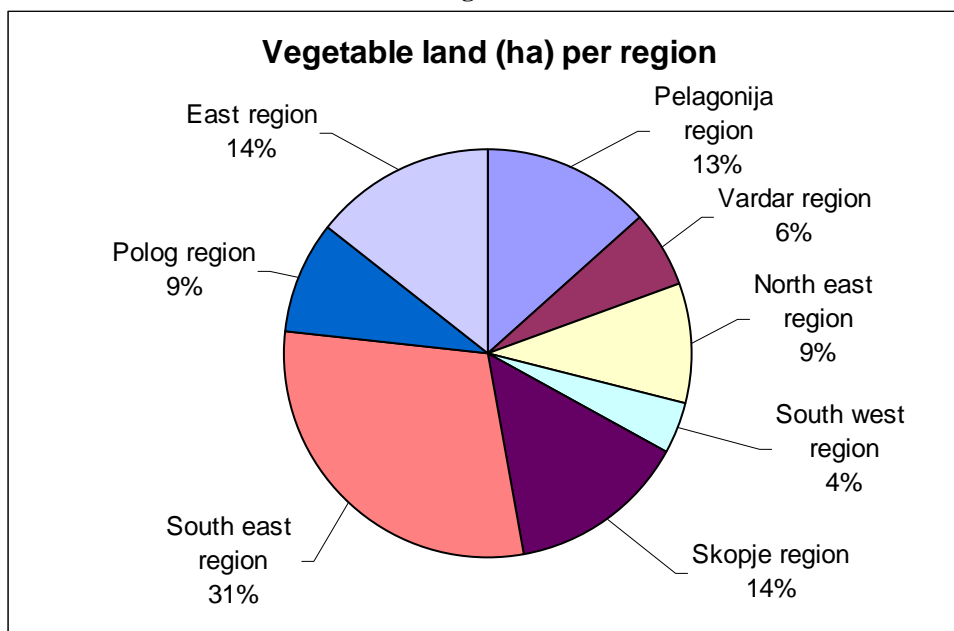
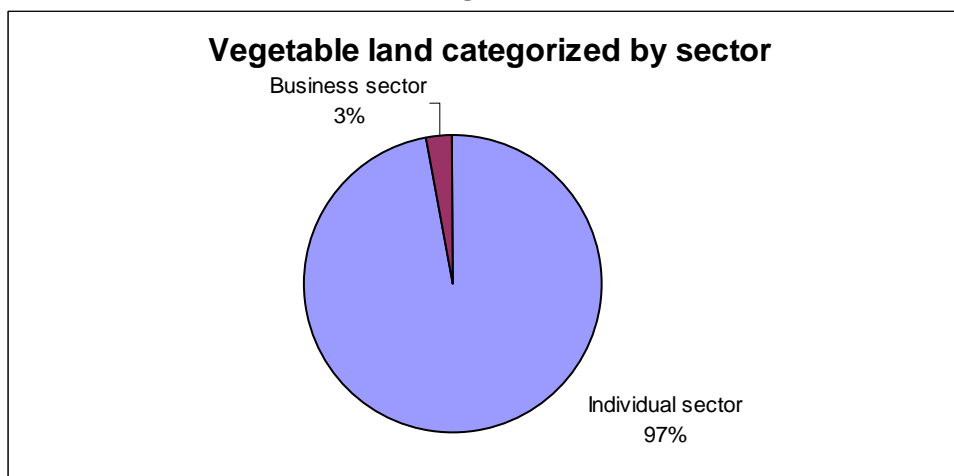


Figure 3⁸



⁷ Agricultural Census 2007 State Statistical Bureau - Total Vegetable Producing area

⁸ Agricultural Census 2007 State Statistical Bureau

5.1.2. Classification by production type and production method

The production of fresh vegetables is either done on open field or production in glasshouses and/or plastic houses. The Table 2 shows the size of the total area of glasshouses and plastic tunnels in Macedonia and by region. Unfortunately, there is no available data on the production in closed areas per product. We were also not able to determine the trends for the greenhouse expansion since we lacked baseline data. However, having the total areas of production of vegetables and the total glass and plastic tunnel area indicated that very small part of the production is done in glass houses and plastic tunnels.

Table 2⁹

Vegetable in plastic & glasshouses vs. total production area									
Region	Glass houses	Plastic tunnels	Total Closed Area	Total Area ha of Products usually grown in "closed" area					% of Closed Area of Total Producing Area
				tomato	pepper	cucumber	cabbage	Total Areas T, P, Cu, Ca	
	ha	ha	ha	ha	ha	ha	ha	ha	
Pelagonija region	14.73	15.4	30	725	1,776	160	352	3,013	1.00%
Vardar region	12.05	115.79	128	700	823	129	226	1,878	6.81%
North east region	0.1	21.03	21	288	475	46	308	1,117	1.89%
South west region	7.26	7.02	14	222	322	37	258	839	1.70%
Skopje region	0.76	164.66	165	896	893	268	386	2,443	6.77%
South east region	66.58	1,721.44	1788	1,295	2,361	693	1,031	5,380	33.23%
Polog region	0.1	7.59	8	750	1,020	158	393	2,321	0.33%
East region	48.04	11.6	60	532	742	45	305	1,624	3.7%

⁹ Agricultural Census 2007 State Statistical Bureau

Table 3¹⁰

# of production facilities: glass houses and plastic tunnels				
	Glass houses		Plastic tunnels	
	#	m2	#	m2
Republic of Macedonia	176	1,496,317	67,928	20,645,410
Individual sector	60	45,797	67,836	20,584,668
Business sector	116	1,450,520	92	60,742
Pelagonija region	6	147,300	799	153,966
Individual sector	1	100	799	153,966
Business sector	5	147,200	0	0
Vardar region	13	120,487	4,824	1,157,891
Individual sector	3	175	4,819	1,154,995
Business sector	10	120,312	5	2,896
North east region	2	1,010	1,073	210,326
Individual sector	2	1,010	1,072	210,196
Business sector	0	0	1	130
South west region	20	72,625	217	70,218
Individual sector	14	2,625	217	70,218
Business sector	6	70,000	0	0
Skopje region	11	7,627	4,491	1,646,637
Individual sector	9	7,597	4,474	1,646,337
Business sector	2	30	17	300
South east region	96	665,828	55,674	17,214,395
Individual sector	28	32,950	55,656	17,163,949
Business sector	68	632,878	18	50,446
Polog region	2	1,000	239	75,944
Individual sector	1	900	239	75,944
Business sector	1	100	0	0
East region	26	480,440	611	116,033
Individual sector	2	440	560	109,063
Business sector	24	480,000	51	6,970

If we consider the number of closed areas for production it is evident that the south east region leads by the number of mainly plastic tunnel production as well as the area under plastic tunnels by far compared to the other regions. Out of the total area under plastic tunnels in Macedonia 83% is in the South East region.

¹⁰ Agricultural Census 2007 State Statistical Bureau

Figure 4¹¹

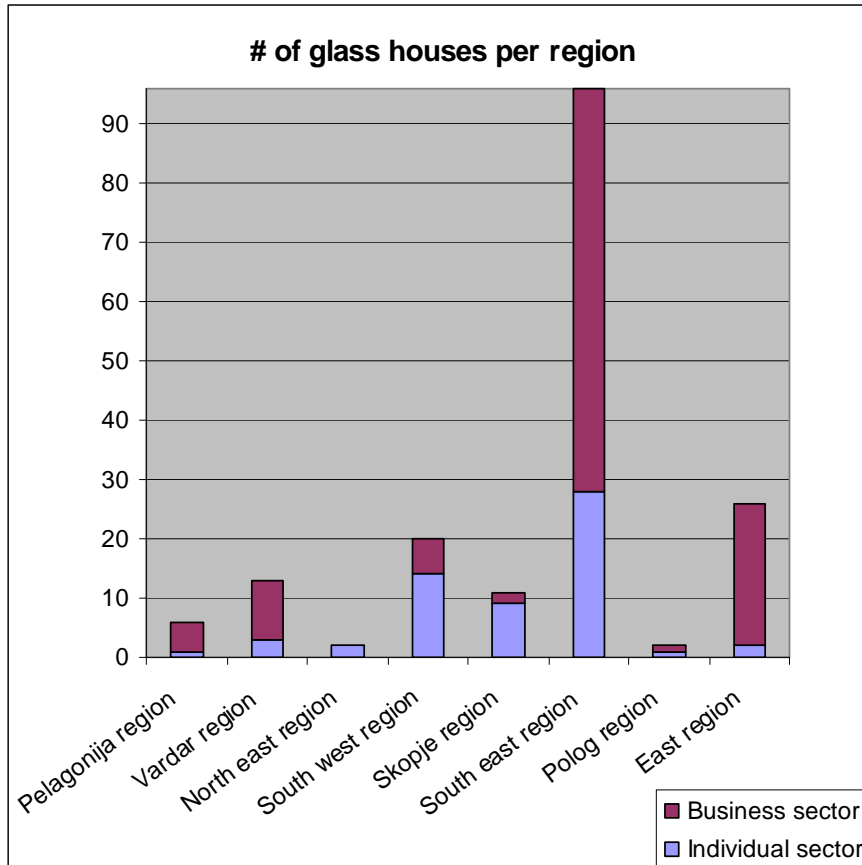
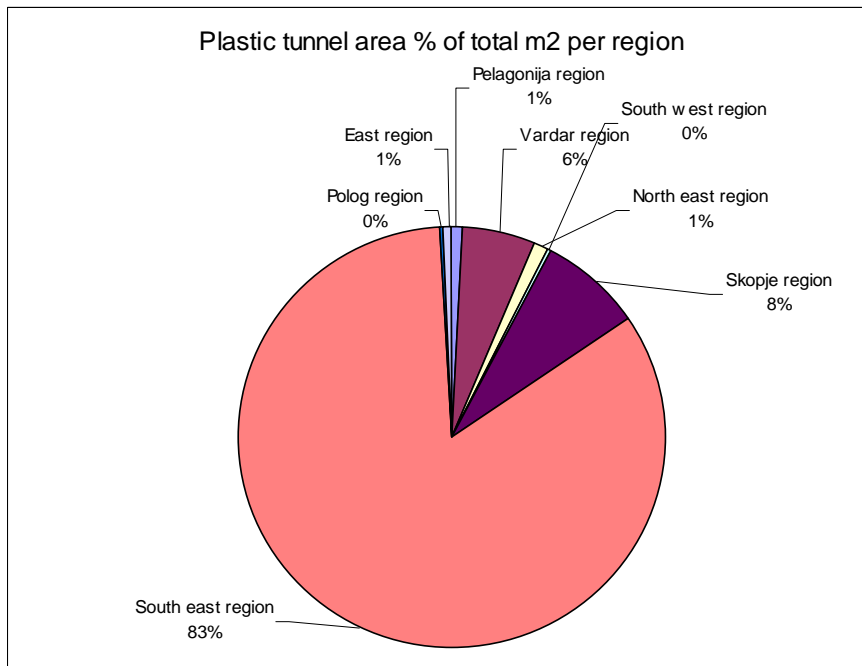
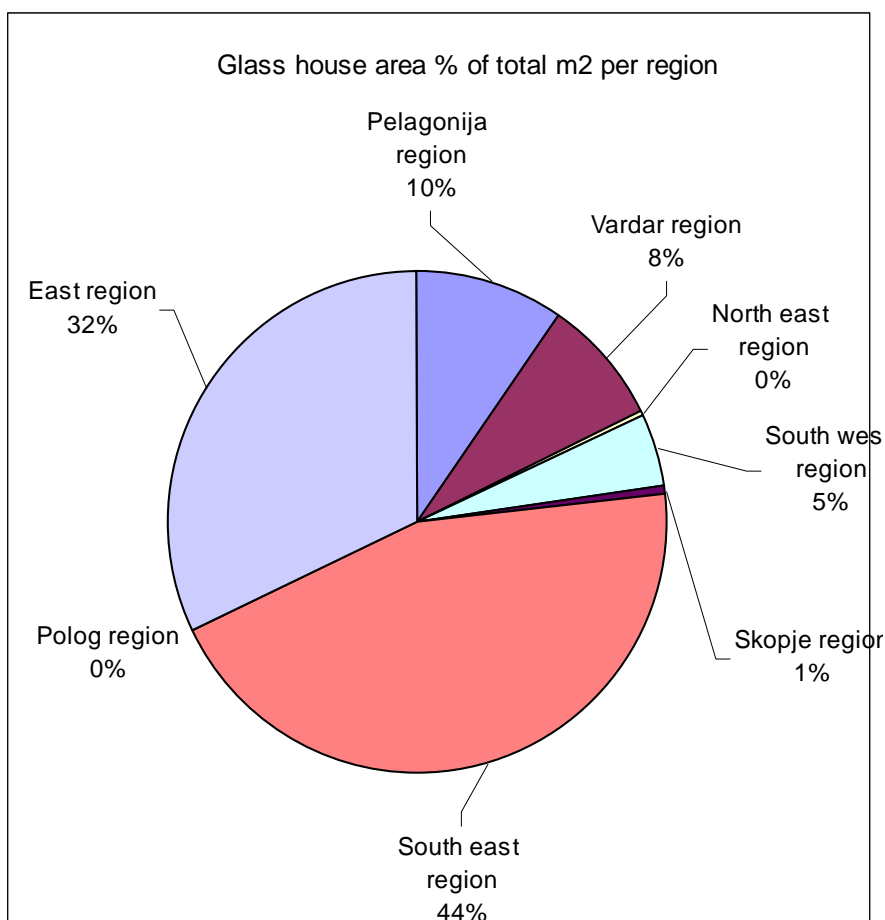


Figure 5



¹¹ Agricultural Census 2007 State Statistical Bureau

Figure 6¹²



Certified ISO 17025 Laboratory

In terms of produce quality check ups there is ISO certified laboratory that provides analysis of pesticides, heavy metals and other relevant parameters that could influence the quality of the products.

The laboratory is located in the Republic Agency for Health Protection providing services to the private and public institutions/organizations making the analysis in a period of up to 10 working days.

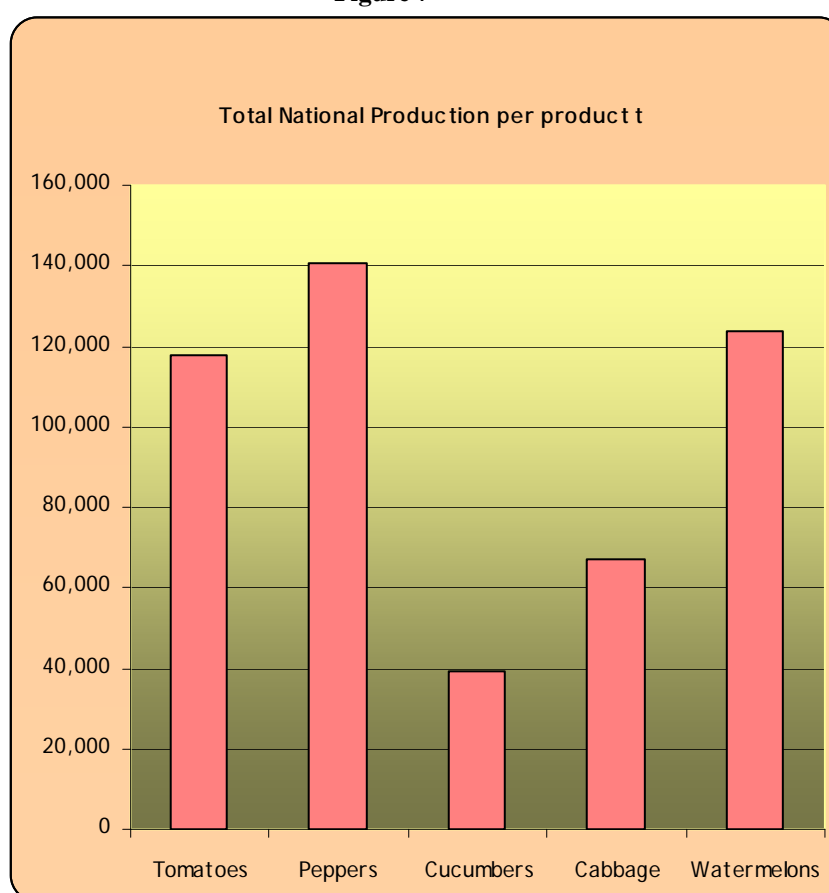
¹² Agricultural Census 2007 State Statistical Bureau

6. Gross Output Values per Product - National & Regional for Y2007

The national production for each of the concerned products is presented in the table below and specifically for each product in the following pages.

From this simplified table for total production on a national basis we can observe that the largest quantity production in Y2007 is: peppers (140,558 t), tomatoes (117,981 t), watermelons with melons (123,840 t) then cabbage (67,138 t) and cucumbers (39,156 t).

Figure 7¹³



The average yield per hectare on a national level for each product from highest to lowest is the following: cucumbers (26,492 kg/ha), tomatoes (21,979 kg/ha), cabbage (20,747 kg/ha), watermelon/melon (20,130 kg/ha) and peppers (16,872 kg/ha).

Out of the total agricultural land planted with vegetable, 23% is planted with peppers, 15% with watermelons, 9% with tomatoes, cabbage 5%, melons 3%, cucumbers 2% and the remaining 43% are planted with other remaining vegetables (22.9% potato, 8.3% beans, 5.5% onions, 1.2% strawberries etc).

¹³ Agricultural Census 2007 State Statistical Bureau

Figure 8¹⁴

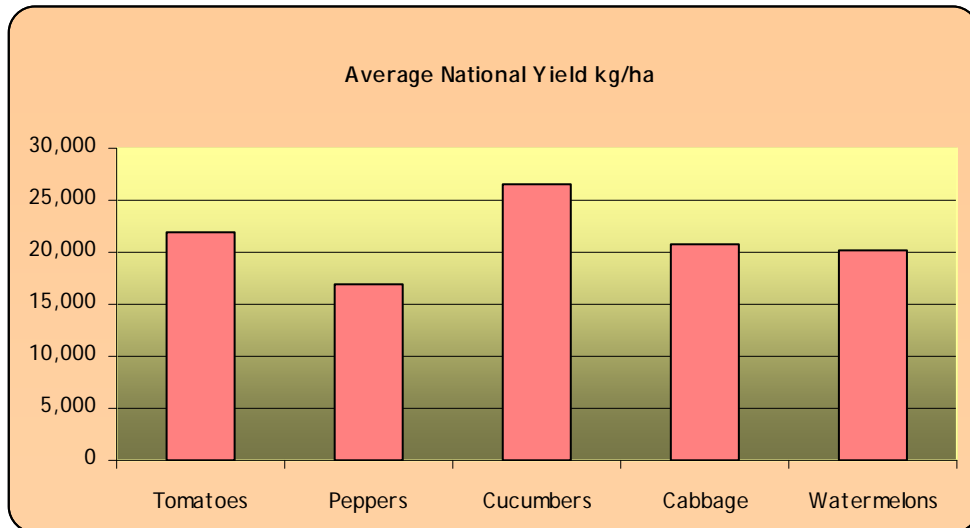
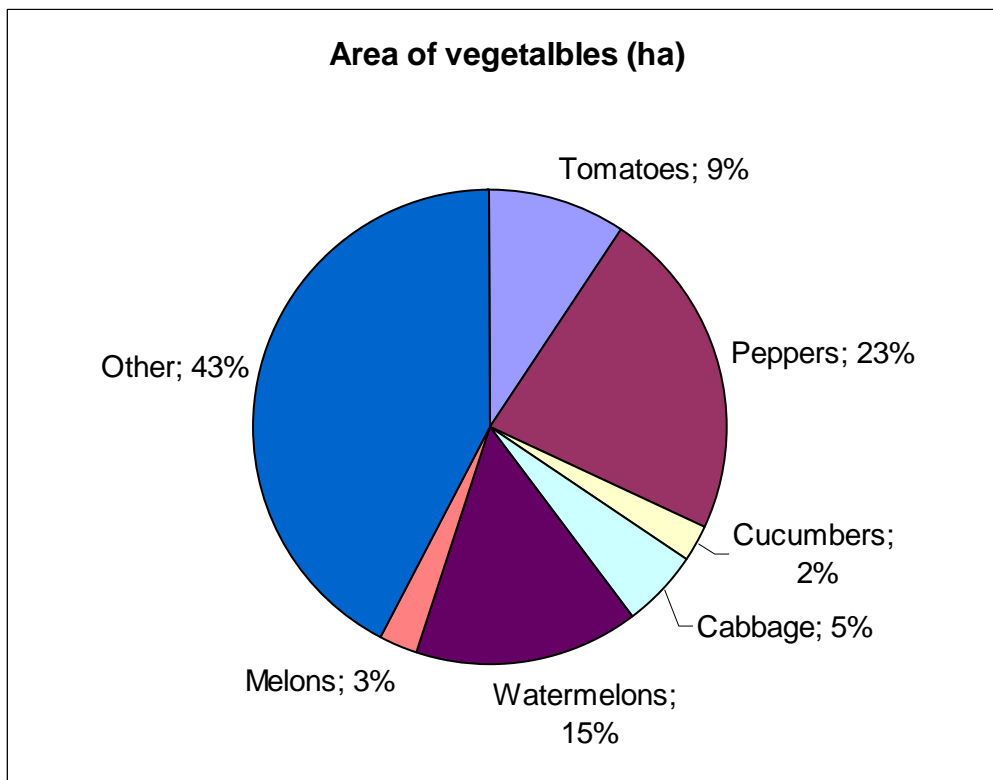


Figure 9¹⁵



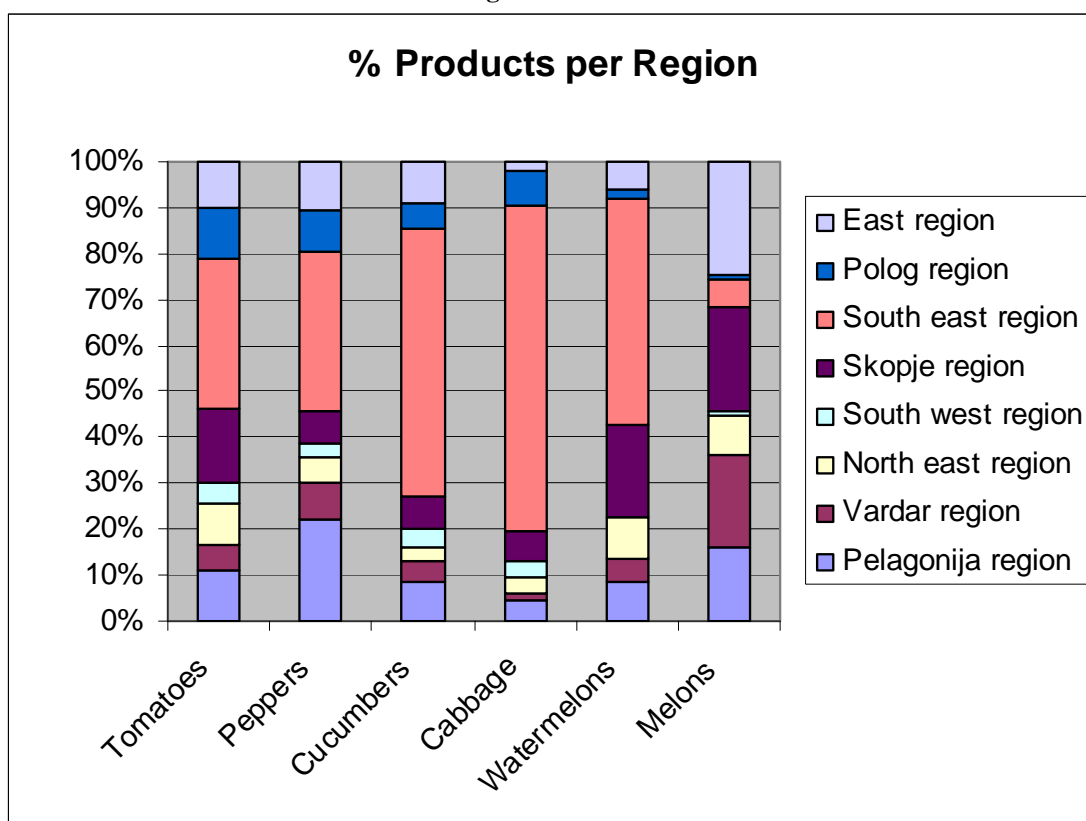
¹⁴ Agricultural Census 2007 State Statistical Bureau

¹⁵ Agricultural Census 2007 State Statistical Bureau

Table 4

Percent production area per region per product						
	Tomatoes	Peppers	Cucumbers	Cabbage	Watermelons	Melons
Pelagonija region	11%	22%	9%	4%	8%	16%
Vardar region	5%	8%	4%	2%	5%	20%
North east region	9%	6%	3%	3%	9%	9%
South west region	4%	3%	4%	4%	0%	1%
Skopje region	16%	7%	7%	6%	20%	23%
South east region	32%	35%	58%	71%	49%	6%
Polog region	11%	9%	6%	7%	2%	1%
East region	10%	11%	9%	2%	6%	24%

Figure 10



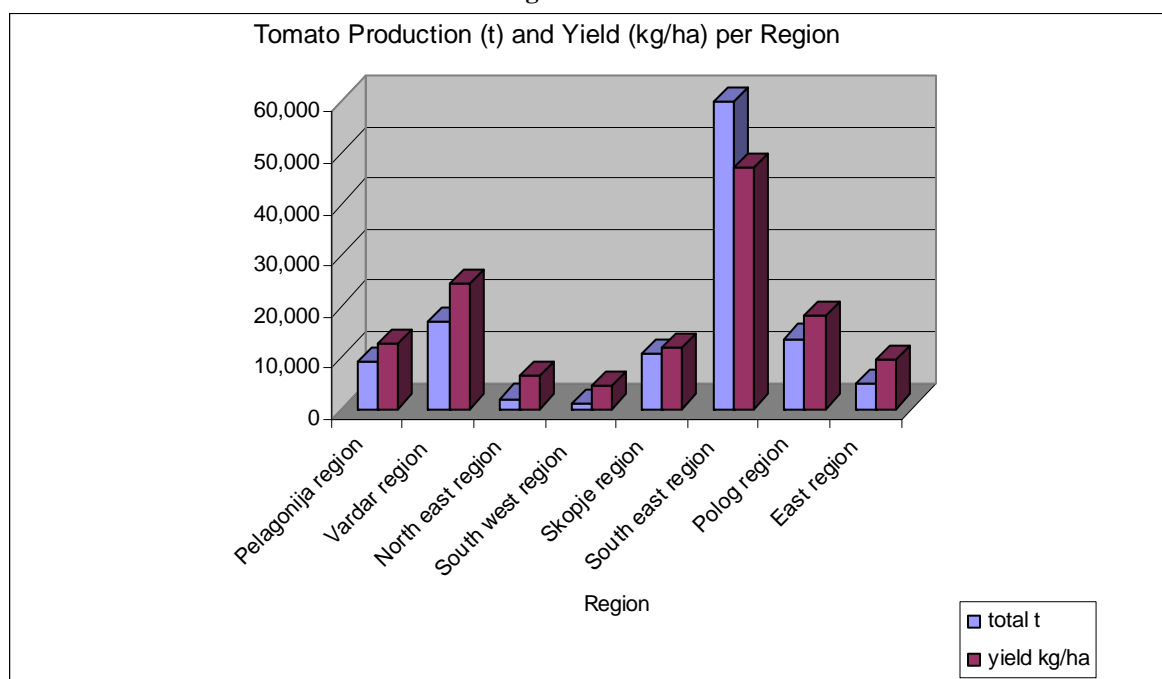
The south east region of Macedonia is by far the largest producers of almost all products considered.

6.1. Tomatoes Y2007

Table 5¹⁶

REGIONAL	Tomatoes			
	area in ha		production	
	sown	harvested	total t	yield kg/ha
Pelagonija region	725	725	9,232	12,734
Vardar region	700	700	17,008	24,297
North east region	288	286	1,862	6,510
South west region	222	222	996	4,486
Skopje region	896	892	10,656	11,946
South east region	1,295	1,273	59,738	46,927
Polog region	750	750	13,596	18,128
East region	532	522	4,895	9,377

Figure 11



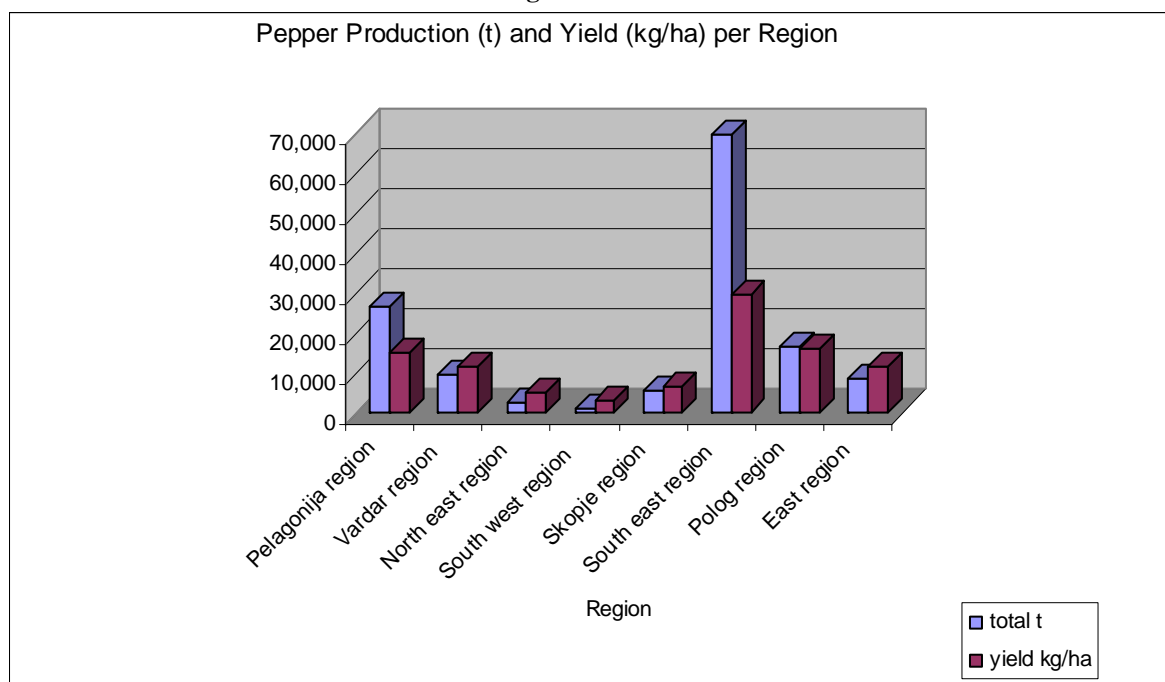
¹⁶ State Statistical Bureau

6.2. Pepper Y2007

Table 6¹⁷

REGIONAL	Pepper			
	area in ha		production	
	sown	harvested	total t	yield kg/ha
Pelagonija region	1,776	1,772	26,878	15,168
Vardar region	823	823	9,550	11,604
North east region	475	454	2,405	5,297
South west region	322	322	1,013	3,146
Skopje region	893	850	5,686	6,689
South east region	2,361	2,358	69,827	29,613
Polog region	1,020	1,020	16,681	16,354
East region	742	738	8,618	11,678

Figure 12

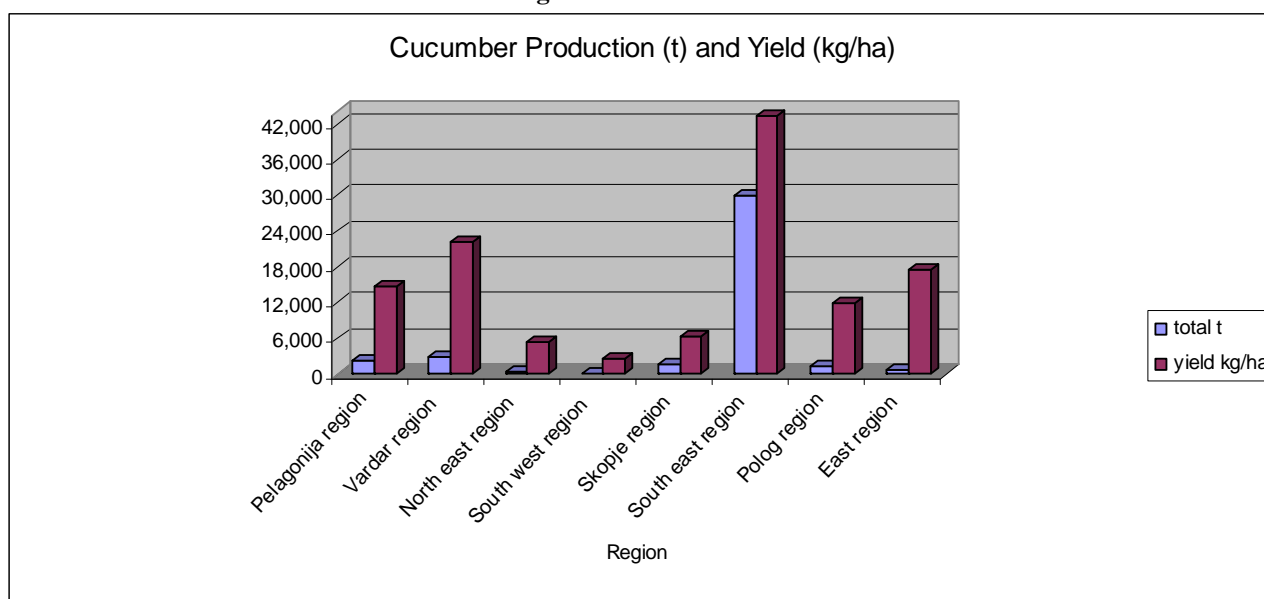
¹⁷ State Statistical Bureau

6.3. Cucumber Y2007

Table 7¹⁸

REGIONAL	Cucumber			
	area in ha		production	
	sown	harvested	total t	yield kg/ha
Pelagonija region	160	160	2,333	14,581
Vardar region	129	129	2,858	22,155
North east region	46	45	243	5,400
South west region	37	37	89	2,405
Skopje region	268	269	1,672	6,216
South east region	693	692	29,986	43,332
Polog region	158	102	1,204	11,804
East region	45	44	771	17,523

Figure 13



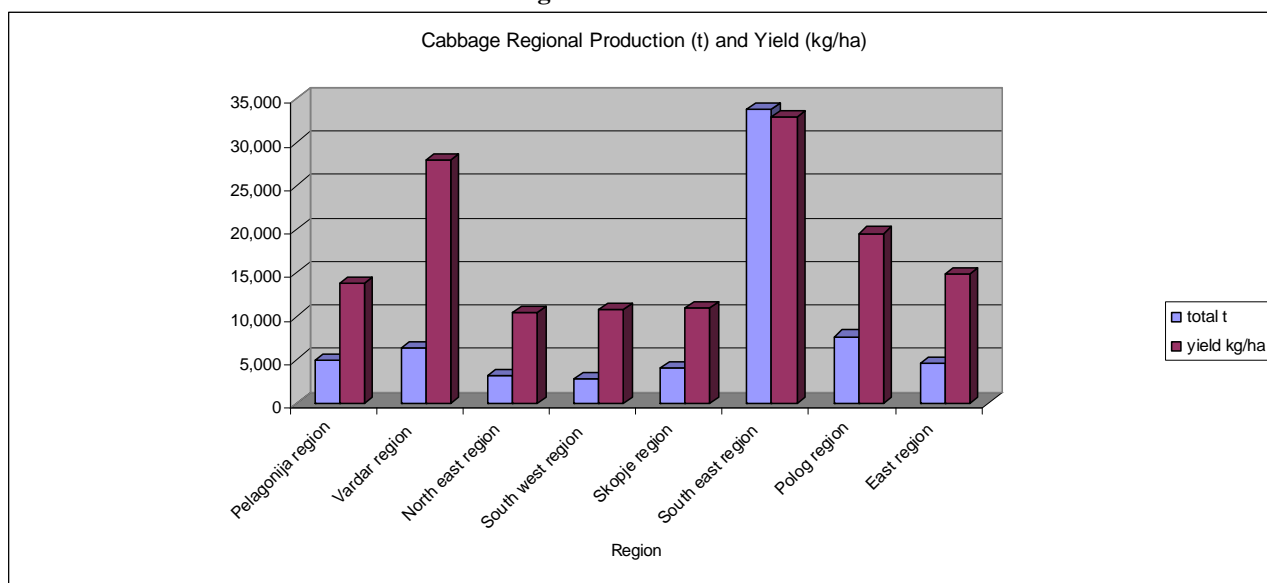
¹⁸ State Statistical Bureau

6.4. Cabbage Y2007

Table 8¹⁹

REGIONAL	Cabbage			
	area in ha		production	
	sown	harvested	total t	yield kg/ha
Pelagonija region	352	352	4,863	13,815
Vardar region	226	226	6,313	27,934
North east region	308	301	3,131	10,402
South west region	258	258	2,781	10,779
Skopje region	386	367	4,037	11,000
South east region	1,031	1,031	33,857	32,839
Polog region	393	393	7,677	19,534
East region	305	305	4,513	14,797

Figure 14



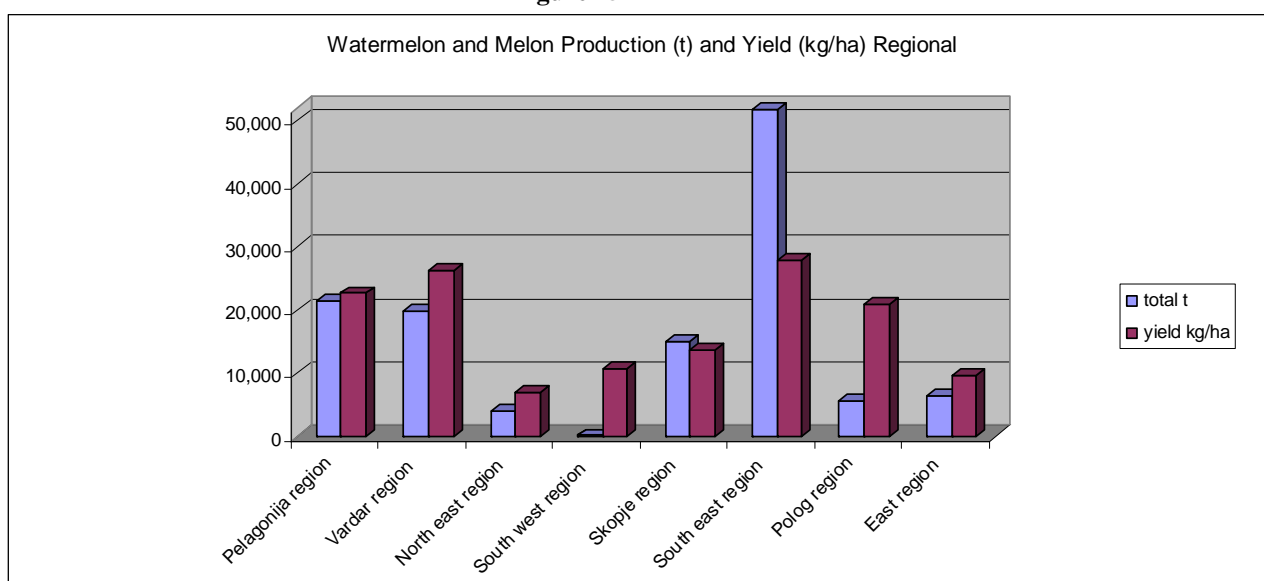
¹⁹ State Statistical Bureau

6.5. Watermelon Melon Y2007

Table 9²⁰

REGIONAL	Watermelon Melon			
	area in ha		production	
	sown	harvested	total t	yield kg/ha
Pelagonija region	942	942	21,347	22,661
Vardar region	751	751	19,741	26,286
North east region	582	554	3,856	6,960
South west region	7	6	64	10,667
Skopje region	1,102	1,102	15,043	13,651
South east region	1,878	1,854	51,738	27,906
Polog region	273	272	5,654	20,787
East region	860	670	6,400	9,552

Figure 15



²⁰ State Statistical Bureau

6.6. Traders' Buying/Selling Price

The information regarding the buyout and sale price listed in Table 10 are based on the information provided by Macedonian traders/exporters of fresh vegetables. These prices are the average of those provided by the interviewees²¹.

If we consider the provided information as relevant and objective then the information indicates that 57% to 74% of the revenue of the fresh vegetable traders is merchandise purchase, i.e., the costs or the revenue to the primary producers. The costs that the trader incurs for the activities they undertake: sorting, calibration, packaging and transportation of the goods represent additional expenses of 22% to 25% of the traders' revenues. The remaining 4% to 20% represent the profit margin of the trader.

According to the traders and exporters interviewed, the buying price from the farmers is determined on a daily basis and by the wholesalers on the wholesale markets (mainly in Strumica).

Table 10²²

MKD/kg	Buying Price	Other costs	Selling Price
Tomatoes	25.0	7.3	33.7
Peppers	31.0	10.0	44.0
Cucumbers	18.3	6.3	26.7
Cabbage	15.0	5.7	22.7
Watermelons	6.0	2.5	10.5
Melons	4.0	1.5	6.0

MKD/kg	Buying Price	Other costs	Trader Margin
Tomatoes	74%	22%	4%
Peppers	70%	23%	7%
Cucumbers	69%	24%	8%
Cabbage	66%	25%	9%
Watermelons	57%	24%	19%
Melons	67%	25%	8%

²¹ The results of the questionnaire where mentioned are based on the five filled questionnaires sent to nineteen buyers/traders/exporters of fresh vegetable in R. Macedonia

²² Questionnaire data

7. Fresh Vegetable Exports & Sales Destination

The export data shows that the exports of fresh vegetables from Macedonia in the period from 1999 to 2007 can be grouped into markets which are considered as relevant for the country and also for the analysis as:

- Ex-Yu (Serbia, Kosovo, Montenegro, Bosnia & Herzegovina, Croatia and Slovenia)
- Regional (Albania, Greece, Bulgaria and Romania),
- European (all EU25 minus Slovenia and Greece including Switzerland, and Norway)
- Ex-Soviet (ex-Soviet republics with Moldova)
- Other markets (all other countries - mainly due to coding mistakes during custom procedures)

The exports of fresh vegetables from Macedonia indicate a strong trend of increase in quantity, especially during the last few years. The ex-Yugoslavia, considered as one market, is traditionally and is still the largest consumer of the Macedonian fresh vegetables. This market has "survived" due to several reasons. Firstly the well kept relationships among partners which have been active during the last decades when Macedonia has been the main producer of agricultural products for Yugoslavia. The consumers in this region are used and familiar with the Macedonia production therefore still consumes the fresh vegetables from Macedonia. Considering the fact that Macedonia is not "large" producer and the ex-Yugoslavian markets were around 22 million consumers, which were and still are close, familiar and "adequate" size. This is still considered as a "steady" market for the Macedonia fresh products but these markets could easily be considered as a local sale since all of them were recently part of one country.

The regional market, besides the ex-Yu market, is another significant market which is comparable and very similar to the ex-Yu market. We are aware that parts of the figures allocated to regional markets in reality are re-export to other EU markets, but we could not confirm this statement with adequate information.

The European market is another destination of the Macedonian fresh produce which has been significantly increasing in the years from the last decade. The European market is considered as more "demanding" and sophisticated in sense of the consumer needs. This market demands smaller packages; different varieties etc. which according to the exporters is still something to strive for. The reason why the Macedonian production is not still "aiming" this market is due to the "security" on the ex-Yu and regional market which is familiar and satisfied with the current products from Macedonia providing some security of sales, however it is a stifling factor for further development of the Macedonian fresh produce to a level which is adequate for the European market. At the same time the Macedonian fresh

produce on the European market is exposed to a competition which is traditional and well established on this market especially from Spain, Turkey and Greece to an extend which are "domestic" producers with higher compliance with the consumer demand, subsidized production etc. It is our main conclusion that Macedonia should consider EU markets as a target for the future development especially considering the accession process of the Balkan countries into EU.

Transporters

There is serious number of transporters in Macedonia that serve not only the domestic but also the regional market such as Bulgaria, Greece and Serbia. With modern, expensive vehicles that satisfy the strict requirements by the EU the transporters mainly drive the tours of fresh vegetable to the EU markets (mostly Hungary, Austria, Czech Republic, Germany), the EX-Yugoslavian market (Serbia, Montenegro, Kosovo, Bosnia and Herzegovina, Croatia, Slovenia), the regional market (Bulgaria, Greece, Romania), and the East European markets (Ukraine, Byelorussia, Russia). The transporters do not face any serious problems during the transport in any of the countries except Bulgaria and Serbia where the custom procedures take incredible long time, the highway road taxes are expensive and the police controls unnecessary frequent.

The usual rate of transport costs is around 1 Euro/km and the most preferable destinations are the EU countries. The main problem the transporters face in the country is the small number of TIR licenses.

Forwarding Service

The problems the forwarding services face are linked to lack of knowledge of the international forwarding/customs procedures. The main export destinations as archived by the forwarding agencies of the fresh vegetables are Ex-YU countries, mainly Serbia as well as EU market (mainly Germany). The quota trade is problematic for the exporters, as the quota to some of the countries is quickly used.

The forwarding agencies need to participate actively in the process of new Law adaptation where most of the EU procedures will be followed and the State will unify its custom protocols with the international ones.

7.1. Export Seasonality & Price

In order to see if there is any trend or specific period when Macedonia is exporting, we analyzed the monthly exports for each of the concerned products for three separate years 1999, 2003 and 2007.

The tomato is mostly exported in June and May, with significant quantity increase due to open field production. The pepper is mostly exported in September and October and June and July the trend is the same however as with the tomatoes the quantity exported is significantly increased.

The cucumber is mostly exported in May with not significant increase in the quantity exported.

The cabbage is exported mostly in April and May with significant increase in quantity in the last year.

The watermelons and melon export shows July as the month of exports with doubled exports in 2007 compared to 2003 in the peak export month.

The varieties sold from Macedonia to the export markets for each of the products as stated by Macedonian exporters, are mainly different Dutch varieties²³ however significant part of the production is also with outdated varieties which is not adequate for the European markets. Considering other varieties of vegetables, especially those demanded by EU markets are something that should be considered in order for a larger production to be adequate for the European markets. In addition varieties which are originating from areas with "closer" climatic conditions should be also considered such as Italy, Israel etc.

If we compare the below given figures of average product prices per month with the quantities exported in almost each case the maximum quantity exported is when the prices are lowest. This shows that the vegetable production is not organized in a manner that the farmers will produce out of season products and will not create an oversupply on the market. Even though this is known to be one of the largest problems of the farmers which most of the production come out on the market when then there is over supply and when there is a competition both on the domestic and on all regional markets. This also shows that still largest part of the production in Macedonia of fresh vegetables is done open field, without planning for larger production during, before or after the season so that they take advantage of the higher prices.

²³ Interview Process

Figure 16²⁴

Export Quantity Monthly 1999

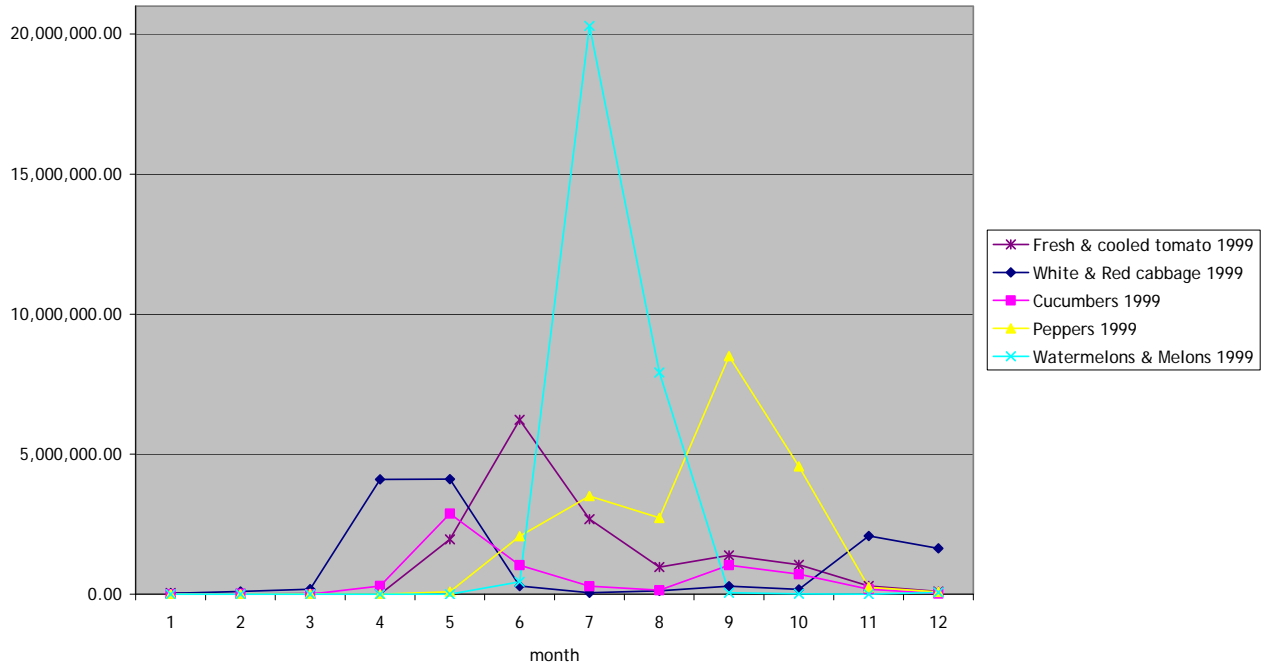
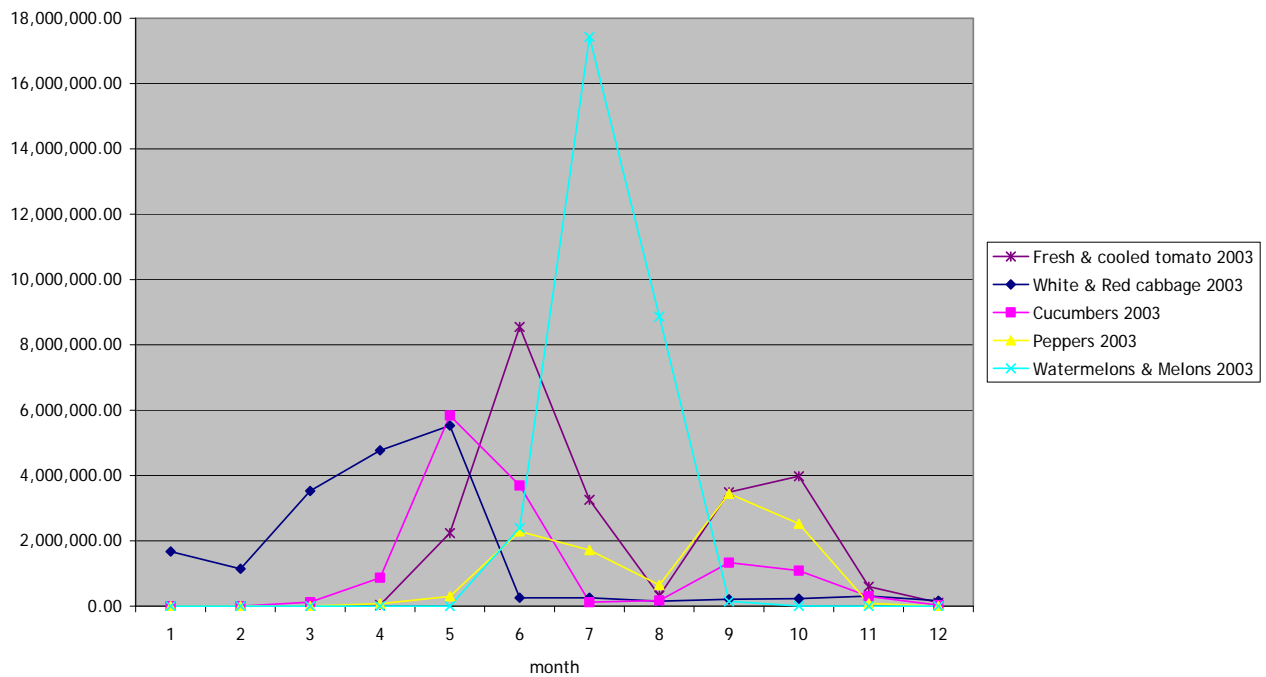


Figure 17

Export Quantity Monthly 2003



²⁴ State Customs Office

Figure 18

Export Quantity Monthly 2007

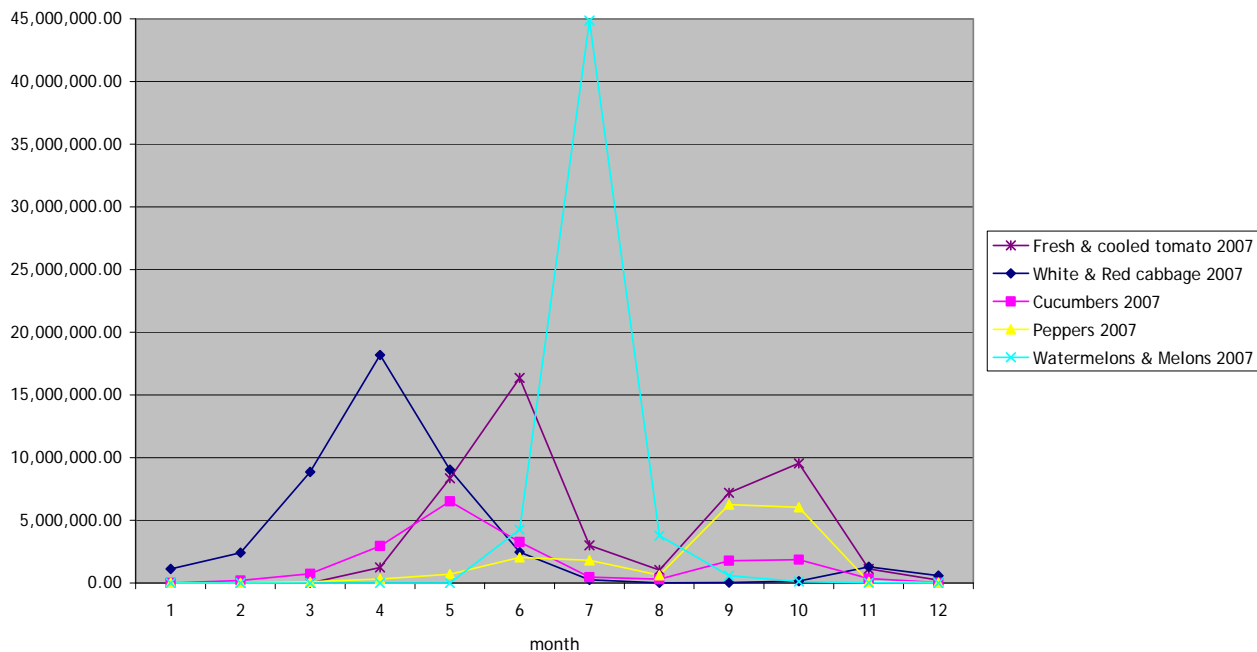


Figure 19

Y 1999 Fresh Vegetable Average Price in EURO/kg per Month

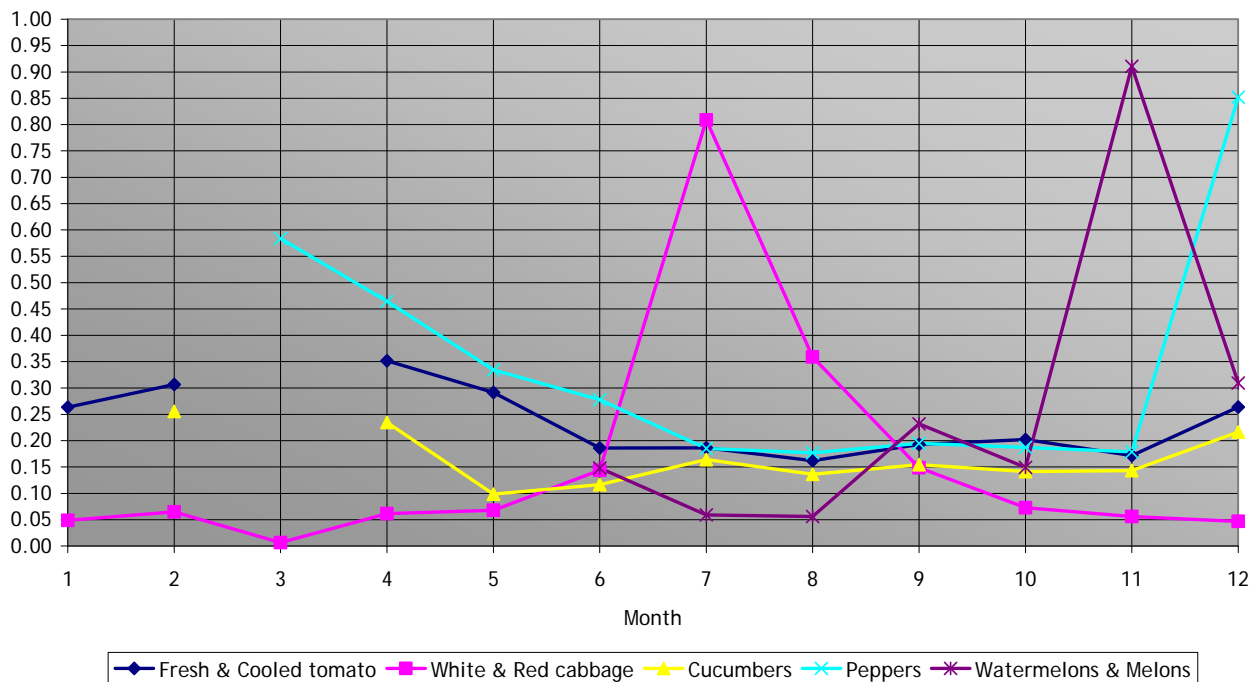
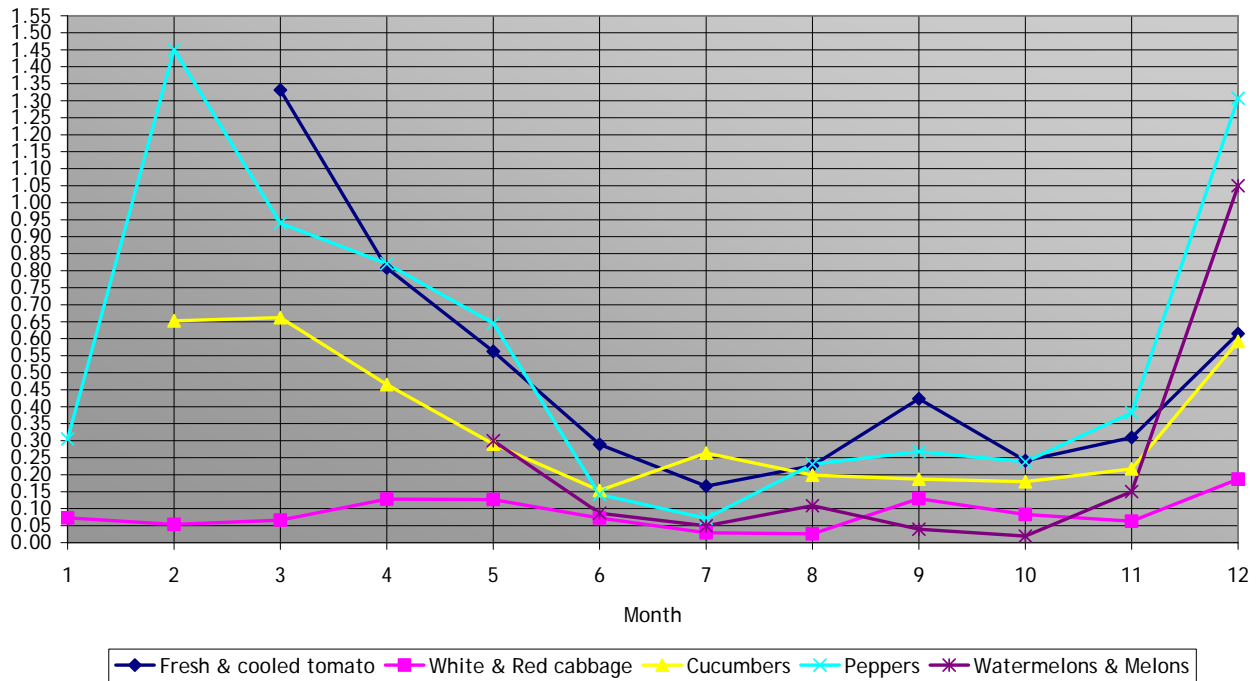


Figure 20

Y 2007 Fresh Vegetable Average Price in EURO/kg per Month



If we consider the prices of the product for the same period on a monthly basis the highest prices achieved for the products are the months out of season that is January to March for tomatoes, pepper and cucumber, May and September for watermelons and melons and June, July, September and December for cabbage. At the same time we can observe largest exports during the season when the prices are lowest.

7.2. Destination of sales²⁵

The major destination of the Macedonian fresh vegetable is the markets of ex-Yugoslavia. Fresh products are primarily bought from individual farmers directly from the field through organized buyout from the marketer which is at the same time adding value to the products through calibration, sorting, and packaging of the products. It is crucial to mention at this point that due to lack of farmers' facilities necessary to prevent damage to the product, due to immediate post harvest treatment, the products lose quality until they reach the marketers (temperature shocks and similar) in addition the lack of immediate sorting of the product and the harvesting when the products are ripe once again reduces the quality by damaging the product by few handlings and also hard to be transported. This reduces the shelf life of the product and decreases the product value especially on the EU markets.

The wholesalers/traders/exporters after handling the products, sell the products to the foreign importers and their role stops here. No interviewed exporter identified by EPI CENTAR directly deal with supermarket chains or sell directly to supermarket chains (with small exceptions). The reasons are manifold: no year round production, i.e., no produce available for a year round supply, no adequate small sized packaging ready for consumers, the varieties are not adequate as the most demanded varieties on the European markets. Traditional links with regional markets can be considered as a positive market since the Macedonian fresh produce has a relatively "sure" market which knows the product and is satisfied with the varieties and the quality. However on the other hand this "sure" market does not allow the further development of the sector. In this sense the Macedonian traders/exporters do not demand new and EU demanded varieties of fresh vegetable produce and thus the farmers do not change the varieties. As soon as the traders/exporters refocus their sales/exports on the European markets it is likely that the varieties demanded and thus produced in Macedonia will change to more adequate varieties demanded on the European markets. Also, the traders do not bother to respond and compete with other products which are with higher added value such as ready salads or packages for single member family etc. This results with no packaging centers with modern equipment and significant size and again no need for the farmers to equip themselves with post harvest facilities such as coolers or temperature stabilizing storage facilities immediate sorting of the produce in different quality and size categories etc. The additional stifling characteristic to this conclusion is the non functioning incentive systems for change. The traders stick to the traditional markets, they pay the farmers in terms of quantity and in bulk which do not provide incentive for the farmers to clean,

²⁵ All export data are from the State Customs Office database

sort, grade that means to change towards the needs of the EU fresh vegetable markets towards which we declare to strive.

7.2.1. Tomato Export Value & Weight

In 2007 approximately 41% of the total tomato production was exported as fresh tomatoes. Fresh tomatoes have increased in export value in the last decade from 2 to 17 million EURO with the leading export market being the ex-Yu countries by regional and then European sales. Compared with the table of net weight for the same period we can see that the quantities sold to ex-Yu markets are stable, but the quantities sold to regional markets are raising, this indicates that the Macedonian fresh tomato faces increasing price on the ex-Yu and lowering price on the regional market and the total value is increasing.

Figure 21

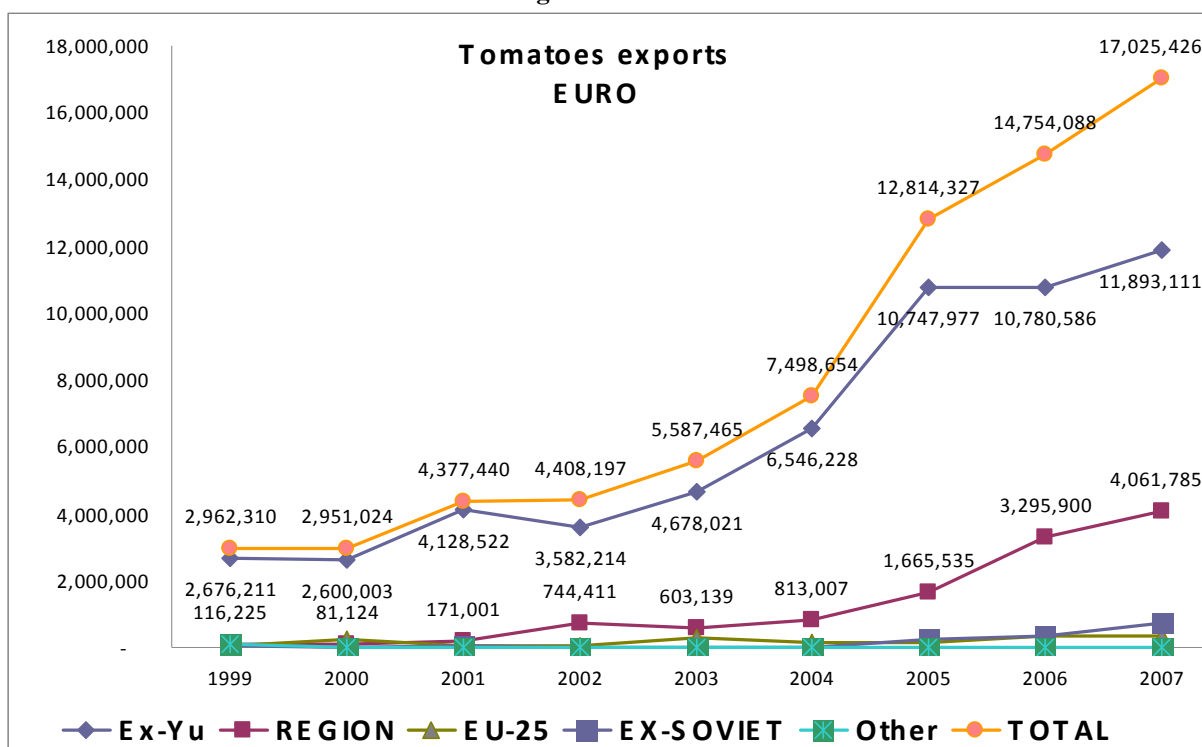


Figure 22

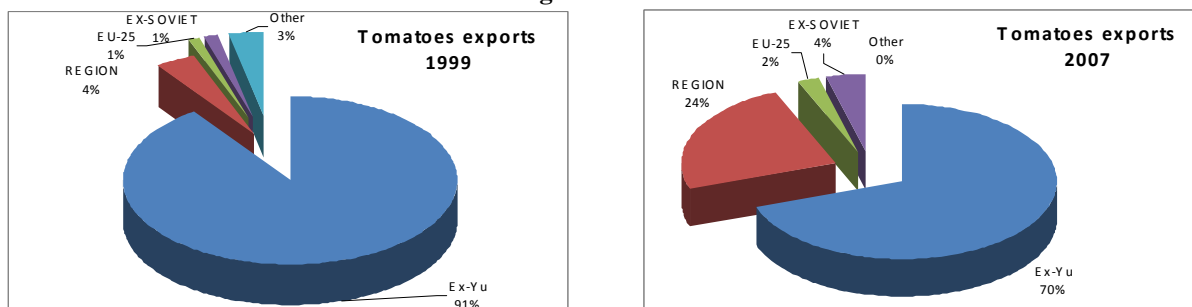
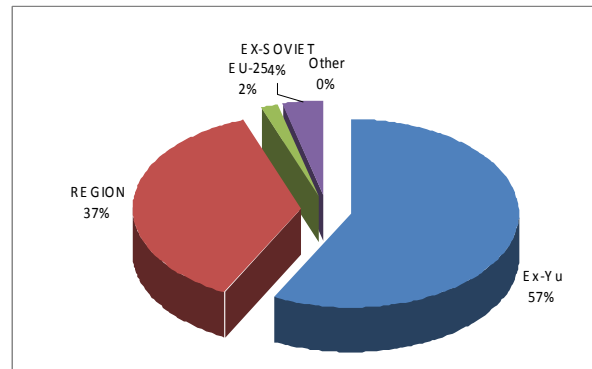
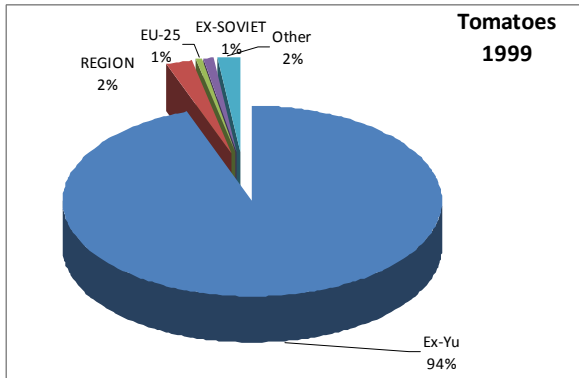
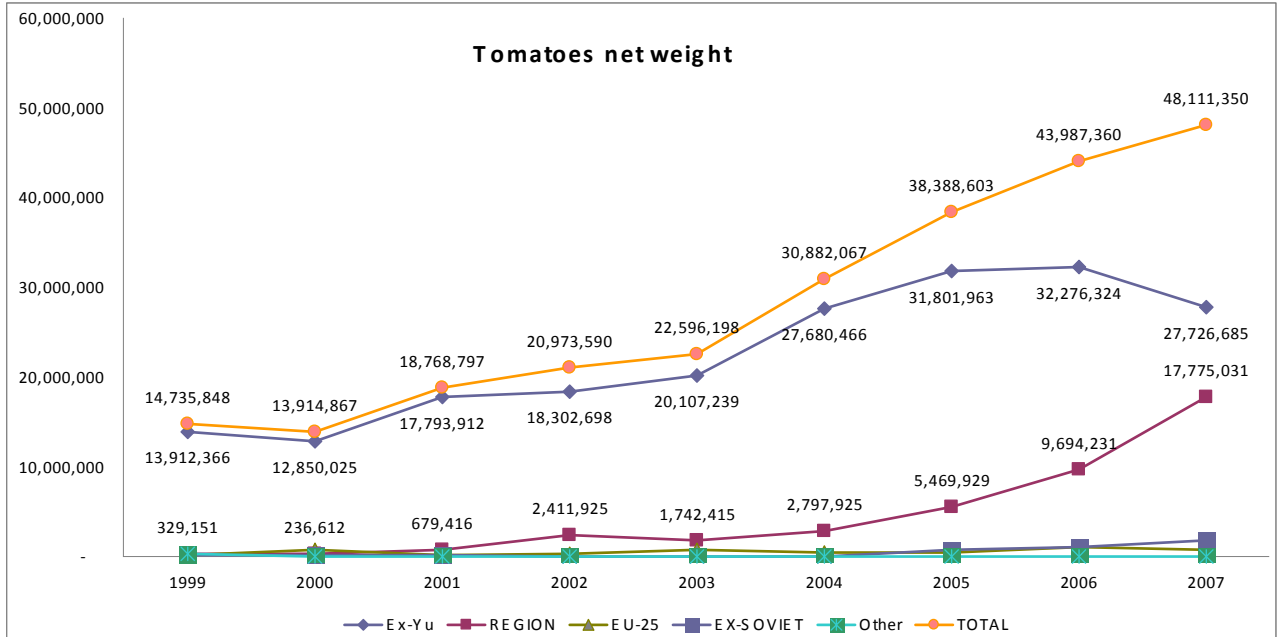


Figure 23



7.2.2. Pepper Export Value & Weight

In 2007 approximately 13% of the total pepper production was exported as fresh pepper vegetable. The pepper export in value has ups and downs in the period concerned. The major markets as with the tomato are the ex-Yu and the regional market following with almost identical trend of ups and downs. The European markets are behind the first two still not showing a drastic change throughout the period. The quantities follow the same trend with the quantities however showing the opposite average price in 2007 of the trend of tomatoes, here we see better price of the tomato on the ex-Yu market.

Figure 24

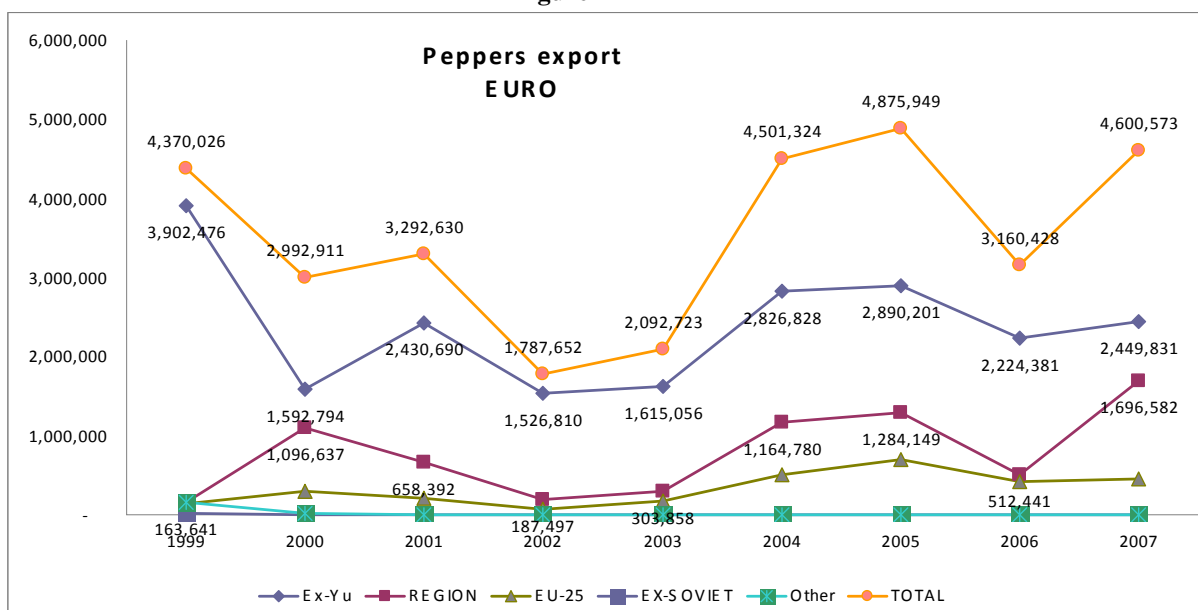
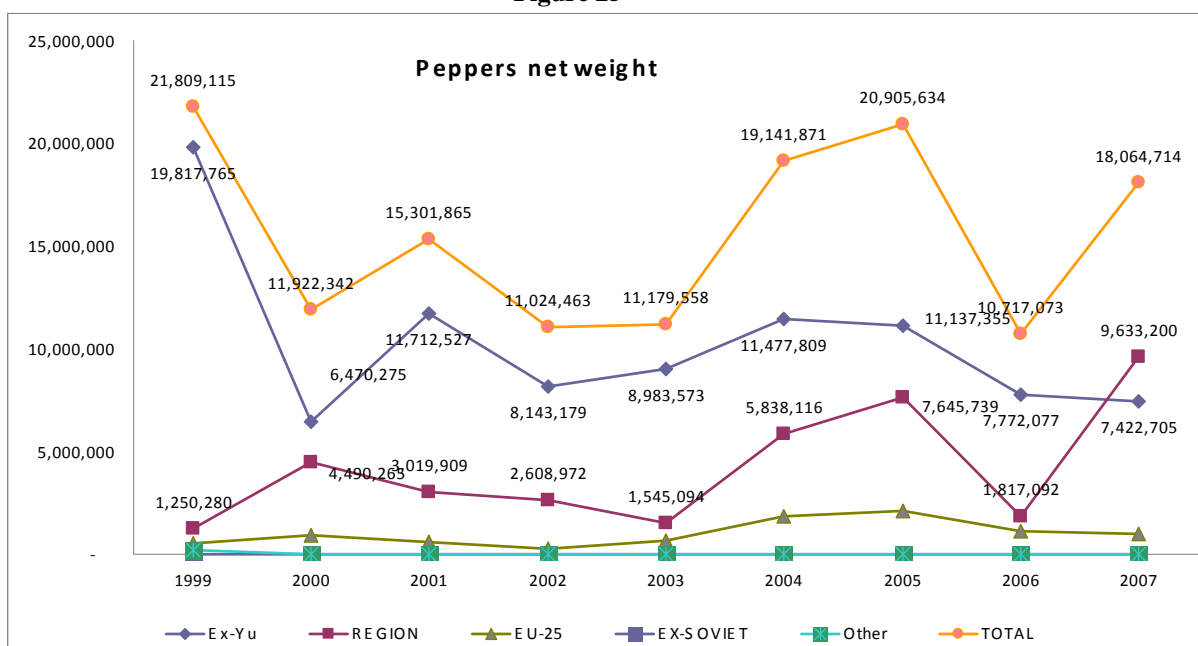


Figure 25



7.2.3. Cabbage Export Value & Weight

In 2007 approximately 66% of the total cabbage production was exported as fresh cabbage vegetable. The total cabbage exports show an upwards trend and increase of the quantities exported from 13 to 44 thousand tons for the period. The quantities exported to the ex-Yu and the regional markets are close together and there is simultaneous increase on both markets. The European market as well as the ex-soviet market in the last two years shows a significant increase in terms of export value indicating increasing prices for the Macedonian cabbage on these markets as well as a potential leader change in the export of cabbage.

Figure 26

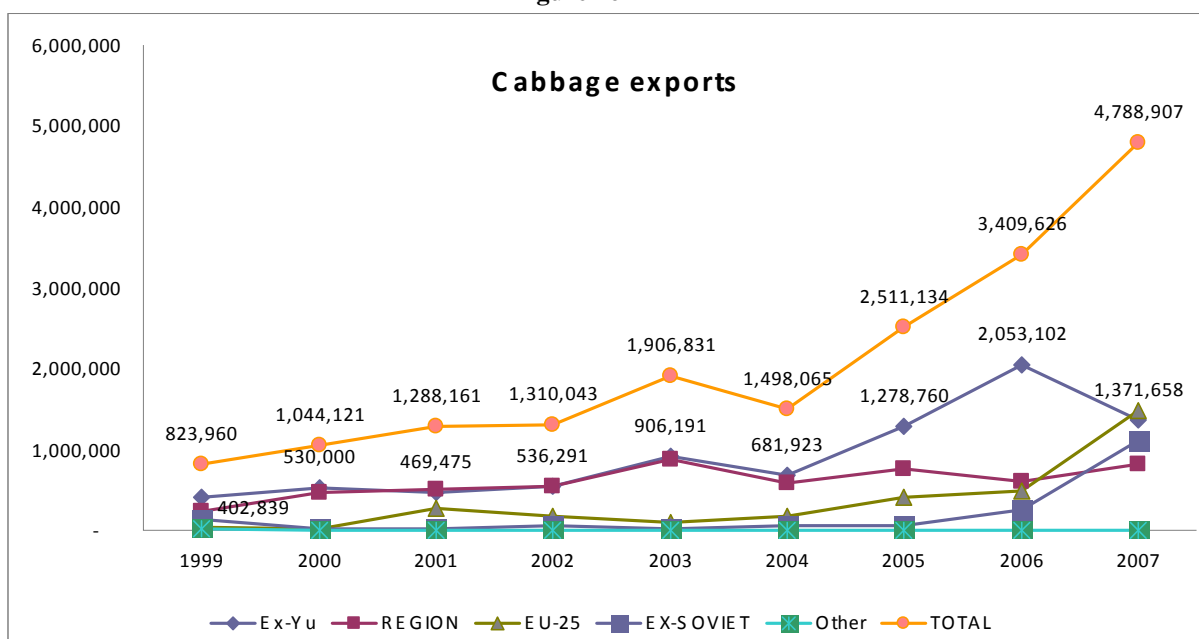
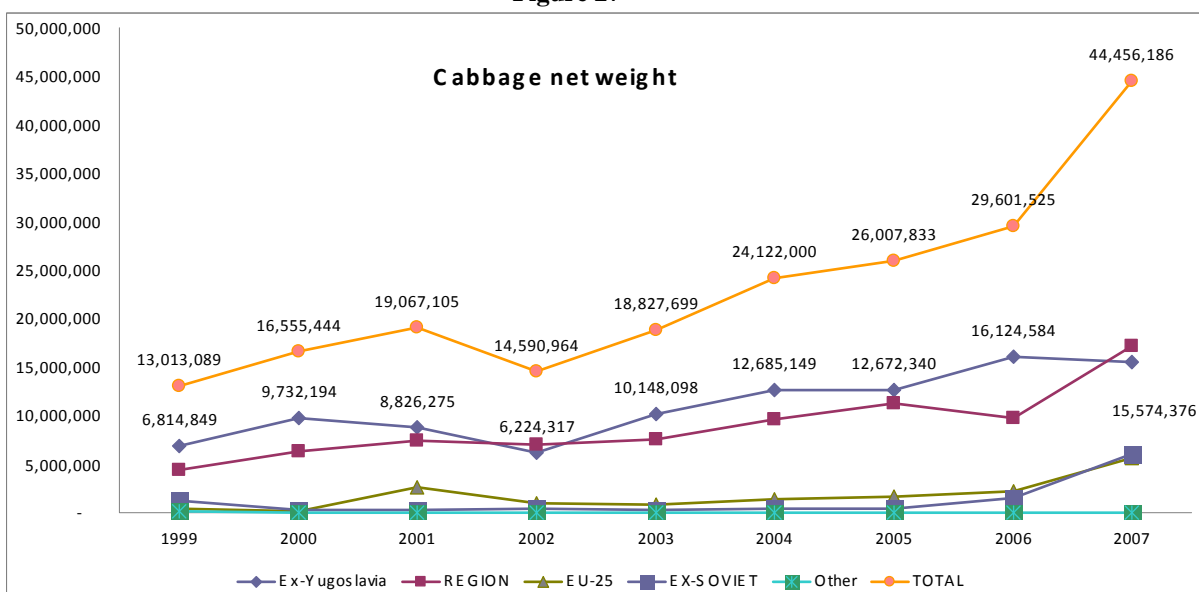


Figure 27



7.2.4. Cucumber Export Value & Weight

In 2007 approximately 47% of the total cucumber production was exported as fresh cucumber vegetable. The leading and by far for the cucumbers from Macedonia is the ex-Yu market both by value and quantity. This market is followed by the regional and the European market with almost equal importance. There is a drop in the exported quantity on the ex-Yu market in the last year however there is increase on the export value generally showing price increase of the cucumber.

Figure 28

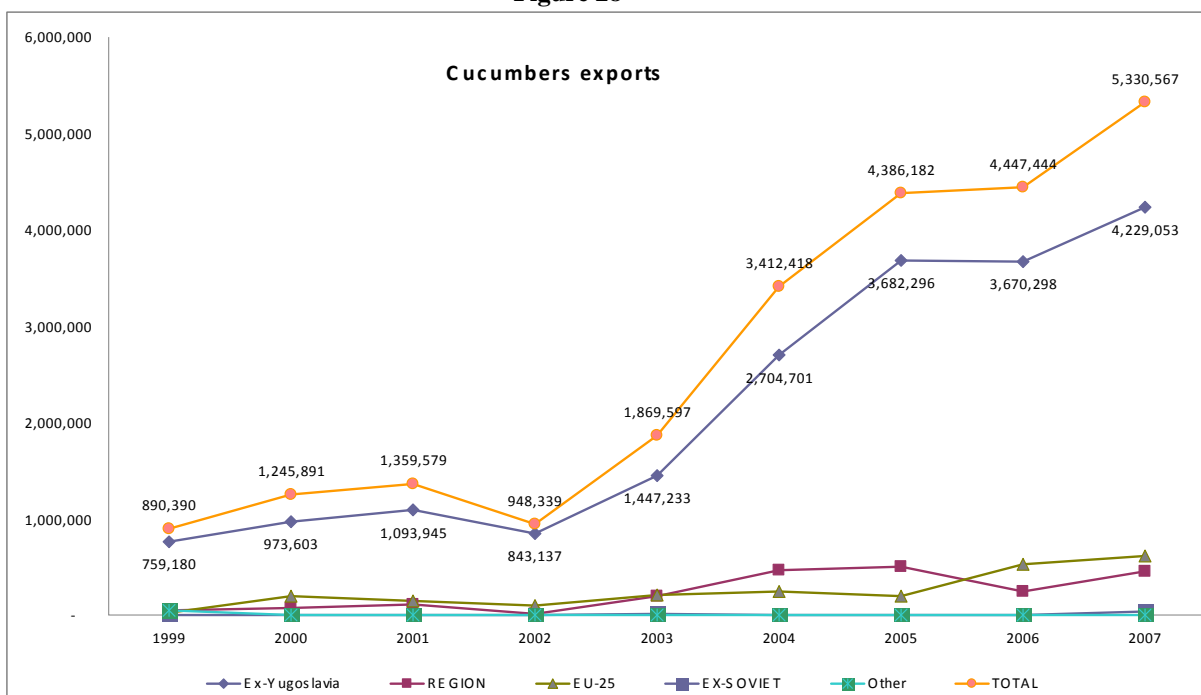
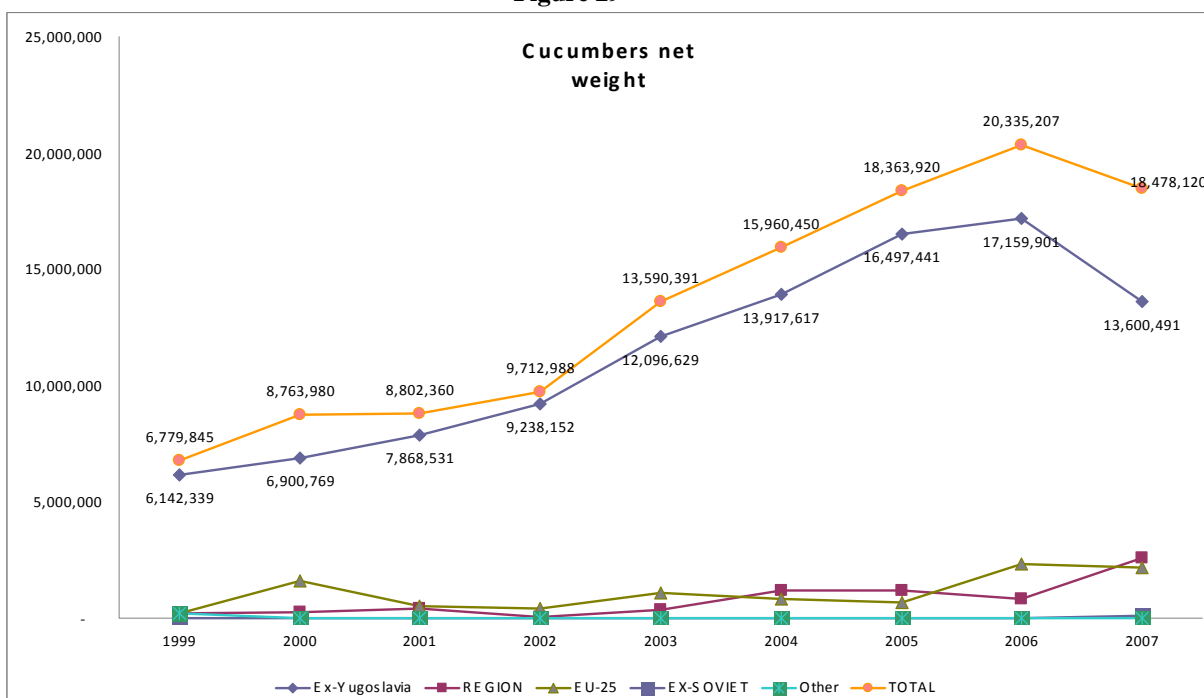


Figure 29



7.2.5. Watermelon/Melon Export Value & Weight

In 2007 approximately 43% of the total watermelon/melon production was exported. The watermelons/melons are mainly exported on the ex-Yu market as traditional market for the Macedonian watermelons. We see in the table below that the regional market as well as the European markets show an increase and possible there is a potential to keep the trend of increased export in these areas in the following years, especially in the regional market where there is a drastic increase on the last couple of years. On the other hand the export value shows a steady trend with an exception of 2006 exports. This is mainly due to the export increase in value on the European market and some export value increase on the regional markets.

Figure 30

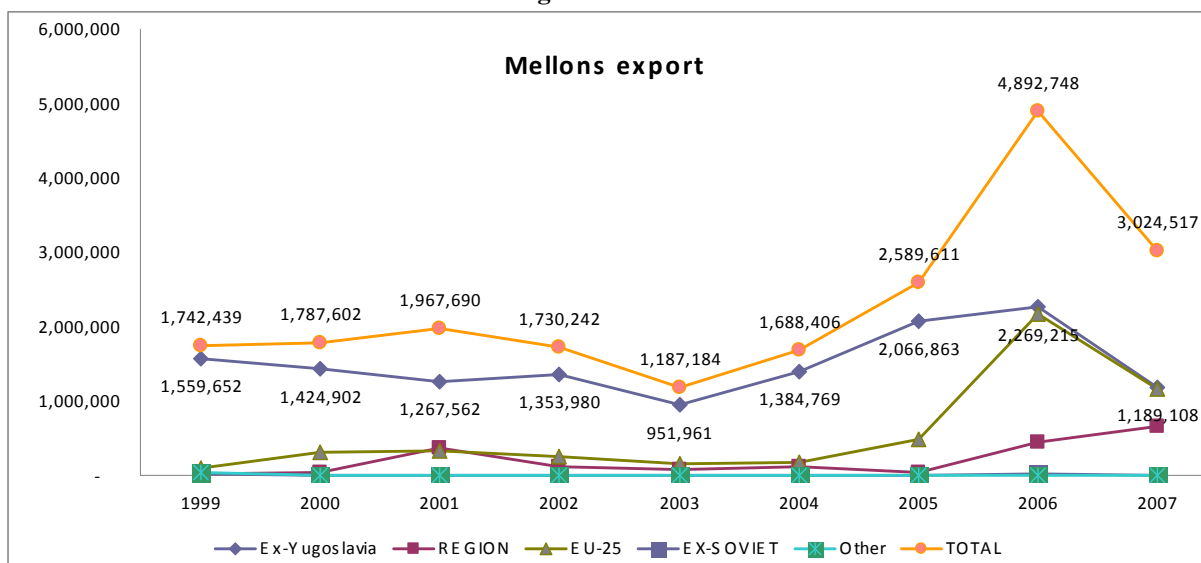
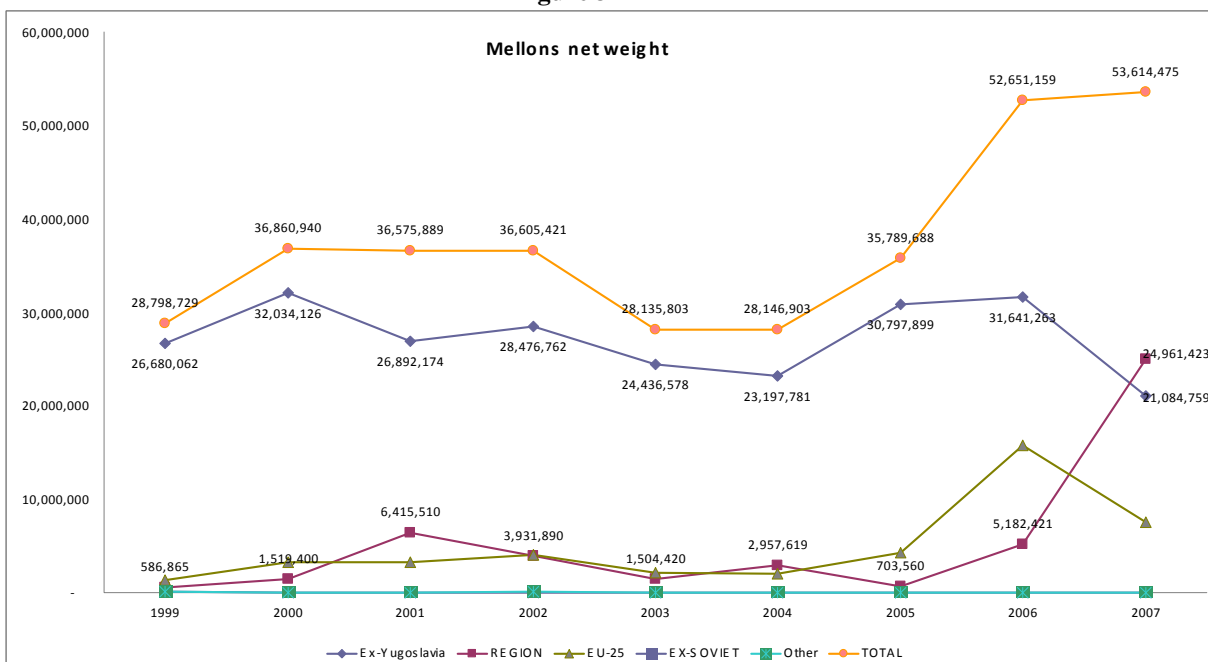


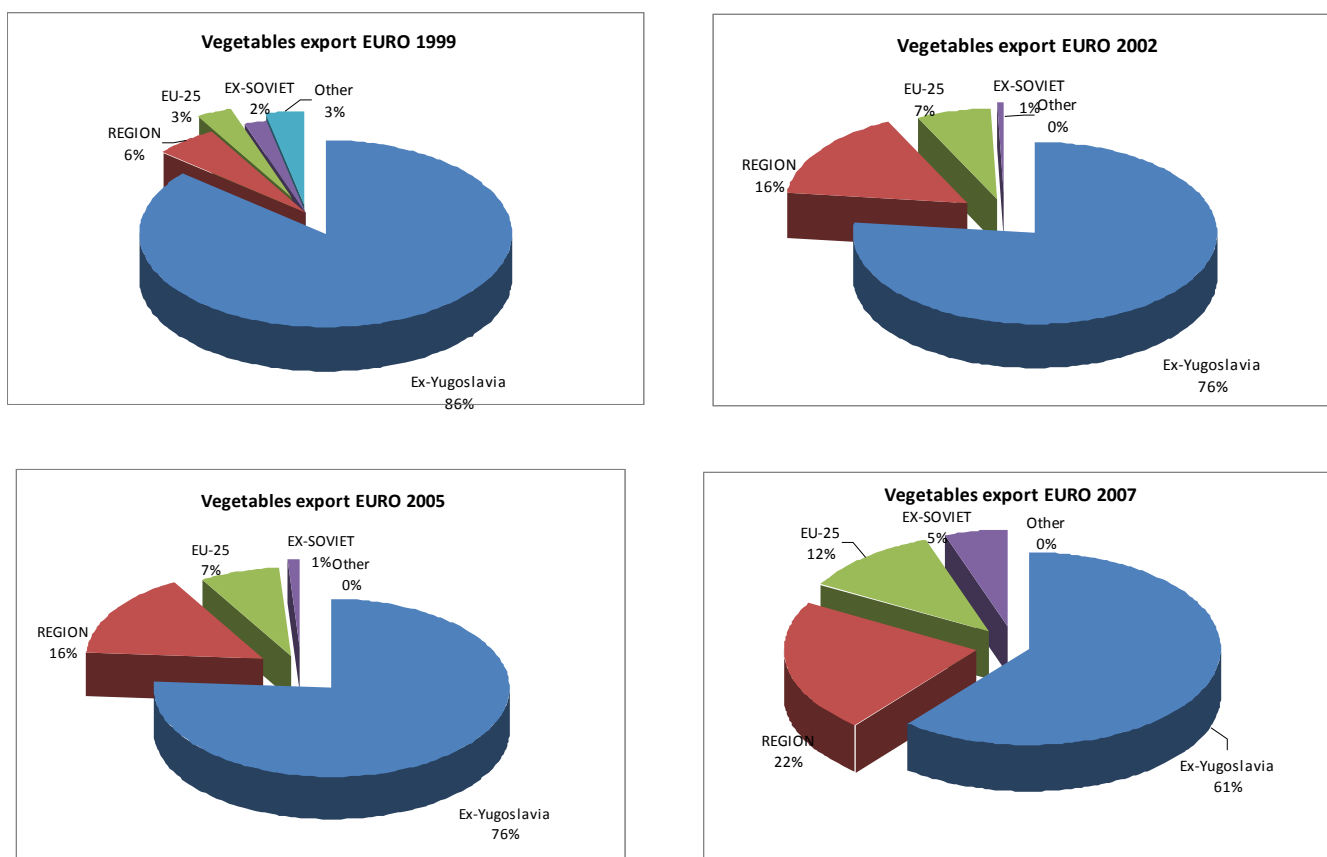
Figure 31



All in all the general conclusion about the fresh vegetable export from Macedonia show that the ex-Yu market is the traditional and leading market for export of the

fresh vegetables. The situation is changing in the last two to three years (assuming that the changes are not incidental) where the regional market firstly and then the European markets might become comparable and significant for the Macedonian fresh vegetable produce. There is an obvious and considerable trend of increased sale of vegetables in total both in quantity (from 85,136 t in 1999 to 182,725 t in 2007) and in value (from 10.8 million Euro in 1999 to 34.8 million Euro). The charts below indicate that the ex-Yu market is “loosing” exports of total fresh vegetables on an account of the regional market primarily and then the European market in terms of percentage of the total export value of the expected fresh vegetables taken into consideration in this study.

Figure 32



Total selected fresh vegetables exports in net weight (kg)

	Ex-Yugoslavia	REGION	EU-25	EX-SOVIET	Other	TOTAL
1999	73,367,381	6,802,910	2,586,281	1,435,888	944,166	85,136,626
2000	67,987,389	12,783,729	6,790,477	401,878	54,100	88,017,573
2001	73,093,419	17,956,844	7,049,134	406,545	10,074	98,516,016
2002	70,385,107	16,014,081	5,989,538	449,729	68,970	92,907,425
2003	75,772,116	12,727,092	5,368,127	381,015	81,298	94,329,648
2004	88,958,821	22,401,512	6,433,792	437,962	21,203	118,253,290
2005	102,906,998	26,298,689	9,080,114	1,157,242	12,636	139,455,678
2006	104,974,150	27,273,557	22,403,549	2,561,485	79,584	157,292,325
2007	85,409,017	72,076,689	17,192,861	8,009,237	37,042	182,724,845

Total selected fresh vegetables exports in value (EURO)

	Ex-Yugoslavia	REGION	EU-25	EX-SOVIET	Other	TOTAL
1999	9,300,358	595,377	336,021	212,143	345,226	10,789,126
2000	7,121,301	1,758,738	1,085,460	37,545	18,505	10,021,549
2001	9,390,194	1,824,171	1,016,505	54,247	384	12,285,500
2002	7,842,432	1,606,677	670,245	62,932	2,186	10,184,472
2003	9,598,462	2,057,641	921,006	48,378	18,314	12,643,801
2004	14,144,449	3,155,712	1,240,009	54,296	4,402	18,598,868
2005	20,666,096	4,242,665	1,938,496	324,271	5,675	27,177,204
2006	20,997,581	5,096,623	3,934,224	617,230	18,675	30,664,333
2007	21,132,762	7,697,417	4,062,028	1,872,965	4,818	34,769,990

8. Employment

The agricultural sector in Macedonia in Y2007 employs 17.5 % of all the employed individuals in the country and 19.3% in the current Y2008. In the last five years the percentage of agriculture related employees is increased from 15.8% in 2004 to the 19.3%. The increase is due to the increase of the unpaid family workers and the self employed farmers while the number of the employers and the employees within business entities is reduced.

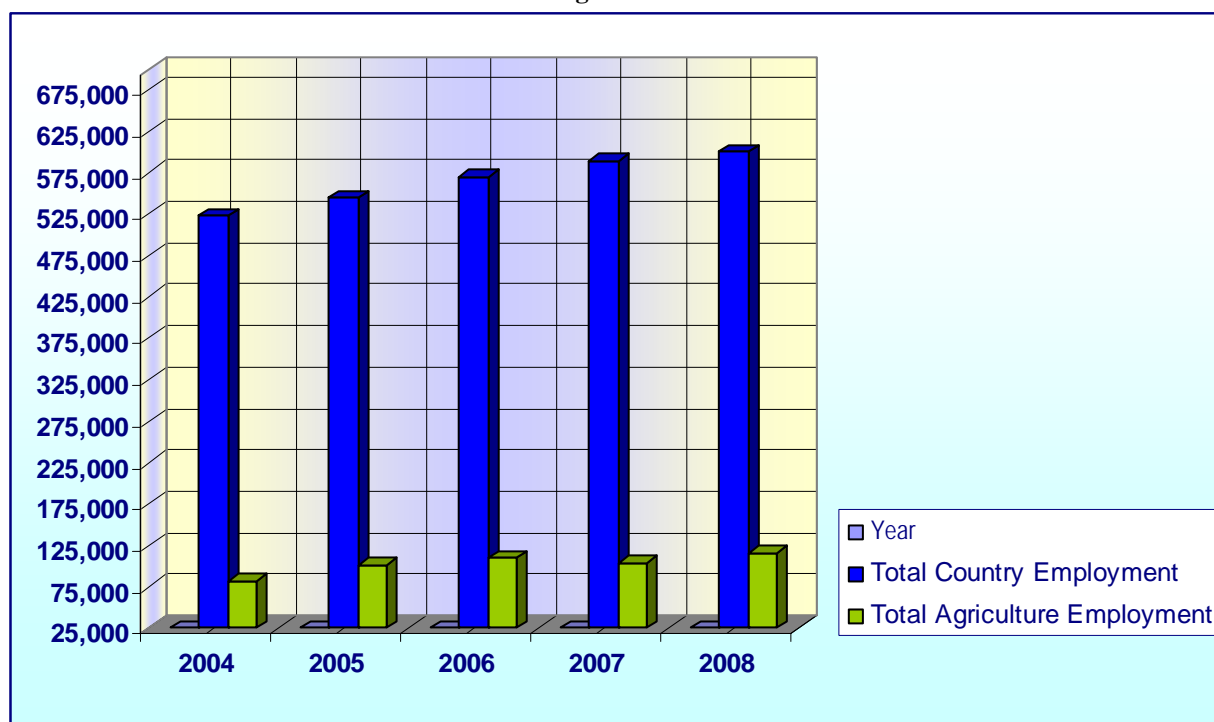
If we consider the total agricultural employees registered which in 2007 count 103,462 and together with the individuals engaged in agriculture including those that are engaged in agriculture indifferent of the hours, or weather it is their primary, additional or temporary activity they count 476,613 which is more they 4.6 times more indicating that from the 920,512 active individuals in the country 52% of these are somehow active in the agricultural sector. These numbers consider solely the primary agricultural production employments and unfortunately there are no specific data that can be extracted to include the other agribusiness employments including any post harvest employments.

Table 11²⁶

EMPLOYMENT IN THE AGRICULTURE SECTOR IN THE REPUBLIC OF MACEDONIA						
Year	Total Country Employment	Total Agriculture Employment	Total Agriculture Employees	Total Agriculture Employers	Self-Employed individual Farmers	Unpaid family workers
2004	522,995	82,842	11,019	4,355	27,930	39,537
2005	545,253	101,469	9,702	5,624	34,323	51,820
2006	570,404	109,987	8,211	7,751	37,234	56,972
2007	590,234	103,462	9,074	4,389	37,060	52,940
2008	600,593	115,937	10,445	2,174	45,674	57,939

²⁶ State Statistics Office

Figure 33

Table 12²⁷

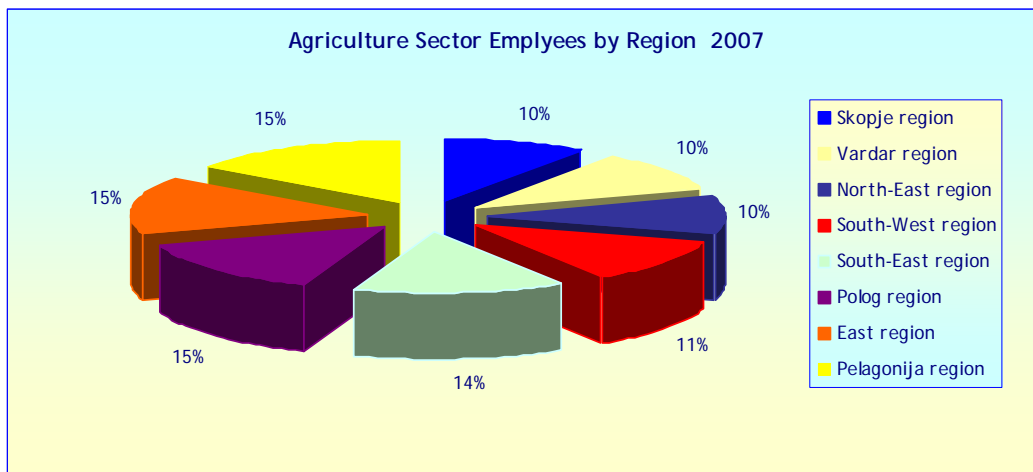
Total engaged individuals in agriculture Y 2007*	
Republic of Macedonia	476,613
Pelagonija region	71,998
Vardar region	47,091
North-East region	47,968
South-West region	54,686
Skopje region	46,267
South-East region	68,235
Polog region	69,513
East region	70,855

* All individuals conducting any agricultural activity on their individual land, indifferent of the number of working hours and indifferent of whether agriculture is their primary, additional or temporary activity

If we consider the number of individual engaged in agriculture per region within the country, there is no drastic difference among the regions and they range from 10% to 15% as shown in the below figure.

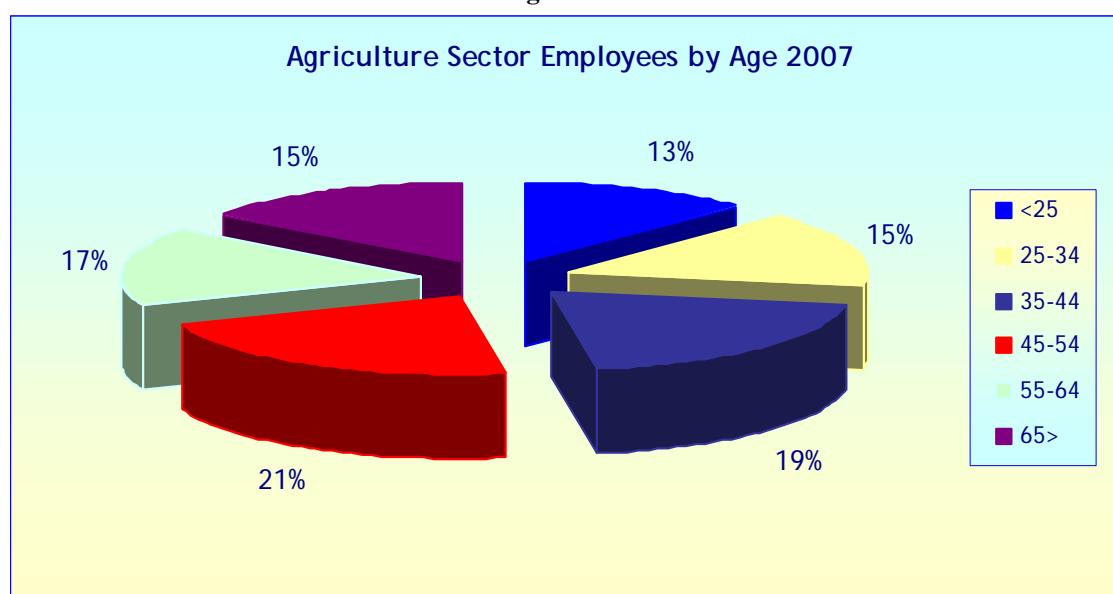
²⁷ State Statistics Office

Figure 34



The individuals engaged in agriculture are mostly between the age of 45-54 represented with 21% and least active in the agriculture are those below the age of 25, with 13%.

Figure 35



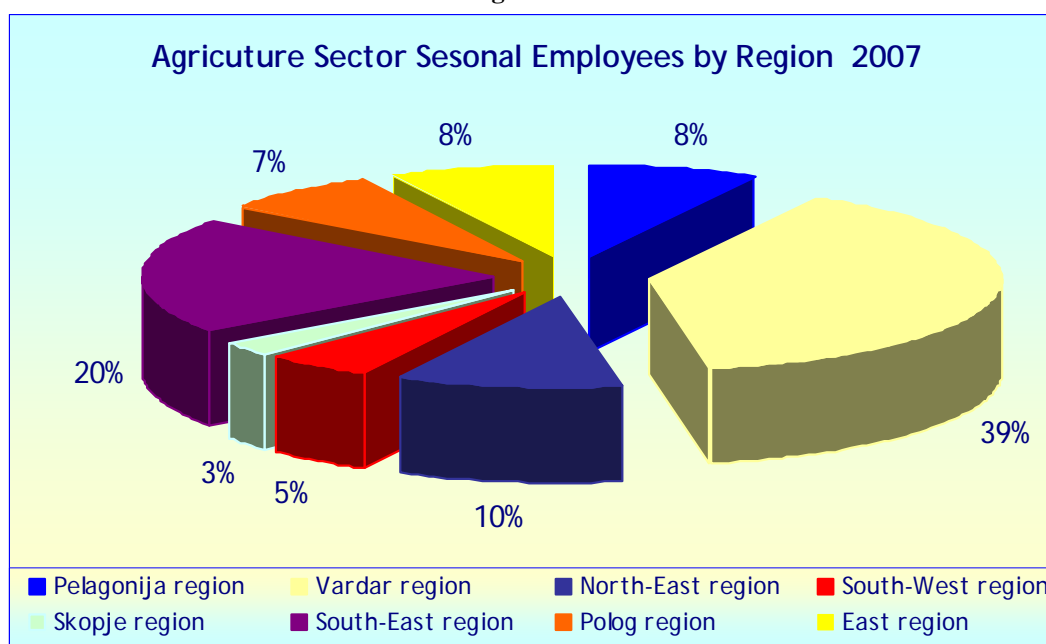
There are 109,606 individuals recorded to work as seasonal part time workers throughout the country, out of which 94% belong to the individual sector while only 6% for the business sector. Regionally the Vardar region counts 39% of the total seasonal employees and Skopje region only 3%.

Table 13²⁸

SEASONAL WORKERS IN INDIVIDUAL AND BUSINESS SECTOR			
Year 2007	Total	Number of persons	
		Male	Female
Republic of Macedonia	109,606	67,686	41,920
<i>Individual Sector</i>	103,187	65,337	37,850
<i>Business Sector</i>	6,419	2,349	4,070
Pelagonija region	8,379	6,287	2,092
Vardar region	43,232	19,309	23,923
North-East region	11,297	7,235	4,062
South-West region	5,450	4,303	1,147
Skopje region	2,886	2,357	529
South-East region	22,275	15,530	6,745
Polog region	7,719	6,992	727
East region	8,368	5,673	2,695

²⁸ State Statistics Office

Figure 36



The areas sown with the targeted vegetables are available by region. The assumption is that most likely the areas which are covered (plastic or glass houses) are sown most likely with tomatoes, peppers, cucumbers and cabbage. We also have the total areas under plastic and glass houses per region. Therefore, regionally we can find the total area sown open field and covered. The watermelon and melon production in open field therefore the area sown with watermelon and melon will be considered as part of the open field production area. The assumption is that for closed production of vegetables (including plastic tunnel and glass house production) there is an average need of 6 full time employees and for open field production 4.2 individuals²⁹. Having this in mind the approximation shows that for the size vegetables covered in this study, 109,029 full time employments are generated from the production of these vegetables. (See table underneath)

²⁹ One full time employee is defined calculating 220 working days per year

Table 14

Generated employment from plastic tunnels, glass houses and open field of the targeted six products											
Y 2007 Regions	Area in ha under tomatoes, peppers, cucumbers, cabbages		ha plastic tunnels	ha glass houses	total plastic + glass houses	Open field under tomatoes, peppers, cucumbers and cabbages	Watermelons & melons sown	Open field all 6 products	Employment from covered areas	Employment from open field	Total employment
	sown	harvested									
	a	b	c	d	e=c+d	f=a-e	g	h=f+g	i=e*6	j=h*4,2	k=i+j
Pelagonija region	3,013	3,009	15	15	30	2,983	942	3,925	180	16,485	16,665
Vardar region	1,878	1,878	116	12	128	1,750	751	2,501	768	10,504	11,272
North east region	1,117	1,086	21	0	21	1,096	582	1,678	127	7,047	7,174
South west region	839	839	7	7	14	825	7	832	86	3,493	3,579
Skopje region	2,443	2,378	165	1	166	2,277	1,102	3,379	995	14,193	15,187
South east region	5,380	5,354	1,721	67	1,788	3,592	1,878	5,470	10,726	22,976	33,701
Polog region	2,321	2,265	8	0	8	2,313	273	2,586	49	10,861	10,909
East region	1,624	1,609	12	48	60	1,564	860	2,424	360	10,181	10,541
<i>Republic of Macedonia</i>	18,615	18,418	2,065	150	2,215	16,400	6,395	22,795	13,289	95,739	109,029

9. Major Export Market Characteristics

In the sections above it was concluded that the Macedonian fresh vegetable is primarily exported on the ex-Yu market and the regional market, and other part on the European market, as defined for this study³⁰. The other markets outside the borders of Europe are insignificant and almost inexistent.

9.1. Ex-Yu Market

The section on exports shows the importance of the ex-Yu market for the Macedonian fresh vegetable. The former republics of Yugoslavia represent the major market for all of the fresh vegetables considered within this study. Largest percentage of the sales takes place in the in Serbia, Bosnia and then Croatia and Slovenia. According to interviews with exporters, these markets are almost identical which means they are traditionally used to the Macedonian fresh vegetables with the characteristics provided. This means that the importers or the supermarkets (whenever possible) are satisfied with the varieties produced in Macedonia. However, they have demands regarding the product calibration, packaging and sorting which does not make them any different from the European markets. These are closest markets for Macedonia which is convenient, provided that the vegetables are perishable products and that the farmers are “used” to harvest the product ripe which reduces the shelf life of the product. This “habit” of harvesting the products ripe is a result from the payment system established by the traders/exporters and the farmers. The farmers are paid mainly by weight; therefore the product is kept on the plant as long as possible to have more weight and is thus ripe. In line with this potential remuneration/payment system may have an effect on this issue by payment by piece and class of the product rather than just weight. This may potentially increase the possibility for increase of the durability of the product and therefore the distance of the product where it can reach. This is of special importance for products such as the tomatoes.

9.2. Regional Market

The regional market is another interesting market for the Macedonian fresh vegetables. The data indicates that this market is “accepting” more quantities in the last years and it gets closer to the ex-Yu markets. Considering the period from 1999 to 2007 the regional market is the main destination for cabbage and peppers and in the last year’s watermelons and tomatoes as well. The conditions and demand in these markets are similar to those of the ex-Yu market.

³⁰ *Ex-Yu Market*: Serbia & Montenegro/Yugoslavia/Montenegro/Serbia (depending on the year), Bosnia and Herzegovina, Croatia, Slovenia.

Regional Market: Albania, Bulgaria, Greece, Romania

European Market: EU-25 plus Switzerland and Norway and without Slovenia

9.3. European Market

The European market for fresh vegetables is characterized by its sophistication and specific demands for fresh vegetables. The EU-25 with a population of approximately 465 million and GDP per capita of around 26,000 EURO presents a large market for Macedonian products. However this market is highly competitive where the supply is almost from all supplying countries within the EU. The vegetables available on the European market are various in type, variety, size and packaging, which allows a wide variety and selection for consumers. Having this in mind and considering the level of development of the sector in Macedonia, it is logical to conclude that Macedonia is a small quantity supplier of fresh vegetables to the European market, and is not as sophisticated at providing varieties of produce demanded by the various distribution channels in Europe.

If we consider the tables bellow for the available period of 1999 to 2005 we can see that the imports from Macedonia to EU are very small. Except for peppers, no other product represents even 1% of the total imports within the EU.

Table 15³¹

European Union - Imports Quantity (tonnes)							
	1999	2000	2001	2002	2003	2004	2005
Cabbages and other brassicas	433,480	440,053	424,644	470,909	474,368	516,745	498,061
Cucumbers and gherkins	732,369	743,314	793,082	790,411	831,922	862,521	923,377
Pepper (Piper spp.)	76,080	75,744	57,646	84,407	86,592	85,488	82,148
Tomatoes	1,952,391	1,957,830	2,151,437	2,132,396	2,265,812	2,399,881	2,412,989
Watermelons	712,862	662,356	719,007	757,654	838,832	750,480	844,155

Table 16

European Union - Imports Quantity (tonnes) from Macedonia							
	1999	2000	2001	2002	2003	2004	2005
Cabbages and other brassicas	430	183	2,604	981	773	1,381	1,632
Cucumbers and gherkins	192	1,630	513	421	1,080	834	661
Pepper (Piper spp.)	531	932	569	263	650	1,826	2,122
Tomatoes	97	738	133	226	707	403	400
Watermelons	1,337	3,307	3,229	4,099	2,158	1,991	4,266

Table 17

European Union - Macedonian Imports % of the Total EU Imports							
	1999	2000	2001	2002	2003	2004	2005
Cabbages and other brassicas	0.10%	0.04%	0.61%	0.21%	0.16%	0.27%	0.33%
Cucumbers and gherkins	0.03%	0.22%	0.06%	0.05%	0.13%	0.10%	0.07%
Pepper (Piper spp.)	0.70%	1.23%	0.99%	0.31%	0.75%	2.14%	2.58%
Tomatoes	0.00%	0.04%	0.01%	0.01%	0.03%	0.02%	0.02%
Watermelons	0.19%	0.50%	0.45%	0.54%	0.26%	0.27%	0.51%

³¹ FAOSTAT

The reasons for the above picture are various. Firstly, because the European market is a year round vegetable consumer of all types and the Macedonian production is only seasonal as well as the exports as it can be seen from the monthly exports.

Based on the survey conducted among the traders/exporters of the Macedonian fresh vegetable products, the critical success factors with high or low importance for the competitive advantage have been identified as perceived by this stakeholder group.

The most critical characteristics and features necessary to be fulfilled as demanded by the buyers i.e. the importers were identified to be payment terms provided by the Macedonian partner, the delivery reliability, the financial stability of the exporter, the packaging, the quality and then other characteristics such as origin, pre-cooling, branding etc.

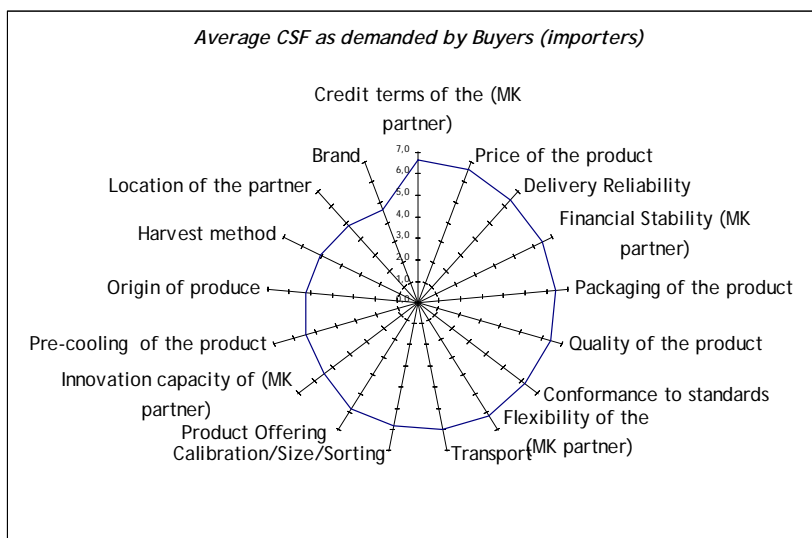
The European market demands fresh vegetable during the whole year which poses difficulty to arrange stable partnerships with the importers on the European end therefore the Macedonian producers should make efforts to at least extend the production season and consequently the sales season; the shape and the color of the tomatoes demanded on the EU market is as well specific and the Macedonia fresh vegetable sector starting from the farmer is not ready to do that as well. The most demanded varieties such as the cherry tomatoes are not present on the Macedonian fields for the simple reason that the exporters/ traders do not demand them because the major markets are still the ex-Yu market.

The main reasons causing lower profit of the exporters on the European markets is related to the costs structure of the export. The total costs related to export for European markets in comparison to Ex-Yu market higher as all the specific costs are higher (transport, duty costs, packaging), while the buy-out price is the same resulting with lower profit margin for the trader on the European markets.

The vegetables entering the EU also are subject to certain fees that are tools used to protect those markets. This means that there will be either general tariff or specific rate imposed on third country depending on the product, and on the minimum entry price system. There are also some additional specific duties imposed during certain periods of the year. This makes the European market more inaccessible and once again less enterable³². With the current accession to EU this is expected to change.

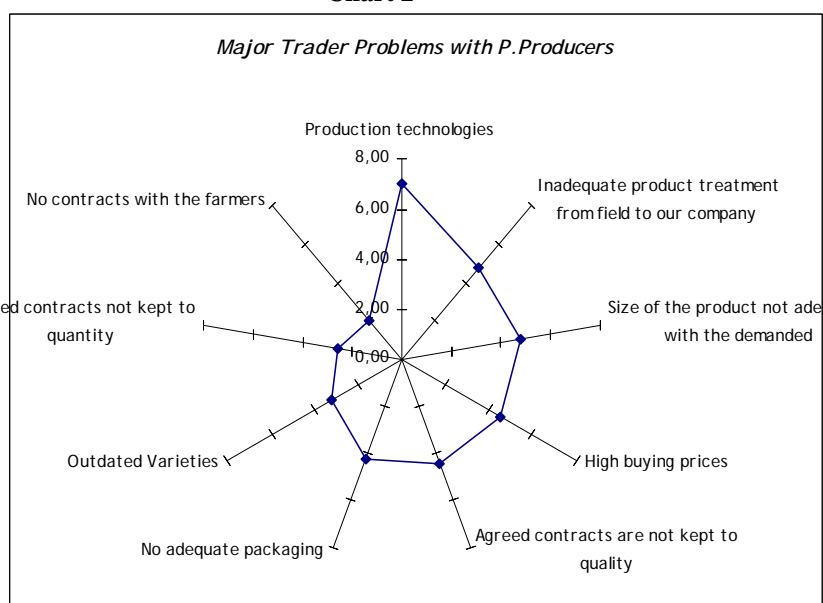
³² http://ec.europa.eu/taxation_customs

Chart 1³³



The major problems that the exporters face with the primary producers identified by themselves ranked as most critical were foremost the production technology of the vegetables, then the inadequate treatment until it reaches the trader, then the size of the products (too large or small).

Chart 2³⁴

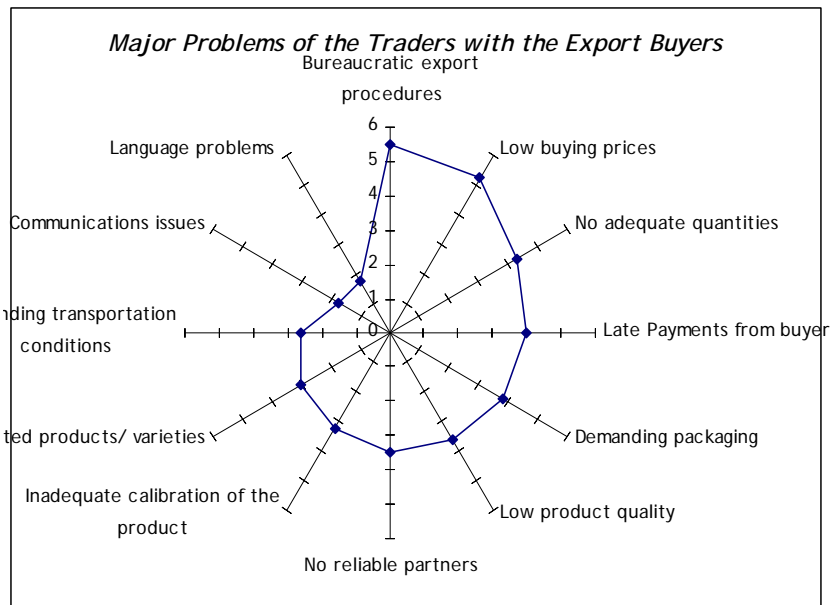


The major problems that the exporters face with the partners on other side of the border once again ranked as most critical are the bureaucratic procedures for export, the low prices, no available enough quantities, and the late payments. The product quality or variety have not been identifies as major issues.

³³ The results represent average grading from possible 1 (no importance to 7 critical importance) from the 5 questionnaires answered by exporter/traders

³⁴ The results represent average grading from possible 1 (no importance to 7 critical importance) from the 5 questionnaires answered by exporter/traders

Chart 3³⁵



³⁵ The results represent average grading (from possible 1 no importance to 7 critical importance) from the five questionnaires answered by exporter/traders

10. Key Value Chain Problems Opportunities and Threats

10.1. Key Problems

The main issues in the **primary production** identified during this research are as following:

- Absence of any laboratory tests of the soil
- Extensive use of the varieties which are not demanded for over 20 years
- Self-prepared seedling material by the farmers -low seeding quality
- Low application of modern production technology
- No use of extension service (consultancy)
- Almost total absence of traceability of the farming (Good Agriculture Practice)
- Extensive usage of pesticides and mineral fertilizers
- Small number of standardized production
- Fragmented land and production which is not planned
- Absence of customer driven market information
- Lack of modern mechanization and therefore seasonal lack of manual labor
- Lack of drip system irrigation
- Low education level among the primary producers
- Seasonal production and sales
- No access to cheap loans not only because of relatively high interest rates, but also because of almost no possibility to claim the property on the farm as collateral for the loans
- Lack of information on IPARD opportunities
- Dysfunctional organization among the farmers in associations/cooperatives
- Very minimal number of commercial producers, i.e., well educated professionals with access to large plots of land who view farming as a business rather than a supplement to their income or habit
- A history of mistrust between producers and marketers and thus a lack of interest in forward contracts, especially contracts for the production of products for which the local fresh market is not an alternative

The main issues in the **post harvest** identified during this research are as following:

- Harvesting of products too late, when they are too ripe and difficult to transport and short shelf life
- Lack of cold storage and cooling facilities
- Inappropriate calibration
- Absence of packaging centers working under permanent temperature regime
- Low marketing activities
- Low prices due to inadequate timing, packaging, organization etc.

- Questionable understanding of how to be cost, presentation and quality competitive

10.2. Key Opportunities

- Tradition of growing vegetables enabling skills and potential for their further development of the farmers to reach the necessary changes without lack of agricultural production labor.
- New consumer demanded seedling varieties for increased production, yields and sales and better quality seedling of current varieties by using certified seedlings and not "home grown".
- Several thermal water sites near the large vegetable production areas especially in South Eastern Macedonia. Their higher usage will increase the production and sales window and use the opportunities for the higher prices.
- Use the available ISO 17025 certified lab for pesticide detection in the product
- Introduction of drip irrigation system, mechanization, new varieties and appropriate extension services can significantly increase the production quality
- Direct the production in closed glass houses /plastic tunnels to extend the production and sales window
- Introduction of standards (GLOBALGAP) and introduce system for traceability of the products such as HACCP
- Organization of the primary producers in functional cooperatives and farmers' organization to act united (storage, sales negotiations, packaging etc.)
- Alteration of the governmental incentive systems stimulating the export oriented production rather than providing "social support" to "all" farmers
- Usage of the IPARD opportunities
- Appropriate harvesting time to enable better calibration, transportation and increase shelf life of products on the export markets
- Increase the investments in packaging centers working under permanent temperature regimes, better packaging etc.
- Raw material pricing for producers that reflects relevant grades and standards
- Increase production and sales on the main export market through improved product, post harvest, packaging etc. (all opportunities identified above)

10.3. Key Threats

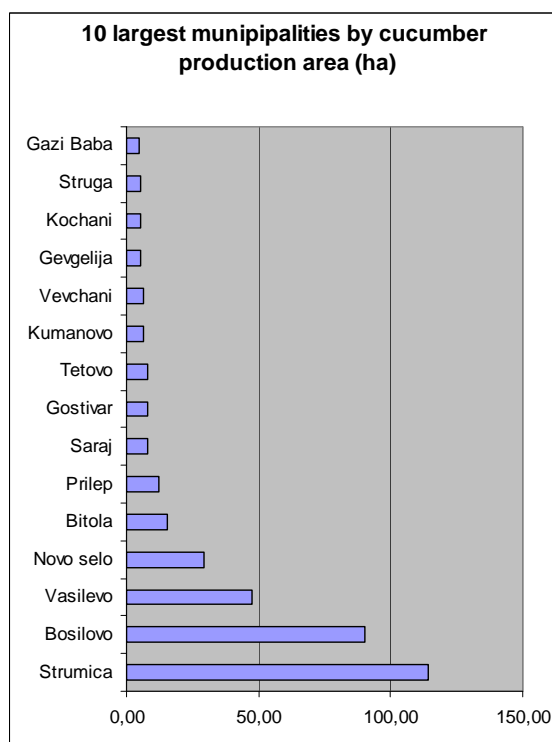
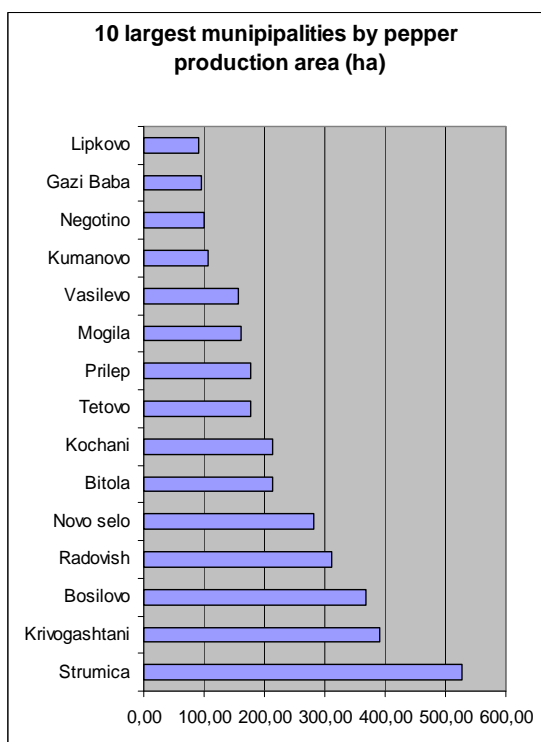
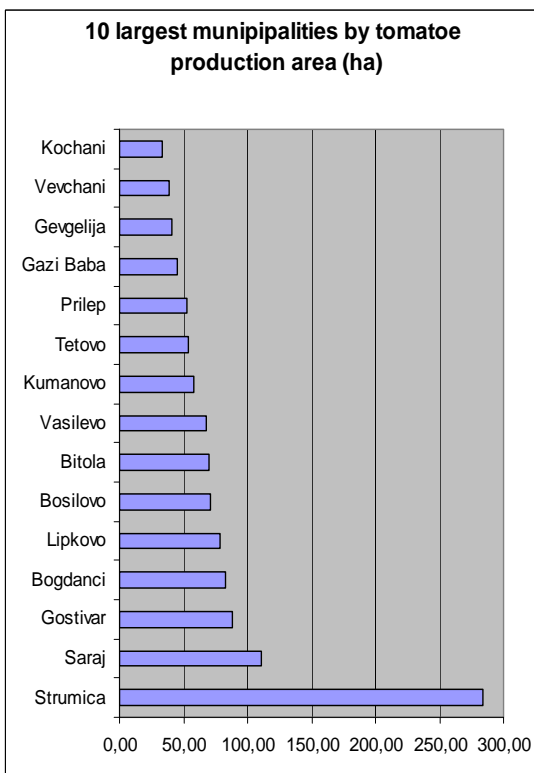
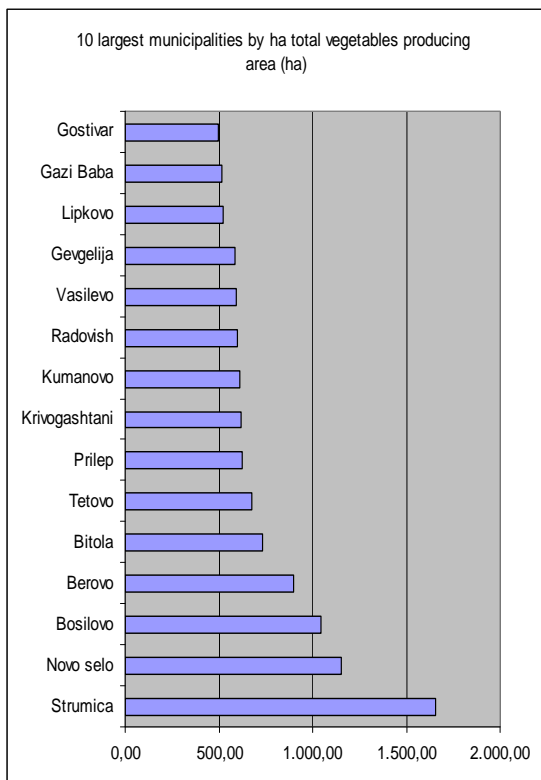
- Exhausted soil due to intensive use of same varieties for over thirty years
- Further land fragmentation
- Loss of markets due to no production/sales period extension
- Loss of markets due to no application of standards

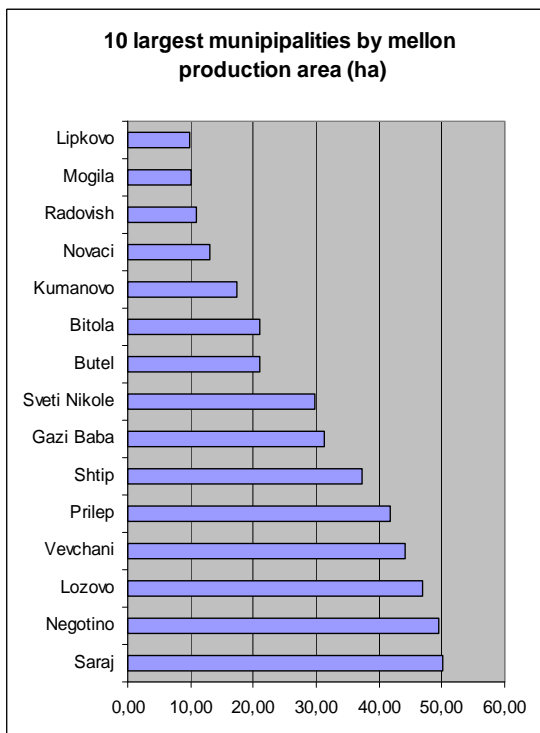
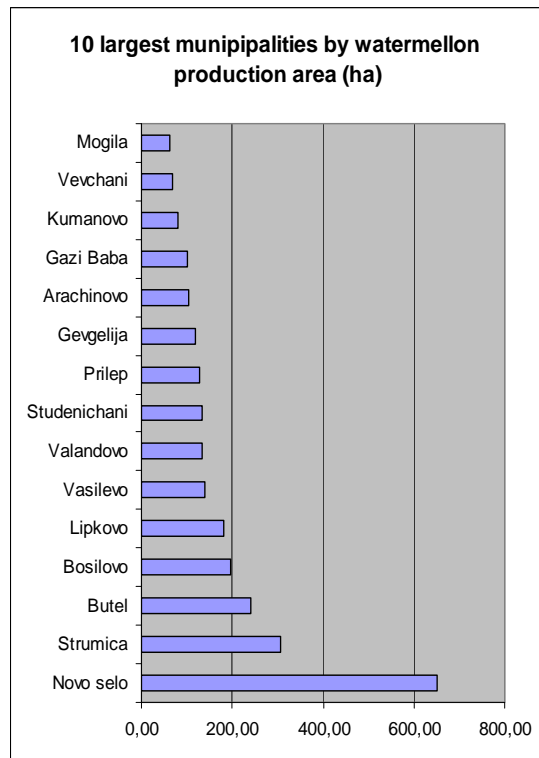
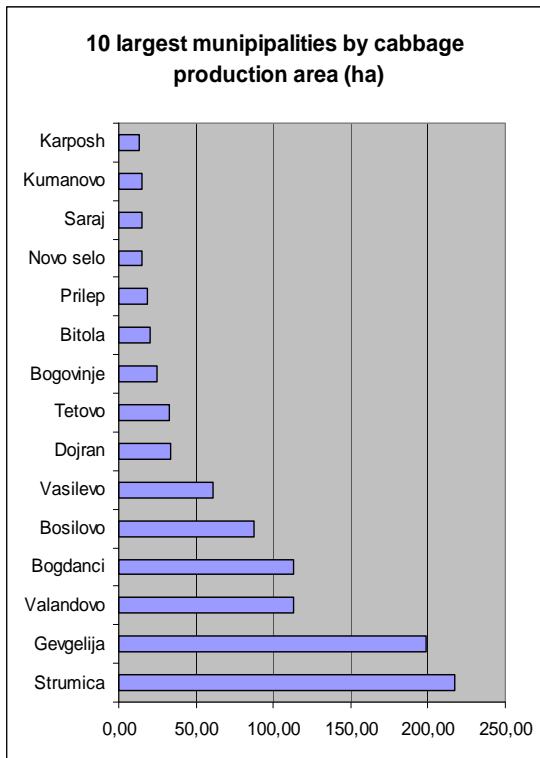
- Loss of markets due to unplanned production in terms of timing
- Increased difficulties for entrance on the EU market
- Increased regional competition, especially from Romania and Bulgaria
- Low price due to inadequate calibration, sorting, packaging etc.
- The present government stimulation is not efficient as it does not support land integration, but further fragmentation and is not export oriented.
- Yield lowering due to outdated or no mechanization
- Loss of domestic market share due to large producers such as Turkey, etc.

Appendix 1: List of Exporters/Traders Interviewed

Ref	Company	Interviewee	Organization
1	Mabi Trade	Trajche Karadakovski	Trader / Producer
2	Kooperant	Daniel Palankov	Cooperative / Producer
3	GIO	Georgi Georgiev	Forward Agent
4	Dzil Promet	Atanas Dimitriev	Trader / Producer
5	Joker	Ilija Tenev	Transporter
6	Badzo	Risto Endzekchev	Trader / Producer
7	Badzo	Risto Danailov	Trader / Producer
8	Badzo PT	Tome Shapkarev	Trader / Producer
9	Opitno Pole	Goce Dimkovski	Nursery
10	Opitno Pole	Panche Angelov	Nursery
11	FRENKI	Mitev Marijan	Trader
12	Interagro	Verica Demirovska	Producer
13	Agro Miks	Nake Shteriov	Trader / Producer
14	ALTRA	Trajko Alchinov	Trader
15	TURAN	Ivan Turanov	Trader / Producer
16	VIPRO	Viktor Petkov	Trader / Producer / Procesor
17	Suny Land	Neta Levi	Trader
18	Anva - Fungi	Vasil Anastasovski	Trader
19	FACE	Ljupcho Toshev	Education
20	FFRM	Gjoko Danailov	Farmer Association
21	Vinojug	Risto Frangov	Producer
22	Agropelagonija	Vlatko Selchanec	Trader
23	VIVI Prom	Dragan Kostadinov	Trader
24	Krivogashtani Promet	Lena Cuculeska	Trader
25	FAGRIKOM	Aleksandar Nikolovski	NGO
26	Agency for Public Health Protection	Vesna Kostich	Laboratory for residues
27	ARD	Vladimir Kokarev	Donor
28	National commission for certification of seeds and seedling material	Goce Vasilevski	Government

Appendix 2: Ten Largest Producers per Product per Municipality





Appendix 3: Export Markets of Fresh Vegetables Y1999-Y2007 (Quantity, Value, Average Price)³⁶

EXPORT Y1999	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight (KG)	Value(EUR)	Average Price	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	13,912,366	2,676,211	0.19	329,151	116,225	0.35	96,626	31,609	0.33	98,747	41,843	0.42	298,958	96,423	0.32
PEPPER	19,817,765	3,902,476	0.20	1,250,280	163,641	0.13	530,692	139,701	0.26	23,150	12,791	0.55	187,228	151,417	0.81
CABBAGE	6,814,849	402,839	0.06	4,416,436	238,840	0.05	429,660	32,524	0.08	1,230,251	131,827	0.11	121,893	17,929	0.15
CUCUMBER	6,142,339	759,180	0.12	220,178	53,615	0.24	192,128	28,477	0.15	5,500	2,719	0.49	219,700	46,399	0.21
WATERMELON & MELON	26,680,062	1,559,652	0.06	586,865	23,057	0.04	1,337,175	103,710	0.08	78,240	22,962	0.29	116,387	33,058	0.28
TOTAL	73,367,381	9,300,358	*	6,802,910	595,377	*	2,586,281	336,021	*	1,435,888	212,143	*	944,166	345,226	*

EXPORT Y2000	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	12,850,025	2,600,003	0.20	236,612	81,124	0.34	738,302	255,412	0.35	87,378	13,609	0.16	2,550	875	0.34
PEPPER	6,470,275	1,592,794	0.25	4,490,265	1,096,637	0.24	931,702	291,632	0.31	16,550	0	0.00	13,550	11,848	0.87
CABBAGE	9,732,194	530,000	0.05	6,304,239	462,627	0.07	183,061	21,777	0.12	297,950	23,936	0.08	38,000	5,781	0.15
CUCUMBER	6,900,769	973,603	0.14	233,213	72,467	0.31	1,629,998	199,821	0.12	0	0		0	0	
WATERMELON & MELON	32,034,126	1,424,902	0.04	1,519,400	45,883	0.03	3,307,414	316,818	0.10	0	0		0	0	
TOTAL	67,987,389	7,121,301	*	12,783,729	1,758,738	*	6,790,477	1,085,460	*	401,878	37,545	*	54,100	18,505	*

³⁶ State Customs Office

EXPORT Y2001	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	17,793,912	4,128,522	0.23	679,416	171,001	0.25	133,279	49,788	0.37	153,546	27,799	0.18	8,644	329	0.04
PEPPER	11,712,527	2,430,690	0.21	3,019,909	658,392	0.22	569,429	203,548	0.36	0	0		0	0	
CABBAGE	8,826,275	469,475	0.05	7,422,643	514,866	0.07	2,603,988	281,011	0.11	214,199	22,809	0.11	0	0	
CUCUMBER	7,868,531	1,093,945	0.14	419,366	114,200	0.27	513,033	151,380	0.30	0	0		1,430	54	0.04
WATERMELON & MELON	26,892,174	1,267,562	0.05	6,415,510	365,711	0.06	3,229,405	330,778	0.10	38,800	3,639	0.09	0	0	
TOTAL	73,093,419	9,390,194	*	17,956,844	1,824,171	*	7,049,134	1,016,505	*	406,545	54,247	*	10,074	384	*

EXPORT Y2002	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	18,302,698	3,582,214	0.20	2,411,925	744,411	0.31	225,617	69,664	0.31	33,350	11,908	0.36	0	0	
PEPPER	8,143,179	1,526,810	0.19	2,608,972	187,497	0.07	262,968	72,619	0.28	9,094	689	0.08	250	38	0.15
CABBAGE	6,224,317	536,291	0.09	7,007,384	552,849	0.08	980,608	171,290	0.17	378,655	49,612	0.13	0	0	
CUCUMBER	9,238,152	843,137	0.09	53,910	6,351	0.12	420,926	98,851	0.23	0	0		0	0	
WATERMELON & MELON	28,476,762	1,353,980	0.05	3,931,890	115,568	0.03	4,099,419	257,821	0.06	28,630	723	0.03	68,720	2,149	0.03
TOTAL	70,385,107	7,842,432	*	16,014,081	1,606,677	*	5,989,538	670,245	*	449,729	62,932	*	68,970	2,186	*

EXPORT Y2003	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	20,107,239	4,678,021	0.23	1,742,415	603,139	0.35	706,512	296,525	0.42	19,000	4,919	0.26	21,032	4,862	0.23
PEPPER	8,983,573	1,615,056	0.18	1,545,094	303,858	0.20	650,291	173,629	0.27	0	0		600	180	0.30
CABBAGE	10,148,098	906,191	0.09	7,550,691	873,736	0.12	772,979	90,046	0.12	305,215	28,733	0.09	50,716	8,124	0.16
CUCUMBER	12,096,629	1,447,233	0.12	384,472	197,906	0.51	1,080,340	209,276	0.19	20,000	10,035	0.50	8,950	5,148	0.58
WATERMELON & MELON	24,436,578	951,961	0.04	1,504,420	79,003	0.05	2,158,005	151,530	0.07	36,800	4,691	0.13	0	0	
TOTAL	75,772,116	9,598,462	*	12,727,092	2,057,641	*	5,368,127	921,006	*	381,015	48,378	*	81,298	18,314	*

EXPORT Y2004	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	27,680,466	6,546,228	0.24	2,797,925	813,007	0.29	402,878	138,793	0.34	0	0		798	627	0.79
PEPPER	11,477,809	2,826,828	0.25	5,838,116	1,164,780	0.20	1,825,756	509,572	0.28	0	0		190	144	0.76
CABBAGE	12,685,149	681,923	0.05	9,599,097	591,279	0.06	1,380,657	167,680	0.12	437,962	54,296	0.12	19,135	2,888	0.15
CUCUMBER	13,917,617	2,704,701	0.19	1,208,755	464,404	0.38	833,561	242,699	0.29	0	0		517	614	1.19
WATERMELON & MELON	23,197,781	1,384,769	0.06	2,957,619	122,242	0.04	1,990,940	181,265	0.09	0	0		563	130	0.23
TOTAL	88,958,821	14,144,449	*	22,401,512	3,155,712	*	6,433,792	1,240,009	*	437,962	54,296	*	21,203	4,402	*

EXPORT Y2005	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	31,801,963	10,747,977	0.34	5,469,929	1,665,535	0.30	399,956	144,927	0.36	712,780	253,431	0.36	3,976	2,457	0.62
PEPPER	11,137,355	2,890,201	0.26	7,645,739	1,284,149	0.17	2,121,885	701,430	0.33	0	0		655	170	0.26
CABBAGE	12,672,340	1,278,760	0.10	11,296,110	752,115	0.07	1,632,068	416,857	0.26	404,892	62,214	0.15	2,423	1,190	0.49
CUCUMBER	16,497,441	3,682,296	0.22	1,183,351	501,634	0.42	660,695	194,704	0.29	18,050	5,977	0.33	4,383	1,571	0.36
WATERMELON & MELON	30,797,899	2,066,863	0.07	703,560	39,232	0.06	4,265,510	480,579	0.11	21,520	2,650	0.12	1,199	288	0.24
TOTAL	102,906,998	20,666,096	*	26,298,689	4,242,665	*	9,080,114	1,938,496	*	1,157,242	324,271	*	12,636	5,675	*

EXPORT Y2006	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	32,276,324	10,780,586	0.33	9,694,231	3,295,900	0.34	1,041,959	329,602	0	971,053	346,001	0.36	3,794	1,999	0.53
PEPPER	7,772,077	2,224,381	0.29	1,817,092	512,441	0.28	1,119,095	416,524	0	1,760	1,040	0.59	7,049	6,041	0.86
CABBAGE	16,124,584	2,053,102	0.13	9,772,011	608,903	0.06	2,138,489	487,901	0	1,549,230	257,035	0.17	17,211	2,686	0.16
CUCUMBER	17,159,901	3,670,298	0.21	807,802	243,110	0.30	2,345,900	526,658	0	17,442	3,437	0.20	4,162	3,941	0.95
WATERMELON & MELON	31,641,263	2,269,215	0.07	5,182,421	436,270	0.08	15,758,106	2,173,538	0	22,000	9,717	0.44	47,369	4,008	0.08
TOTAL	104,974,150	20,997,581	*	27,273,557	5,096,623	*	22,403,549	3,934,224	*	2,561,485	617,230	*	79,584	18,675	*

EXPORT Y2007	Ex-Yugoslavia			REGION			EU-25			EX-SOVIET			Other		
	Net weight (KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price	Net weight(KG)	Value(EUR)	Average Price
TOMATO	27,726,685	11,893,111	0.43	17,775,031	4,061,785	0.23	757,362	353,457	0.47	1,841,182	716,164	0.39	11,090	908	0.08
PEPPER	7,422,705	2,449,831	0.33	9,633,200	1,696,582	0.18	1,003,297	453,799	0.45	0	0		5,512	361	0.07
CABBAGE	15,574,376	1,371,658	0.09	17,129,661	816,004	0.05	5,691,401	1,479,814	0.26	6,040,728	1,117,917	0.19	20,020	3,515	0.18
CUCUMBER	13,600,491	4,229,053	0.31	2,577,374	456,236	0.18	2,185,908	609,565	0.28	113,927	35,678	0.31	420	34	0.08
WATERMELON & MELON	21,084,759	1,189,108	0.06	24,961,423	666,810	0.03	7,554,893	1,165,393	0.15	13,400	3,206	0.24	0	0	
TOTAL	85,409,017	21,132,762	*	72,076,689	7,697,417	*	17,192,861	4,062,028	*	8,009,237	1,872,965	*	37,042	4,818	*

Ex-Yugoslavia	Serbia & Montenegro, Bosnia and Herzegovina, Croatia, Slovenia, Yugoslavia, Montenegro, Serbia (depending on the year)
Region	Albania, Bulgaria, Greece, Romania
European market: EU-25, plus Switzerland and Norway without Slovenia	Hungary, Slovakia, Czech, Austria, Belgium, Germany, Denmark, France, Great Britain, Netherlands, Norway, Sweden, Switzerland, Poland, Latvia, Lithuania, Estonia etc.
Ex-Soviet	Moldavia, Byelorussia, Russian Federation, Ukraine etc
Other	Humanitarian Organizations and other etc.