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1. Introduction

The WGP's value chain plays a significant role in the Macedonian agribusiness sector since nearly all products are sold on exports markets and at the same time provides income or additional income to significant number of households in the rural areas of the country. This sector is considered as generator of subsistence income for the most vulnerable groups in R. Macedonia. Detailed information on the quantities of various products collected and processed and type of markets to which they are sold is not officially available or vague. In order to overcome these obstacles and to provide at least a better picture of the value chain the AgBiz Program contracted EPI CENATAR to conduct a research for this value chain that provides in-depth information for the value chain its structure and sales performance. In consultation with AgBiz it was decided to select three groups of WGP products (MAP, berries and wild mushrooms) that EPI CENATAR considers in this study.

EPI CENATAR in this study made an attempt to:

- Develop a wild gathered mushrooms and berries export focused profile and trends by researching and analyzing historical production and export volumes and values and the primary destination markets of the preselected WGP's;*
- Identify the main opportunities and threats associated with the export performance of the WGP's value chain via research and analysis;*
- Profile the important types of participants in the value chain, their numbers and provide comparative analysis of their importance in the value chain;*
- Compile and analyze information related to the number of full-time employees and seasonal labor engaged by the value chain; and*
- Analyze the findings and develop conclusions into a comprehensive report to serve as a basis for preparing a workshop presentation to be presented to the value chain participants organized by AgBiz.*

2. Approach & Methodology

In order to answer the questions regarding this value chain and to "fill" the gaps with information, EPI CENATAR conducted information gathering and analysis of the sector through:

- Secondary data collection. The sources used in the desk research were based on data available from number of sources.*
 - The State Statistical Bureau of Macedonia*
 - The State Customs Office of R. Macedonia*
 - EPI CENATAR's data base of studies and data from past periods.*
- Primary data collection. For further improvement of the study and focused in-depth analysis, to increase the quality and credibility of the study EPI CENATAR used primary data collected through two methods.*

- *Questionnaire designed and distributed to the identified traders/exporters within Macedonia dealing with WGPs. The questionnaire was comprehensive, covering the most relevant issues regarding the exports of the concerned WGP groups, the most frequent issues that traders face, the requirements for export and on the export markets etc. The questionnaire was sent to 20 buy-out companies, processors and exporters. We were able based on the follow-up phone calls to compile data-base of 15 companies that respond to our questionnaire.*
- *The second manner of collection of primary data was through conducting 10 in-depth interviews with the buyers/processors/exporters of the WGPs and the relevant support institutions/organizations. The interviews were structured to cover all levels of the value chain including issues regarding the quantities exported, target markets, sales, product demand and supply, etc., as well as the most significant issues these entities are faced with together with the potentials, opportunities and threats of the value chain. The interviews provided high quality qualitative information to clearly define the value chain of WGPs and to provide information which so far is not publicly available and is missing.*

3. WGP National Natural Resources & Availability (Supply)

3.1. Collection Trends (season, quantity, products)

The collection of wild gathered products, even though considered as a very old traditional activity of the people living especially in under-developed area, was never considered as a significant commercial activity for the country in general. For a long time it was presented as a sector providing some supplemental income to vulnerable groups in Macedonia. Its relevance for the overall Macedonian economy and especially its contribution to the overall export was never seriously considered.

The existence of one of the largest pharmacological company in ex-Yugoslavia, Alkaloid - Skopje, with its special section for medicinal and aromatic plants, have increased the collection of this products, especially in the period from early 60's to 90's¹. On the other hand the collection of wild mushrooms, lichens and mosses, and berries, start its development in the early 90's when private-owned companies from Macedonia established direct relations with Italian businesses, overcoming the intermediation of the Serbian companies. In the last 18 years the Wild Gathered Products (WGP) sector is in constant and permanent development and growth. The collection trends are increasing based on the market requirements and the availability of the workforce. The market requires much more quantities than the current supply.

The collection is seasonal, starting in the early spring, and finishing in late autumn. Only the winter months are not covered with any collection activity. The collection can be categorized in four main product groups: wild mushrooms, medicinal and aromatic plants, lichens, and berries.

Wild Mushrooms (Fungi) represent a very heterogeneous group of organisms; there are approximately 1.250 recorded species of Fungi². Sites containing the highest myco-diversity, according to current studies, are: Pelister Mountain (location of the Mountain Lodge "Kopanki" and watershed of Braychinska River), Shar Planina Mountain (watershed of Tetovska River), near Mavrovo Lake, Kozhuf-Momina Chuka³.

Lichens (lichenoid Fungi) (Lichenes) number is approximately 340 species.

¹ Based on the interview with Timo Zanev, SPIN RADIKS, Strumica

² Most belong to the orders Ascomycota (130), Basidiomycota (1050), Myxomycota (10), Oomycota (20) and Zygomycota (35).

³ Country Study of the Biodiversity in Republic of Macedonia, Ministry of Environment and Spatial Planning, July 2003

Table 1: Number of Fungi and Lichens by families, genera and species in the Republic of Macedonia.

<i>Types of Fungi</i>	<i>Families</i>	<i>Genera</i>	<i>Species</i>
<i>Acrasiomycota</i>	-	-	-
<i>Ascomycota (without Lichens)</i>	35	60	130
<i>Basidiomycota</i>	49	284	1,050
<i>Chytridiomycota</i>	5	6	10
<i>Dictiosteliomycota</i>	-	-	-
<i>Hyphochytridiomycota</i>	-	-	-
<i>Labyrinthulomycota</i>	-	-	-
<i>Myxomycota</i>	7	7	10
<i>Oomycota</i>	5	9	20
<i>Plasmodiophoromycota</i>	-	-	-
<i>Zygomycota</i>	9	12	35
Total Fungi	110	378	1,250
<i>Lichenes</i>	11	73	340
Total with Lichens	121	451	1,590

The flora (including medicinal and aromatic plants) is quite rich, with a mosaic of diverse floral elements (Tertiary relicts, Mediterranean, Greek-Anatolian, Ilyric, Caucasian, Middle-European, Eurasian, arctic-alpine and cosmopolitan) and large number of endemic species (Macedonian, south Balkan, Balkan etc.). It is represented by 210 families, 920 genera and approximately 3.700 species.

Scientifically Macedonia is very rich in its biodiversity. Unfortunately its biodiversity is not studied enough by the experts in order to make detailed inventory of the diversified species of flora and fauna.

The most attractive products for collection that appear on the Macedonian market are:

- Fungi: Boletus, Chanterelles, Lactarius, Morchela etc.*
- Lichens: Evernia, Centraria*
- Berries: Blackberries, Blueberries, Raspberries, Cranberries etc.*
- Medicinal and aromatic plants: Adonis, Gentiana, Hypericum, Juniper, Thymus, Veratrum, Ramonda, Salvia etc.*

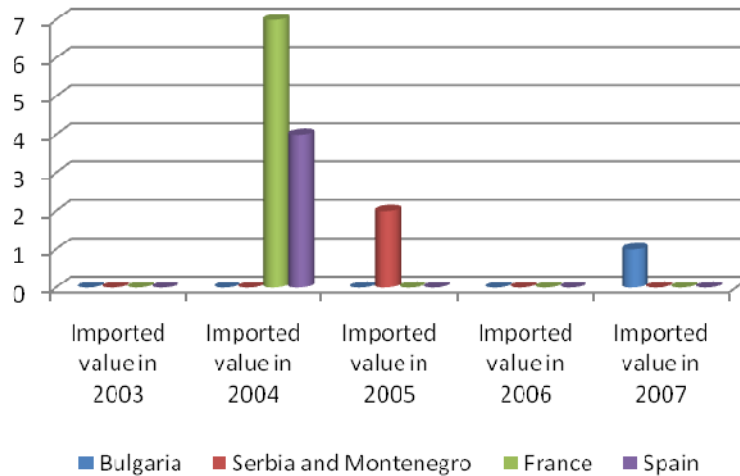
3.2. Import of WGP to Macedonia

The imports of the WGP to Macedonia are not significant and represent very small number compared to the export value that leaves the country. However, there are incidental imports which are then re-exported to other larger importer countries.⁴ The imports per product group are:

⁴ *According to the interviewed companies*

Figure 1

Import Value ('000\$) of Fresh or Chilled Wild Muchrooms (excl. Agaricus)

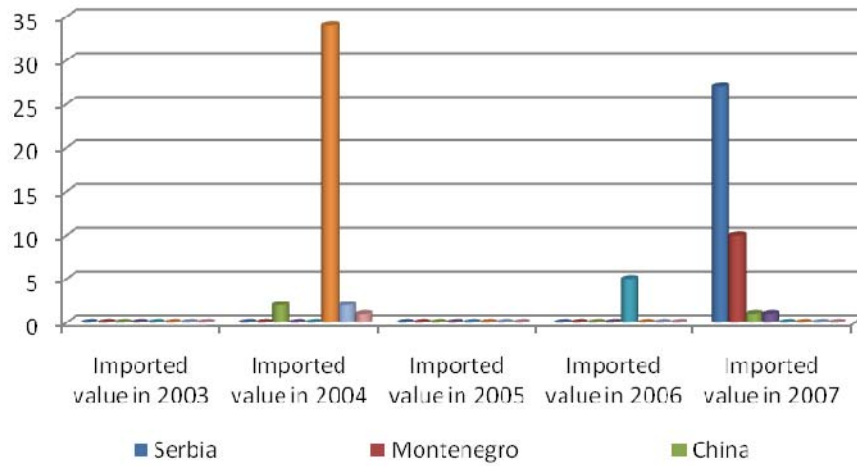


The figure indicates that there is almost no import of fresh or chilled wild mushrooms. There are some incidental imports which occur in Y2004 from France and Spain with a total value of 13.000 US\$ and some imports in Y2005 with a total value of \$2.000 from Serbia and Montenegro and \$1.000 in Y2007 from Bulgaria.

The situation is almost identical with the imports of dried wild mushrooms as well. There are some imports from Serbia and Montenegro in Y2004 with the total value of \$35.000, Y2006 from France with the value of \$5.000 and Y2007 from Serbia, Montenegro, China and Bulgaria with total value of \$40.000.

Figure 2

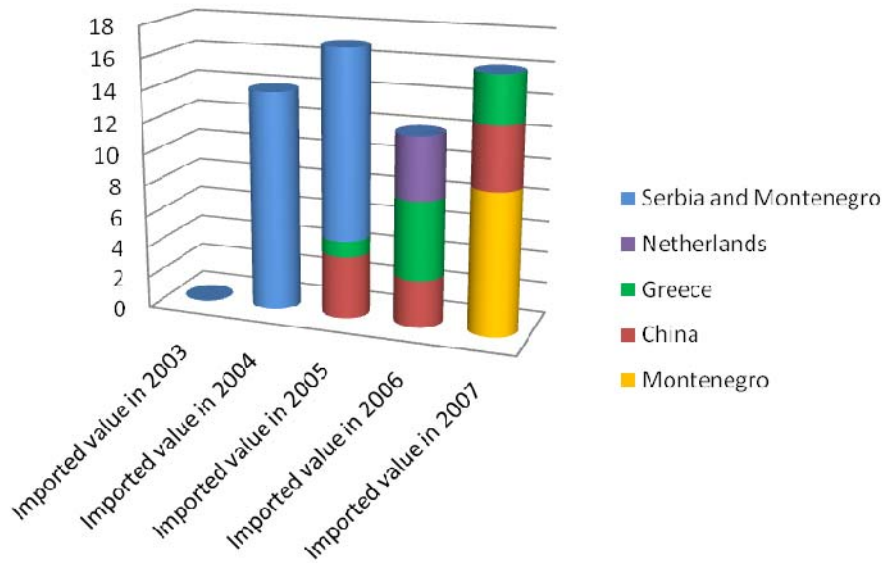
Import Value ('000\$) of Dried Wild Muchrooms



The imports of lichens and mosses in Macedonia are represented by imports from the regional neighboring countries which depending on the year vary. In the last three years China appears as a source of a small value of imports of lichens and mosses in Macedonia as well. However in total the value of imported lichens and mosses does not exceed \$17.000.

Figure 3

Import of Lichen and Moss ('000\$)



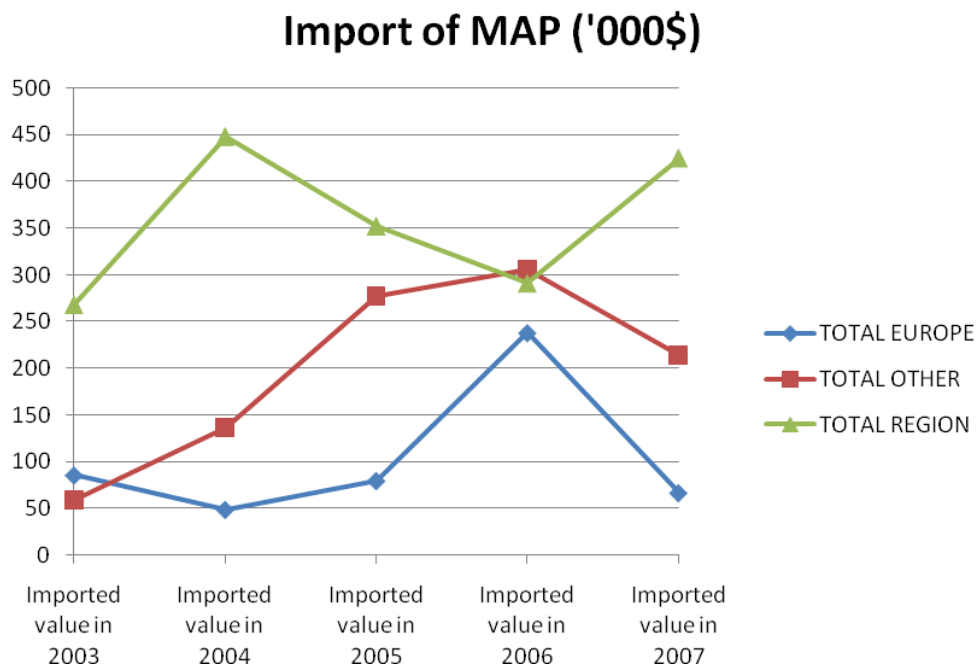
The situation with the medicinal and aromatic plants (MAP) is somewhat different in the sense of variety of countries what are exporting to Macedonia as well the significance of the value of imported MAP.

Table 2 MAP Imports in Macedonia (in 000\$)

Exporters	Imported value in 2003	Imported value in 2004	Imported value in 2005	Imported value in 2006	Imported value in 2007
TOTAL EUROPE	85	48	79	238	66
TOTAL OTHER	59	137	277	306	214
TOTAL REGION	268	448	352	291	425
WORLD	412	634	707	836	705

The table above shows that the total annual value of imported MAP reaches the value of half a million US\$ and is likely to reach up to one million US\$. In terms of markets where the MAPs are coming from, the regional neighboring countries are "leading", followed by the other countries (not part of Europe or the ex-Yu region), and only then the European countries.

Figure 4



If we try and separate the countries within each market which are the exporters to Macedonia we will see that Serbia and Montenegro is the major exporter to Macedonia when it comes to MAPs, Egypt and Tunisia from the Other market, and Spain and Germany from the European market.

Figure 5

Import of MAP from Regional Countries ('000\$)

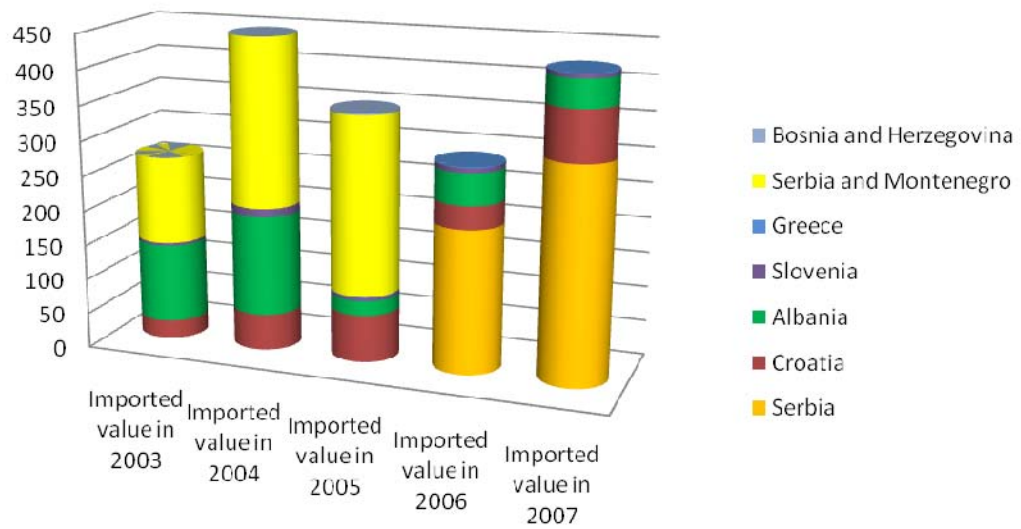


Figure 6

Import of MAP from Other Countries ('000\$)

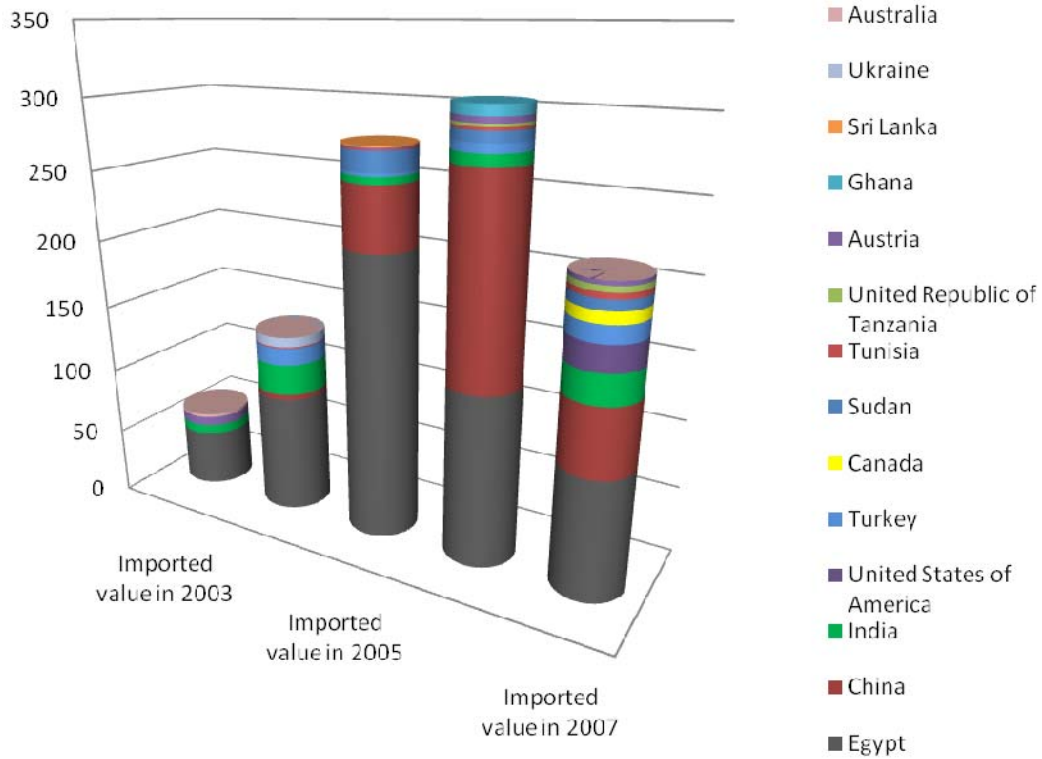
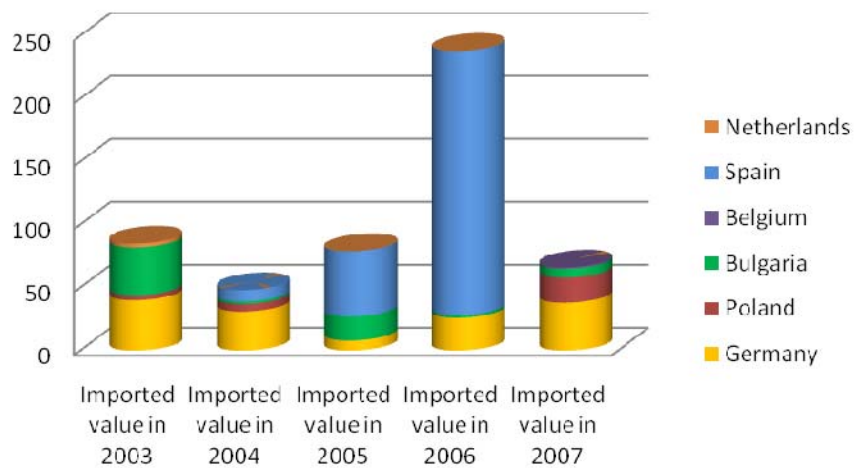


Figure 7

Import of MAP from European Countries ('000\$)



The total imports of WGP to Macedonia are given in the figure and table below indicating that the regional countries are most significant importers, then the other countries and then the European countries.

Figure 8

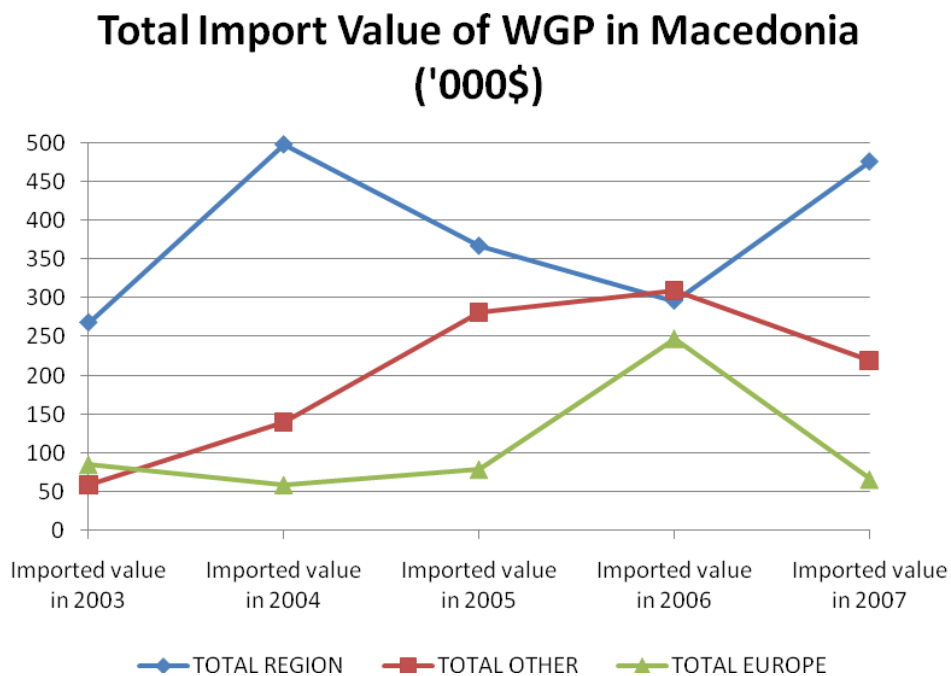


Table 3 Total import of WGP to Macedonia per market Group

Exporters	Imported value in 2003	Imported value in 2004	Imported value in 2005	Imported value in 2006	Imported value in 2007
TOTAL REGION	268	498	367	296	476
TOTAL OTHER	59	140	281	309	219
TOTAL EUROPE	85	59	79	247	66
WORLD IMPORT	412	697	727	852	761

4. Processing of the WGP

The processing of the WGP covers few technology cycles that create semi-final products offered mainly on the export markets. The collected and buy-out WGP exported are:

- Wild mushrooms: Fresh and Chilled, Frozen, Dried, Brined and Fried
- Berries: Fresh and Chilled, Frozen
- Lichens: Dried
- MAP: Dried parts

The processing companies in almost all of the cases are the exporters of the WGP. Based on EPI CENTAR research (data collection and interviews) there are around 80 companies in Macedonia that appear on the export market⁵. Out of this number, only ¼ are companies that have continuous export during in the last eight years, in values over 100.000 Euros/per year.

There are mainly two lines in the WGP processing industry:

1. Frozen products

Freezing is a processing cycle applied to almost all collected berries and part of the wild collected mushrooms. Freezing is organized in high quality freezers that posses automatic equipment, ozone friendly with possibility to freeze up to -40°C.

The collected berries are cleaned, classified according to the agreed categories and frozen in special packages. The freezing of mushrooms is slightly different as the mushrooms are cleaned and directly shocked on the extremely low temperature that causes so-called freezing ice needles in the frozen product trying to preserve the taste and quality as much as possible. The process of freezing enables storing of the products for at least 2-3 years, which is usually not necessary, as most of the processed products are sold in the actual year of collection and processing.

2. Dried products

Drying of wild mushrooms and MAPs are in general two different processes. The mushrooms drying varies from open (simple, traditional) sun drying, through using different modern machines for drying the mushrooms in different phases, different capacities and energy used. The dried wild mushrooms are considered as the highest value product on the market and reach the highest price. Most of the quantities of Boletus and Chanterelle are sold as dried mushrooms.

Drying of the MAPs is at the moment the main production technology that is applied in over 90% of the collected products. The MAPs are air dried, cleaned, dusted and pressed in bales as export product. There different types of drying, cleaning, dusting, but all of them are implemented with modern high-cost machines with limited availability on the regional market⁶.

Besides freezing and drying, some of the collected wild mushrooms are brined or fried. Brining is usually done with lower (quality) categories of mushrooms and mostly with Lactarius, where the boiling and fermentation is organized according to the availability of each processor. It means that some of the processors boil the products in front of their capacities on open air, using wood-heated stoves in metal pots, while other have specialized stainless steel boilers as part of their processing equipment. Frying is also done on the lower categories of mushrooms (usually Boletus), under standardized recipe

⁵ Interview with Violeta Krstevska, Export-Import sector, State Statistical Office of Macedonia

⁶ Interview with Ivan Stojanov, representative of FLORES, Skopje

given by the importer. The fried mushrooms are canned and exported as pre-cooked meals on the export market under the importers label.

The processing capacities vary, even most of the interviewed processors during the field work possess their own capacity that is organized on an area from 300 - 3000 m² that enables from 1 - 50 tones of processing per day. They possess different equipment, but it seems that freezers are compulsory. Most of them are equipped with cutting and drying machines, while the modern boiling and fermentation equipment is rare.

The implementation of standards such as HACCP is rare, but all of the processors recognize it as obligation. They all have plans to invest in this process. In this moment certification is not a requirement for the export markets or neither is recognized as a value added for the exported product. This is the main reason why majority of the processors do not possess HACCP standards nor they believe in its importance.

5. Sales and Target Markets (Demand)

5.1. Export Value per Product Group from Macedonia to the World

5.1.1. Wild Mushrooms

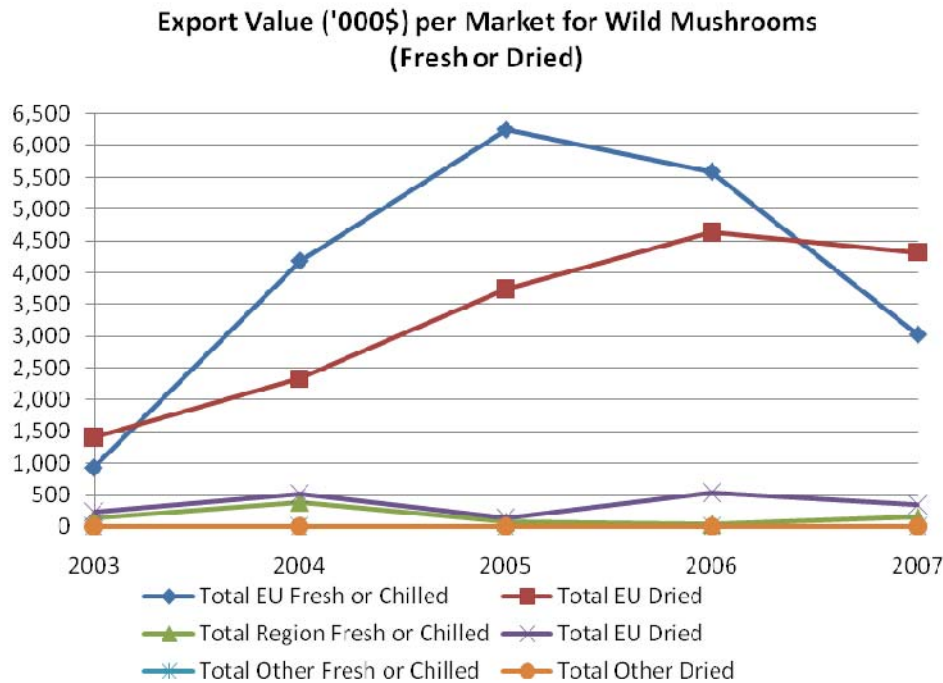
The wild mushrooms considered in this study, in accordance with the international numbers, are:

- *Fresh or Chilled Wild Mushrooms:*
 - *Chanterelles*
 - *Endangered species including Boletus, Lactarius, Morchella & some types of Chanterelles*

- *Dried Wild Mushrooms:*
 - *Agaricus and other*
 - *Wood Ears (Auricularia)*
 - *Jelly Fungi (Tremella)*
 - *Endangered species including Boletus, Lactarius, Morchella & some types of Chanterelles*

The wild mushroom sales on the export markets can be observed both on target market sales on one hand and then as fresh or chilled and dried wild mushroom products. The figure below indicates that the European market is the main market both for the fresh and dried wild mushrooms. The European market is by far larger than the other two market markets. The fresh wild mushrooms from the Y2004 to Y2006 represent most of the sales on the European market however in the other two years considered here, Y2003 and Y2007 the dried mushrooms exceed the value of the fresh wild mushrooms. The regional market does not exceed the export value of one million US\$ for both fresh and dried wild mushrooms and therefore is less significant.

Figure 9



However, if we consider the export values for Fresh or Chilled Wild Mushrooms, on an individual country level, we can conclude that the most significant export partner within Europe is by far Italy (with 65% sales in Y2007 from all European countries), then France, Germany, Austria and Spain. For dried wild mushrooms on the European market again Italy is by far the most important partner followed by France.

From the Regional partners for export of fresh and chilled Wild Mushrooms most significant sales are mostly going to Serbia⁷ and Bulgaria in the last year. The sales in the other countries in the region appear to be incidental. The same market for dried mushrooms shows Serbia and Slovenia as constant partners and in Y2007 Romania with most significant value.

Table 4

FRESH AND CHILLED WILD MUSHROOM EXPORT '000\$					
Importers	Exported value in 2003	Exported value in 2004	Exported value in 2005	Exported value in 2006	Exported value in 2007
Italy	742	3.254	5.562	5.071	1.972
France	114	350	254	252	407
Germany	9	377	196	113	376
Austria	0	40	80	53	154
Spain	0	47	115	22	65
Switzerland	64	116	37	70	52

⁷ Throughout the study figures and tables Serbia will appear as separate country to Serbia and Monte Negro in Y2006 and Y2007 and together with Monte Negro until and including Y2005.

Netherlands	0	2	0	7	0
Lithuania	0	0	0	3	0
Poland	0	0	8	0	0
TOTAL EU EXPORT	929	4.186	6.252	5.591	3.026
Bulgaria	0	0	0	0	79
Serbia	0	0	0	32	22
Romania	0	0	0	0	22
Slovenia	0	14	52	0	21
Serbia and Montenegro	120	365	17	0	0
TOTAL REGION EXPORT	120	379	69	32	144

Table 5

DRIED WILD MUSHROOM EXPORT '000\$					
Importers	Exported value in 2003	Exported value in 2004	Exported value in 2005	Exported value in 2006	Exported value in 2007
Italy	1.361	2.277	3.549	4.287	4.135
France	48	3	193	122	175
Spain	0	0	3	0	7
Switzerland	0	0	1	6	1
Germany	0	53	0	0	1
Cyprus	0	0	0	219	0
TOTAL EU EXPORT	1.409	2.333	3.746	4.634	4.319
Australia	0	0	0	0	5
TOTAL OTHER EXPORT	0	0	0	0	5
Romania	0	0	0	0	209
Slovenia	0	248	46	192	113
Serbia	0	0	0	346	21
Bulgaria	89	0	0	0	1
Serbia and Montenegro	143	266	63	0	0
Greece	0	0	23	0	0
TOTAL REGION EXPORT	232	514	132	538	344

5.1.2. Lichen

Lichens from the genus Evernia and Centrararia are exported mostly to Morocco, Spain and France. The other export markets are more incidental and for much smaller value. If we consider the countries as groups of markets as described in the previous sections then the most significant market for the lichens is the European market and lately the other countries.

Figure 10

Lichen (*Evernia* & *Cetraria*) Export Value ('000\$)

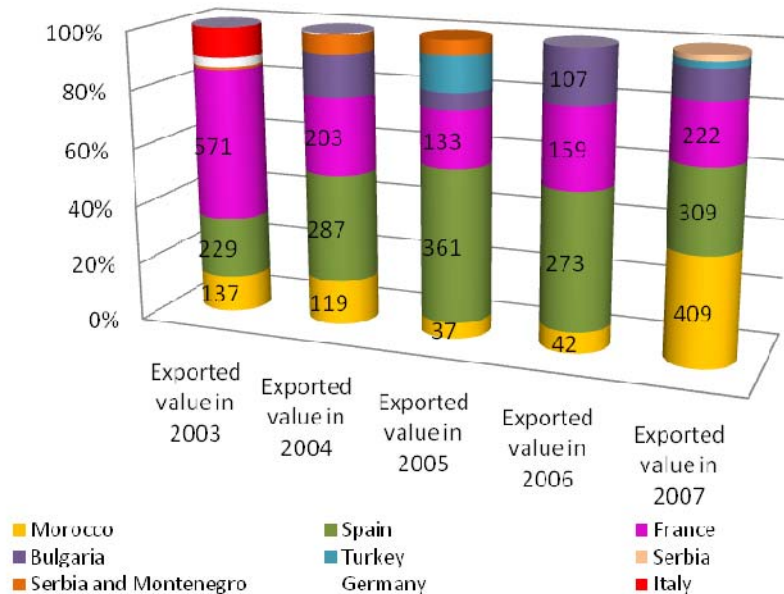
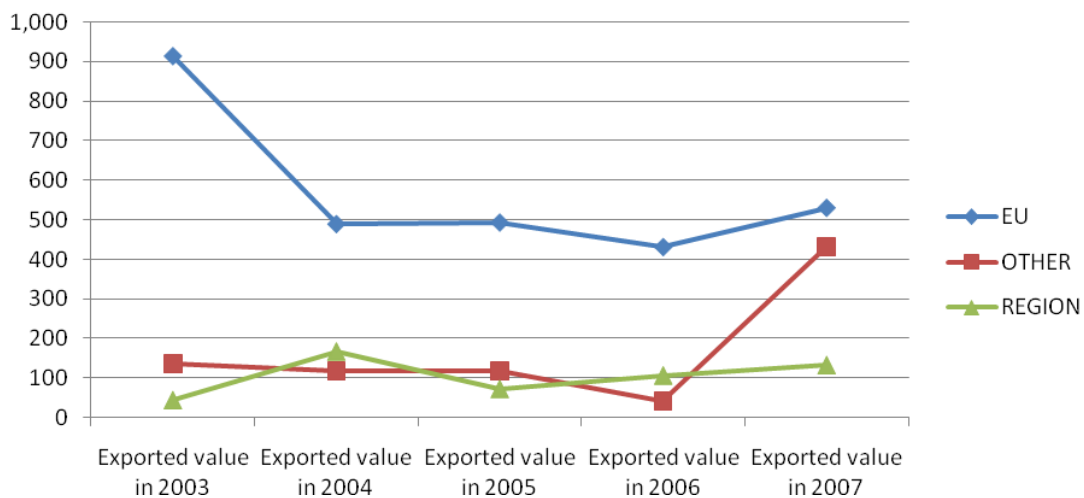


Figure 11

Export Value ('000\$) Per Grouped Markets



5.1.3. Wild Berries

The wild berries considered in this study can be observed as fresh berries exported to other countries and processed berries through steaming, boiling, sweetened and frozen.

- *The Fresh Wild Berries within the presented tables are:*
 - *Raspberries, blackberries, mulberries and loganberries*
 - *Black, white or red currants and gooseberries*

- *Cranberries, bilberries and other fruits of the genus Vaccinium*
- *Processed through steaming, boiling, sweetening, freezing*
 - *Raspberries, mulberries, etc.*

Figure 12

Total Fresh Berries: Raspberries, blackberries, mulberries, loganberries, cranberries, gooseberries, black/white and red currants and other genus Vaccinum Export Value ('000\$)



Figure 13

Total Steamed, Boiled, Sweetened, Frozen Berries Export Value ('000\$)

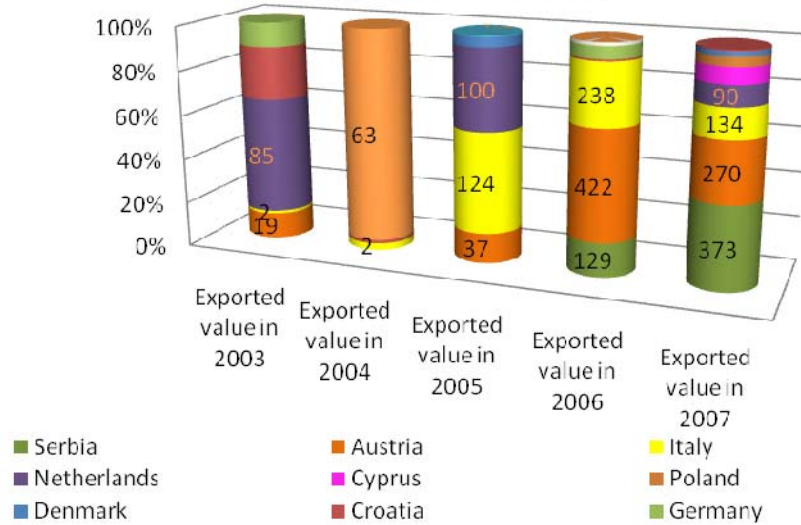
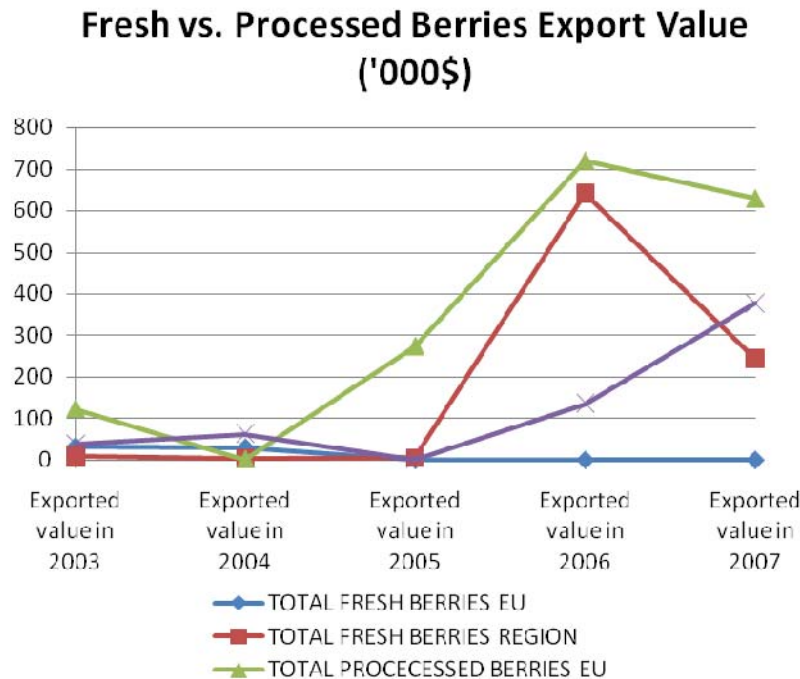


Figure 14



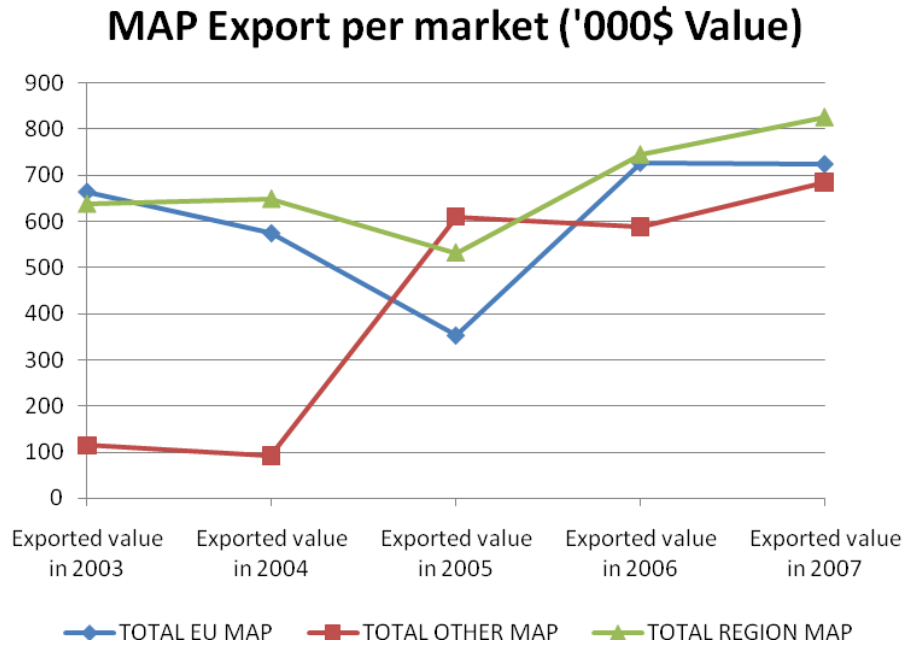
The main export market for the fresh berries is Serbia. If we consider the period in the last five years it seems that this product is relatively “new” in terms of export since the value of exports is significantly increased in the last three years while almost not exports in the previous years. It appears that the European market is almost insignificant for fresh berries while almost all fresh berries export is ending on the regional market i.e. Serbia.

The processed berries have no specific pattern of sale by country although the sales in Europe for processed berries (mostly Austria and Italy) are higher than on the regional market (mostly Serbia). The Other markets do not appear for the processed berries as well.

5.1.4. MAP

The Medicinal and Aromatic Plants (MAP) is the fourth category considered in this study with a trend of constant increasing export value in the last five years. If we consider the exports per markets (grouped in European, Regional and Other), we see that the all three groups of markets the European, the regional market and the other country markets have almost the same importance when the export values in the last three years are considered. The Other markets export value has also increased in Y2004 and kept the same level of exports, while in the period of Y2003 and Y2004 the exports to the other markets has been lower than the European and the regional.

Figure 15



The most significant European market per country is by far Germany representing 48% in Y2007 to 69% in Y2005, of the total MAP exports to the European market. Then is the Italian market with increasing values form 3% in Y2003 to 14% in Y2007 from the European exports, while the French market's export value is reducing, 27% in Y2004 to 14% in Y2007.

The most significant regional market is Serbia representing around 30% to 50% of the regional export value for MAP. Other significant regional markets are Croatia, Slovenia and Bulgaria.

The most significant export markets from the other markets are the USA, and Australia.

Figure 16

Total EU MAP per country Export Value ('000\$)

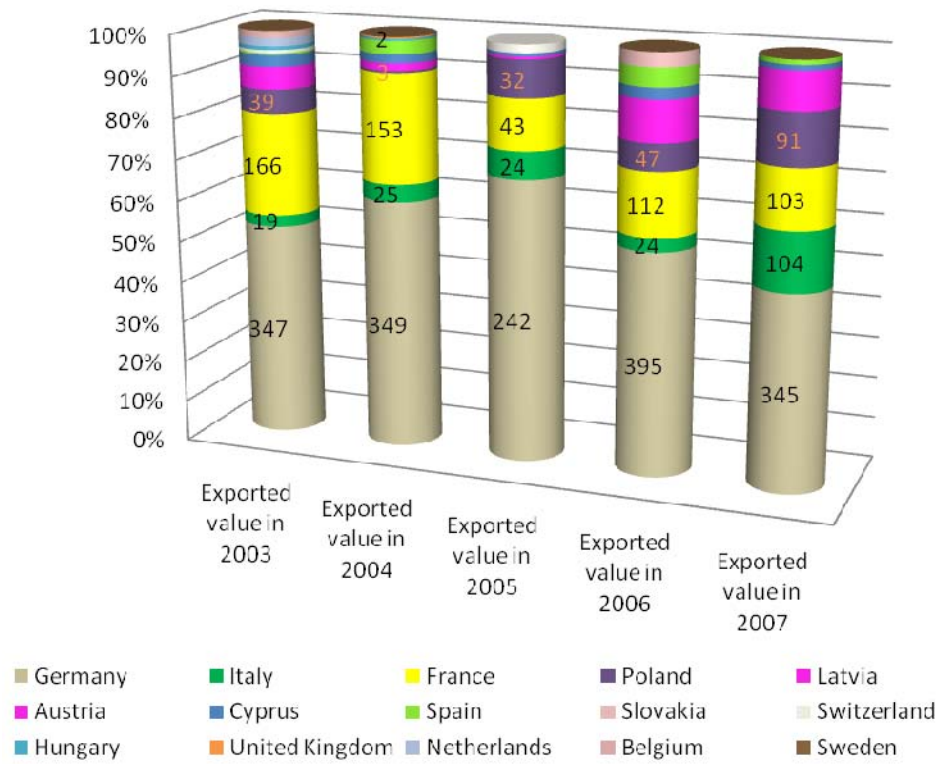


Figure 17

Total Region MAP per country Export Value ('000\$)

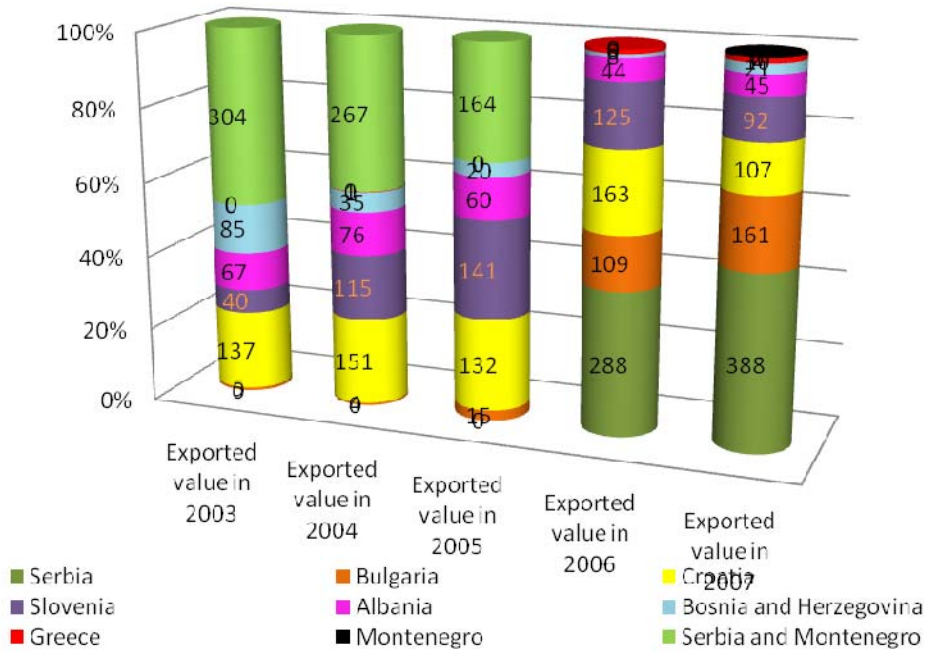
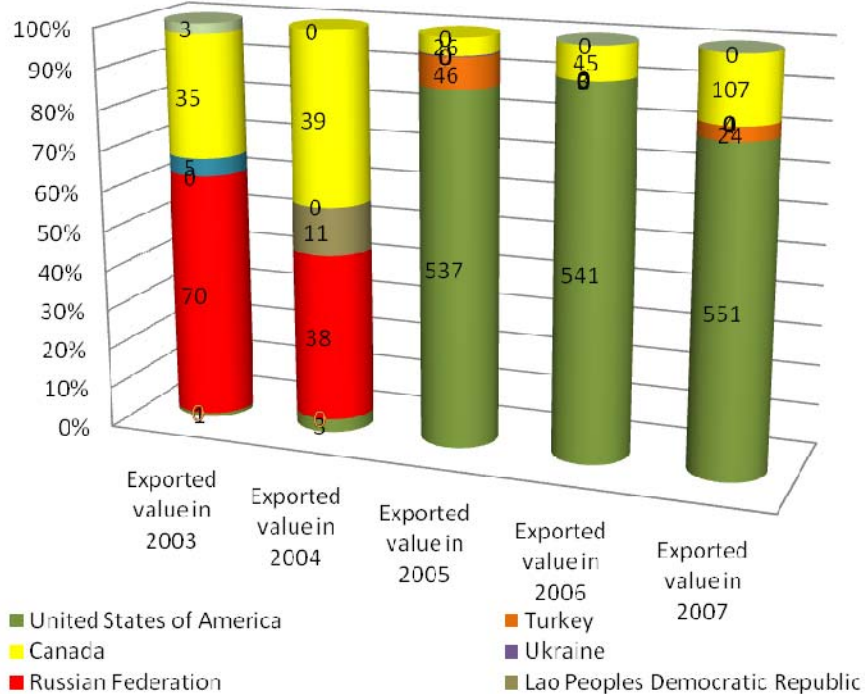


Figure 18

Total Other MAP per country Export Value ('000\$)

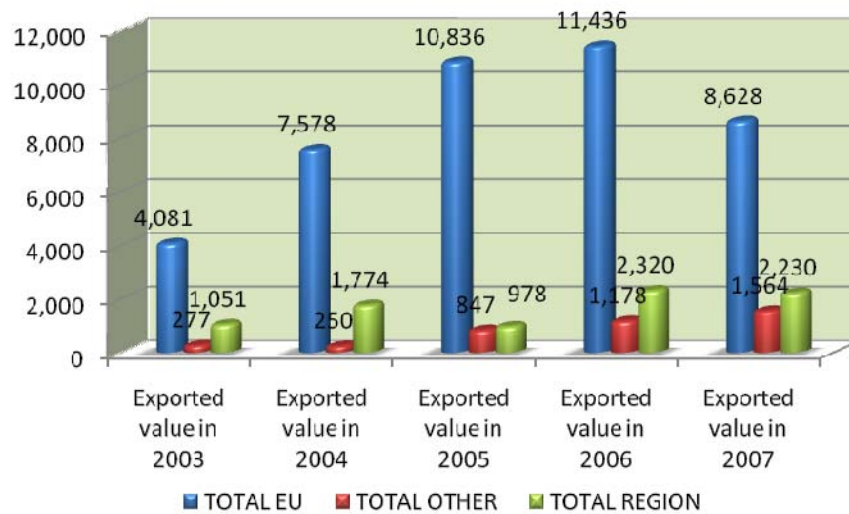


5.2. Main Markets (Regional, EU and Other)

Considering the four product groups all together: wild mushrooms, lichens, wild berries and MAP together we can see from the figure below that the most significant market is the European market⁸, with much larger export value sales, followed by the Regional market⁹ and then by all Other export markets¹⁰. With the exception of Y2007, the export sales trend is upwards with significant annual increases. The reduction of the Y2007 export sales is most likely to be the result from the climatic conditions resulting with lower collected volumes and consequently lower export sales.

Figure 19

**Total WGP's Export Value Y2003-2007 (in '000\$)
Per Region**



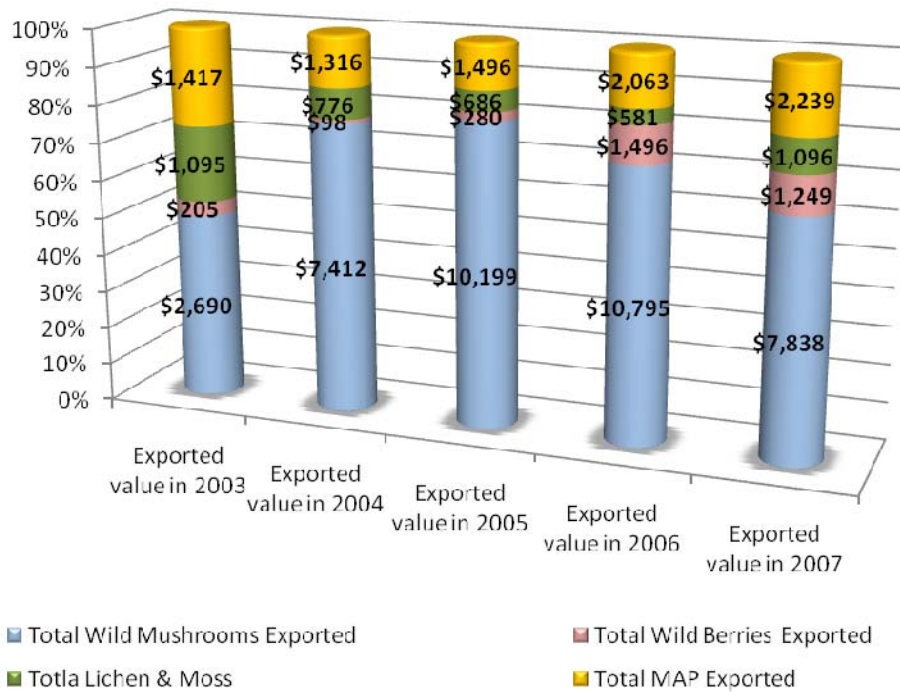
⁸ EU market throughout the study are the EU-27 countries and other developed European countries, however without the regional EU members such as Romania, Bulgaria, Greece and Slovenia

⁹ Regional market throughout the study is considering the ex-Yu countries together with Bulgaria, Albania, Romania and Greece

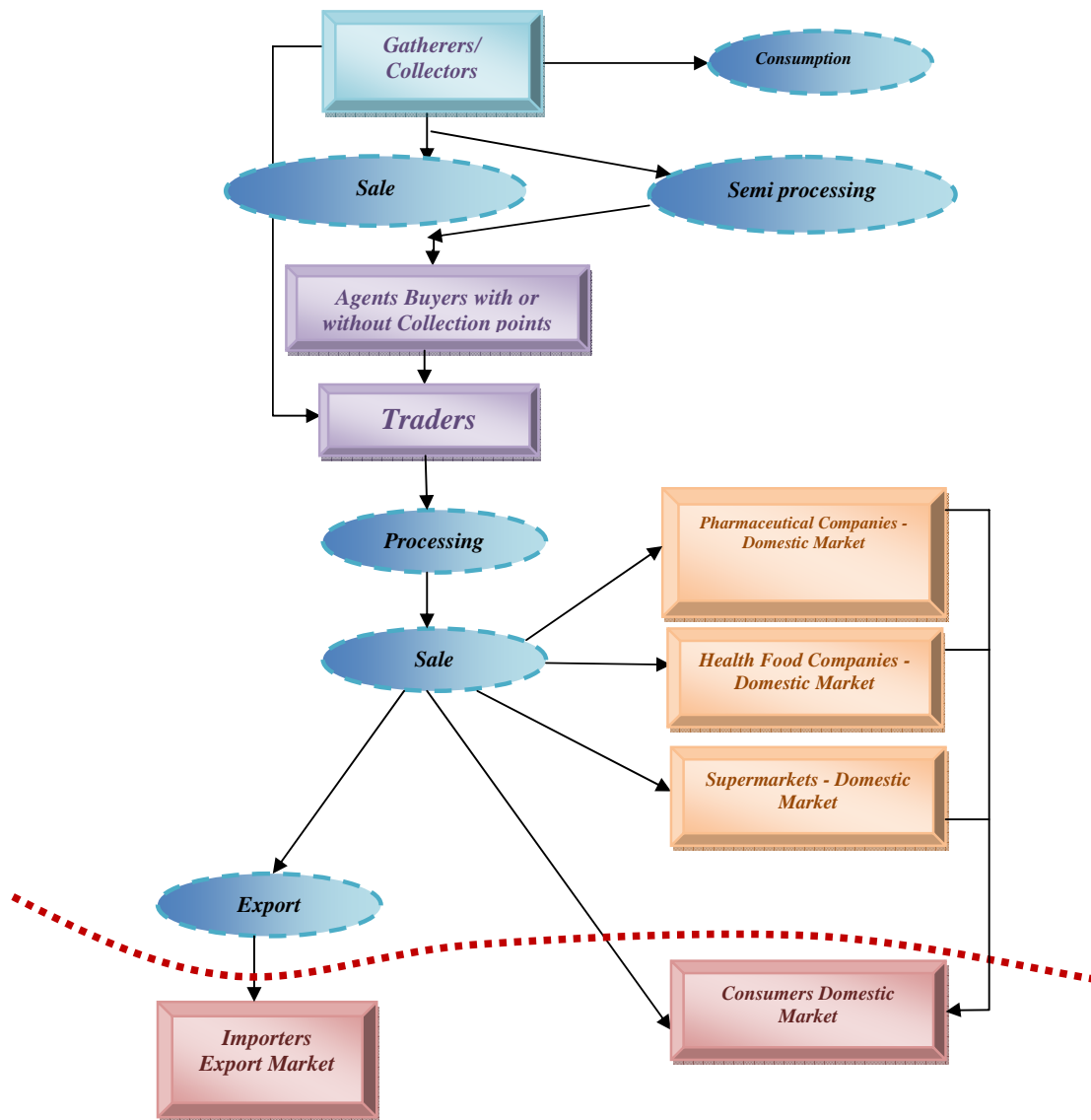
¹⁰ Other markets in this study represent the markets on the Americas, ex-Soviet countries, etc. i.e. not included in the previous two groups

TOTAL SELECTED WGP_s EXPORT FROM MACEDONIA TO OTHER COUNTRIES					
000\$	Exported value in 2003	Exported value in 2004	Exported value in 2005	Exported value in 2006	Exported value in 2007
<i>Total Wild Mushrooms Exported</i>	\$2.690	\$7.412	\$10.199	\$10.795	\$7.838
<i>Total Wild Berries Exported</i>	\$205	\$98	\$280	\$1.496	\$1.249
<i>Total Lichen & Moss</i>	\$1.095	\$776	\$686	\$581	\$1.096
<i>Total MAP Exported</i>	\$1.417	\$1.316	\$1.496	\$2.063	\$2.239
<u>TOTAL WGP EXPORTED</u>	<u>\$5.407</u>	<u>\$9.602</u>	<u>\$12.661</u>	<u>\$14.935</u>	<u>\$12.422</u>

TOTAL WGP_s EXPORT FROM MACEDONIA TO OTHER COUNTRIES ('000\$)



5.3. Main Value Chain Players



The value chain of the WGP sector in Macedonia, even not organized or structured can be easily understood of how it functions, what are the links and how can they be improved. The value chain is supply driven, as everything depends on the supply of the WGP's that can not be predicted. At the moment there is large export market for these products, where unlimited quantities of Macedonian WGP's can be sold.

- **Gatherers/Collectors**
 - The number of collectors varies, but it has trend of increasing in the last several years. At present there is estimation for 12.000 collectors. Even there were some attempts of organization of collectors in association or

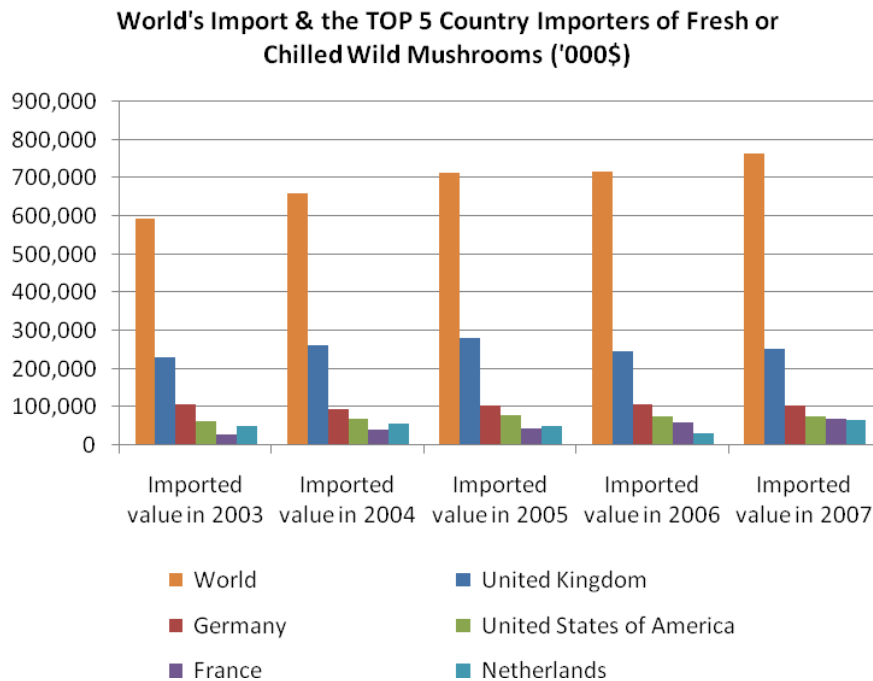
other NGO, at the moment there is no active association where their issues will be articulated and further discussed. The collectors do not possess any power in the value chain as they depend on the domestic market buy-out traders, companies. They usually sold their products fresh (mostly the berries and mushrooms) and dried (MAP, lichens and mushrooms). Large portion of collectors do not possess and equipment, skills and habits for adding value to products, while small number dries the collected mushrooms. Small number of processors keeps part of the collected products for their own needs, which as a result of limited tradition in the home use of the products.

- **Traders/Agents**
 - *There are traders and agents that appear during the season, for whom the processors say they represent the un-loyal competition. Most of these traders are not registered. They collect around 20-30% of the buy-out quantities, play with the prices, and in most of the cases sell the products to the processors.*
- **Processors**
 - *Processors are the main player in the sector that possess the power in the chain. As almost all of the products are exported through these companies, the whole value chain depends on them. The processors have their own inactive association, that gathers when there is urgent need, but it has no permanent representation or any lobby power. The processors organize the most of the buy-out and the export with average gross margins range from 25% to 79% depending on the product and the level of processing. There are around 20 serious players in this group, that invested a lot in their business capacities, implement standards, organize buy-out stations and identify the export markets.*
- **The domestic sales (companies)**
 - *These companies deal with small quantities of medicinal and aromatic plants, mainly in production of teas and medical supplements. Additionally some restaurants buy very small quantities of mushrooms. There are few supermarkets that offer wild mushroom where the sales is in very limited quantities. The domestic sales players are insignificant for the sector.*
- **The export market (importers)**
 - *The importers of the WGs belong to the group of traders and large processing companies. They buy semi-finalized products, which are further packed and sold in the supermarkets, or as raw material in the pharmacological and cosmetics industry. The importers define the price, quantities and the products that should be processed. They possess the greatest power in the value chain. Most of the processors are traditional partners of Macedonian companies, from several European countries. Some of the importers have opened their own processing companies in Macedonia creating competition to the local ones. The importers move the market and the development of the sector in the country.*

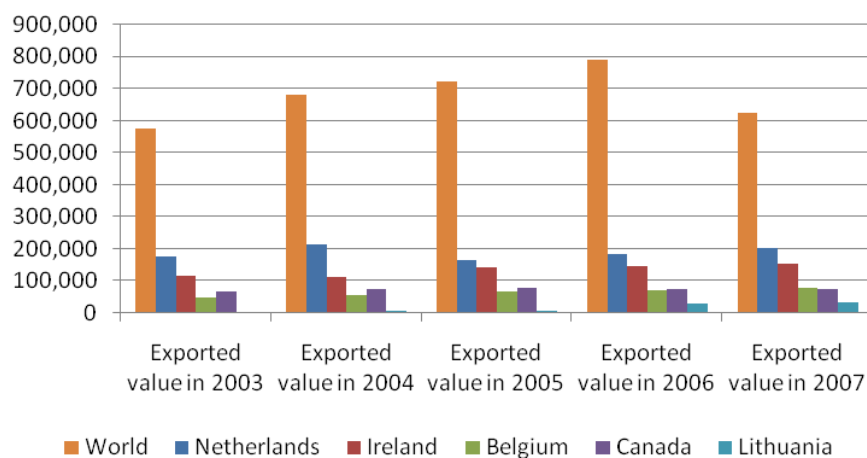
5.4. World's Main Exporters and Importers (Competitors and Potential markets)

5.4.1. Fresh or Chilled Wild Mushrooms

The main importers by US\$ value of fresh or chilled wild mushrooms are Germany, France, UK, USA and the Netherlands while the exporters are Netherlands, Ireland, Belgium, Canada and Lithuania. Macedonia has insignificant or no exports at all from this category of mushrooms. This indicates that some of the largest importers are at the same time exporters i.e. indicating that most likely these countries are re-exporting.

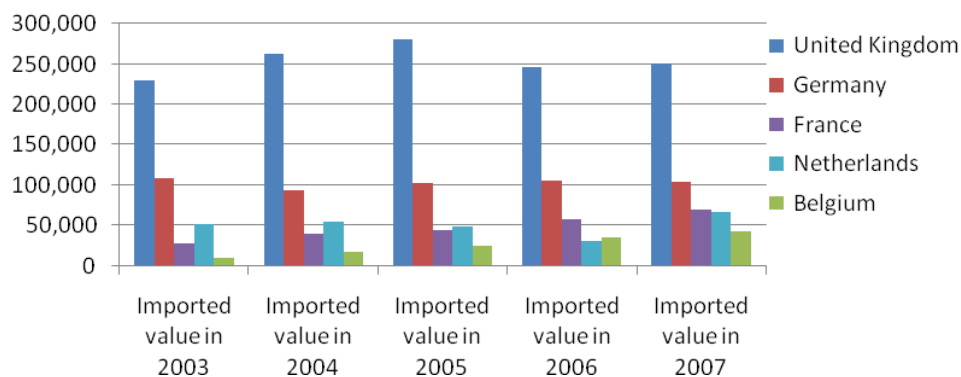


World's Export & TOP 5 Country Exporters of Fresh or Chilled Wild Mushrooms ('000\$)

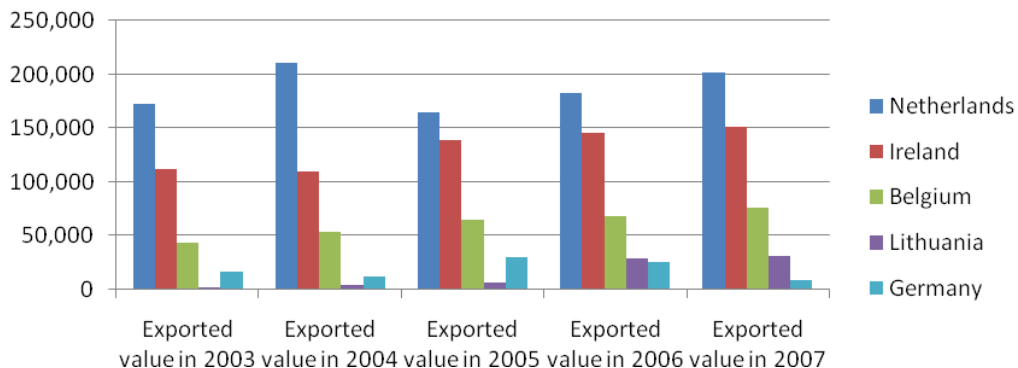


In Europe the top importers of fresh and chilled wild mushrooms are UK, Germany, France, Netherlands, and Belgium while the main exporters are again The Netherlands, Ireland, Belgium, Lithuania and Germany.

TOP 5 Country European Importers of Fresh or Chilled Wild Mushrooms ('000\$)



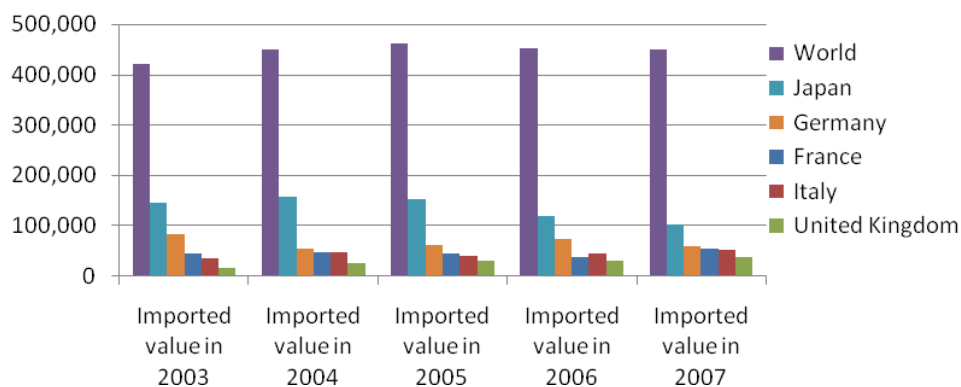
Top 5 European Exporters of Fresh or Chilled Wild Mushrooms ('000\$)



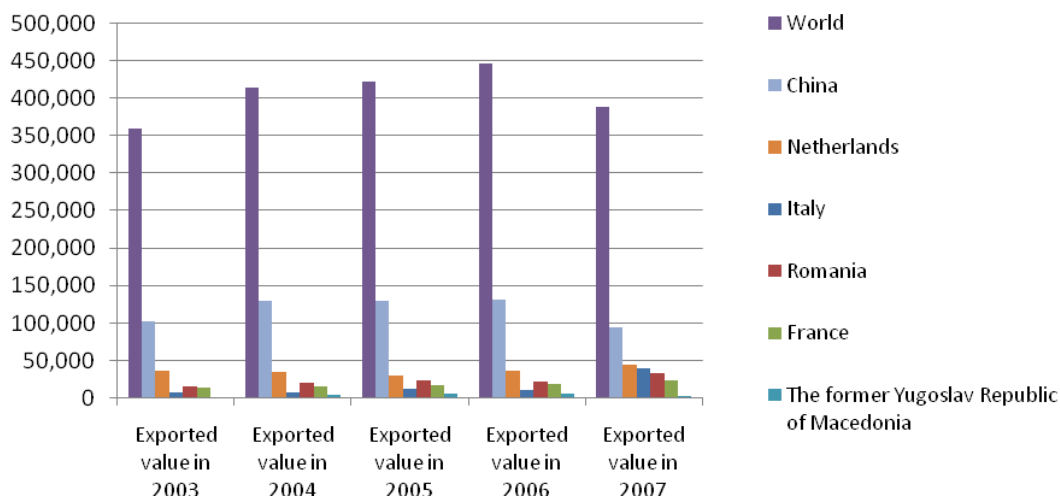
5.4.2. Fresh & chilled edible (excl. Agaricus)

The other edible fresh or chilled wild mushrooms which are not including the species *Agaricus*, are mostly imported in Japan, Germany, France, Italy and UK, while the exporters are China, Netherlands, Italy, Romania and France.

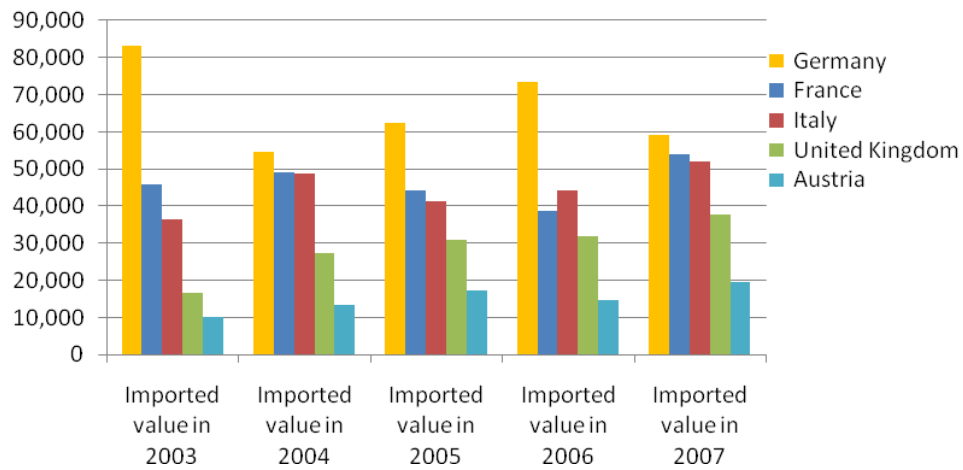
World's Import & the TOP 5 Country Importers of Fresh or Chilled Wild Mushrooms other than Agaricus ('000\$)



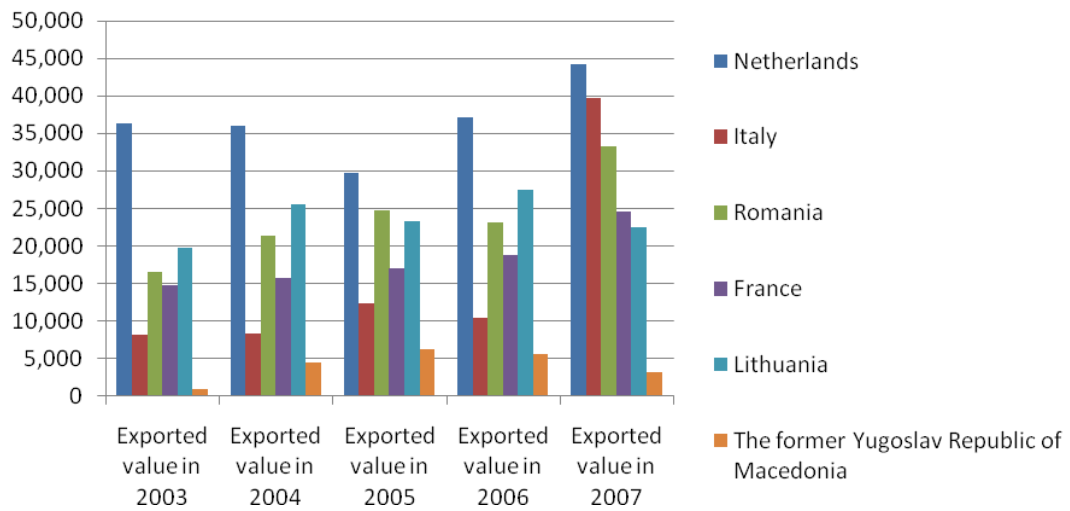
World's Export & TOP 5 Country Exporters of Fresh or Chilled Edible (excl. Agaricus spp.) & MK Wild Mushrooms ('000\$)



TOP 5 European Country Importers of Fresh or Chilled Wild Mushrooms other than Agaricus ('000\$)



Top 5 European Exporters of Fresh and Chilled edible (excl. Agaricus) & MK Wild Mushrooms ('000\$)



5.4.3. Dried Mushrooms and Truffles (whole, cut, sliced, broken or in powder)

The largest importers of dried mushrooms and truffles in the world are Japan, France, Italy, Hong Kong and Germany, while the largest exporters are by far China then, Germany, France, Italy and Serbia.

Figure 20

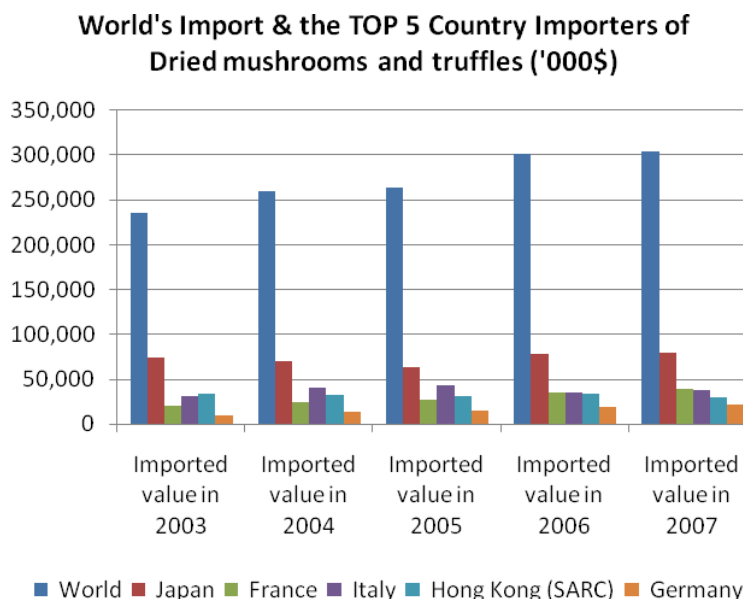
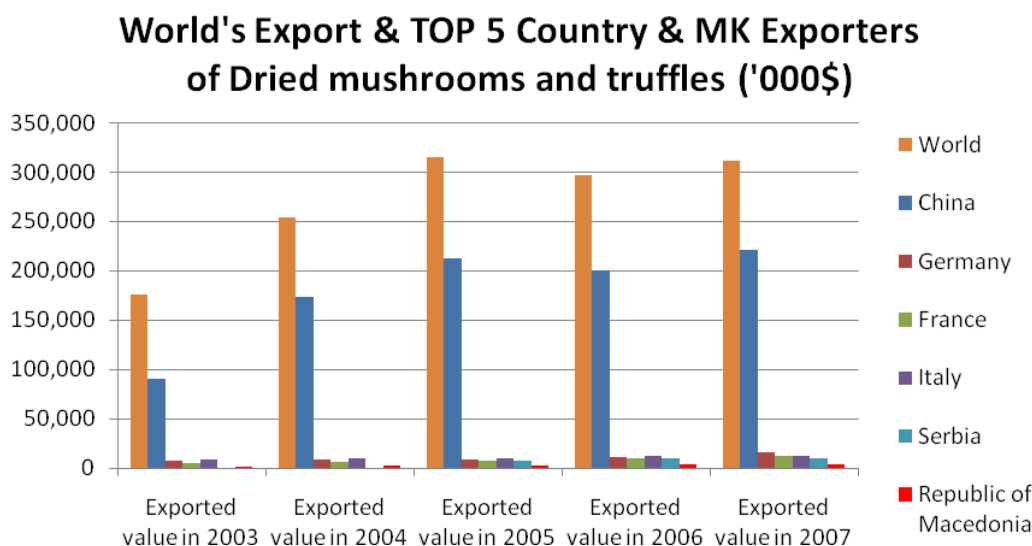


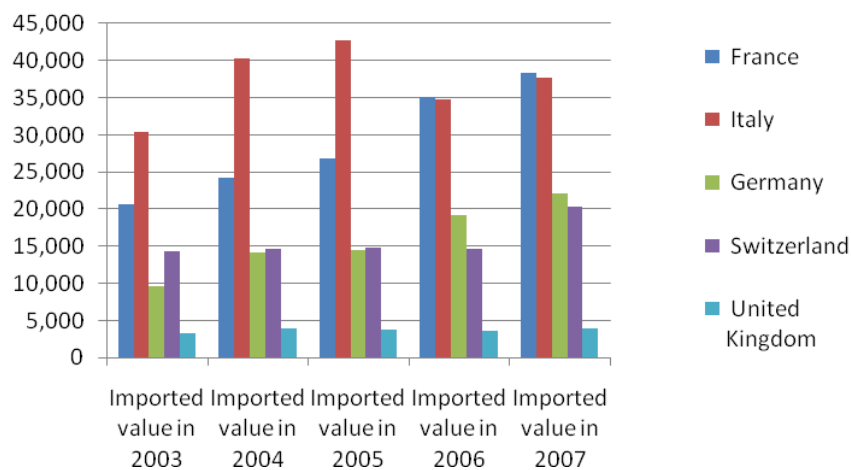
Figure 21



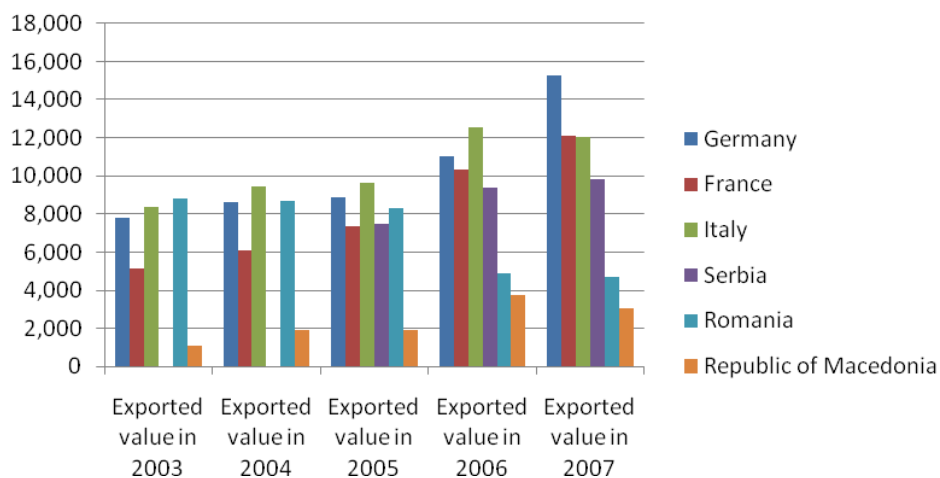
Some of the world's largest exporters and importers of dried mushrooms and truffles are European countries, however if we consider those only on an European level we can see that the largest European importers by value are France, Italy, Germany and then

Switzerland and UK. On the other hand the largest exporters in Europe by value are Germany, France, Italy, Serbia, Romania and Macedonia.

TOP 5 European Country Importers of Dried mushrooms and truffles ('000\$)



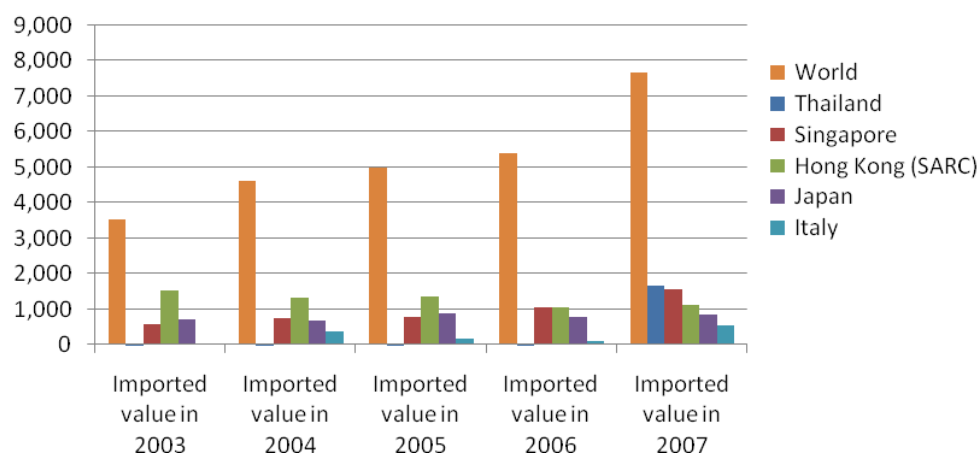
Top 5 European Exporters of Dried Mushrooms and truffles ('000\$)



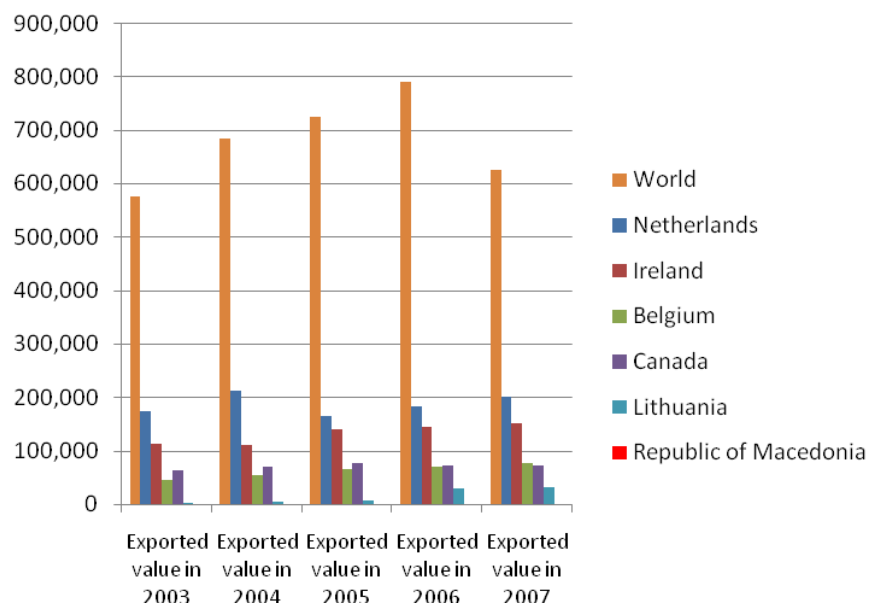
5.4.4. Dried Tremella Species - Jelly Fungi Wild Mushroom

The most significant importers of Tremella spp. Jelly Wild Mushroom on a world level are Thailand, Singapore Hong Kong, Japan and Italy, while the main exporters are Netherlands, Ireland, Belgium, Canada and Lithuania. On an European Level Macedonia is the 6th exporter by value of Tremella species dried fungi, after Italy, France, Germany, UK and the Netherlands.

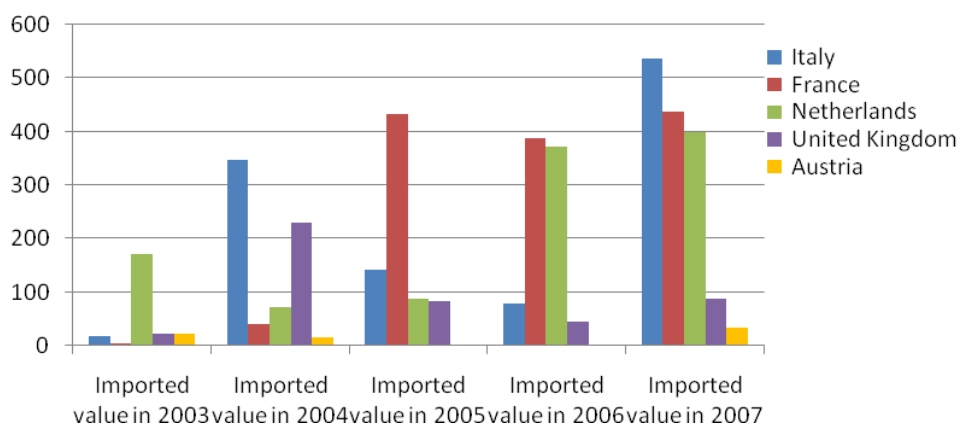
World's Import & the TOP 5 Country Importers of Tremella dried Jelly Fungi - Wild Mushrooms ('000\$)



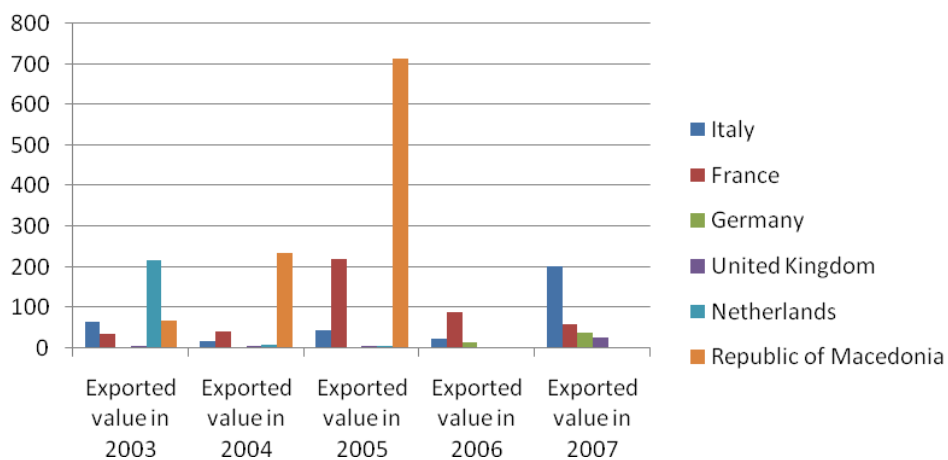
World's Export & TOP 5 Country Exporters & MK of Dried Tremella spp. Wild Mushrooms ('000\$)



**TOP 5 European Country Importers of Dried Tremella Jelly Fungi
Wild Mushrooms ('000\$)**



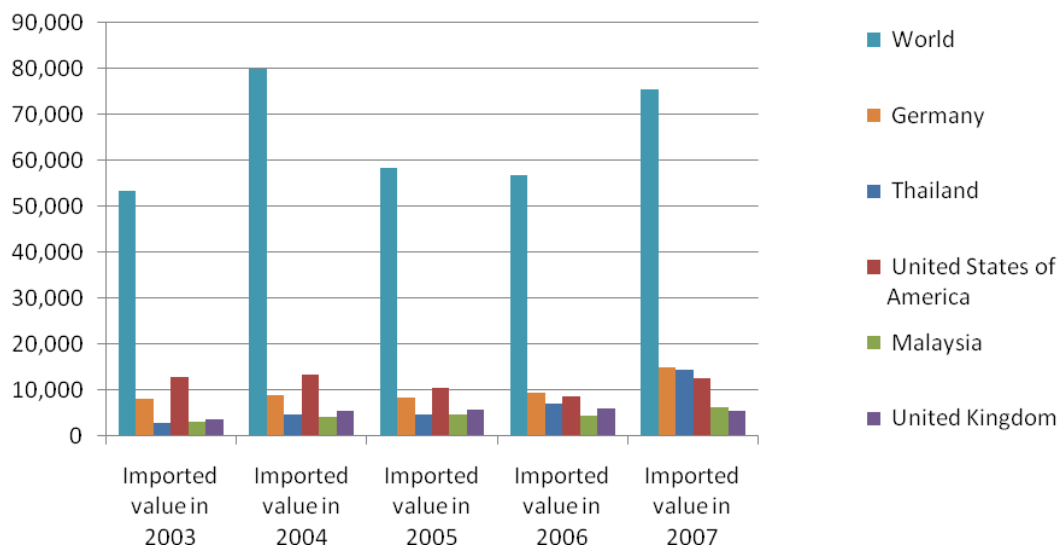
**Top 5 European Exporters of Dried Tremella spp. Wild
Mushrooms ('000\$)**



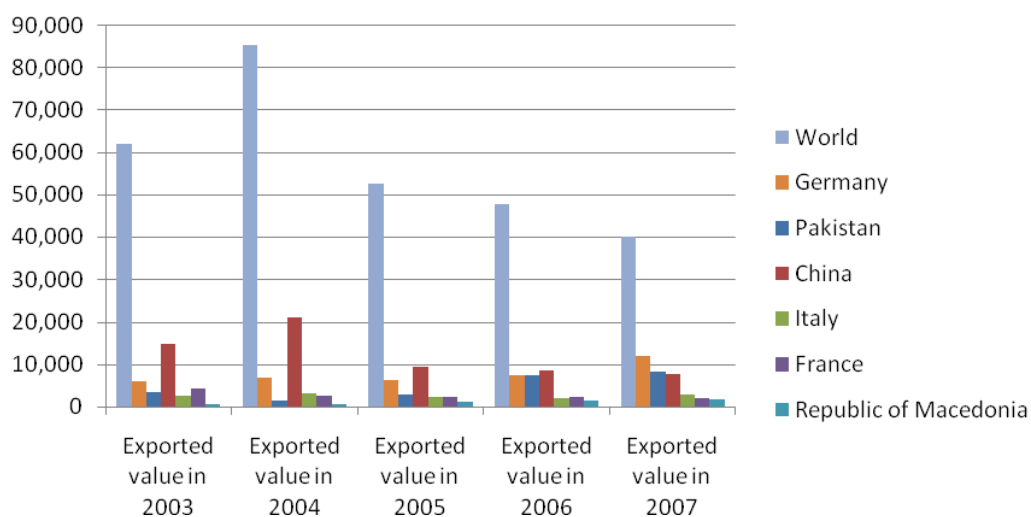
5.4.5. Dried Agaricus

The dried Agaricus species is mostly imported in Germany, Thailand, USA, Malaysia and UK, while exported from Germany as well, Pakistan, China, Italy, France and Macedonia. Macedonia is one of the most significant European country exporters of dried Agaricus as is for the remaining dried wild mushrooms while this is not the case for fresh or chilled mushrooms.

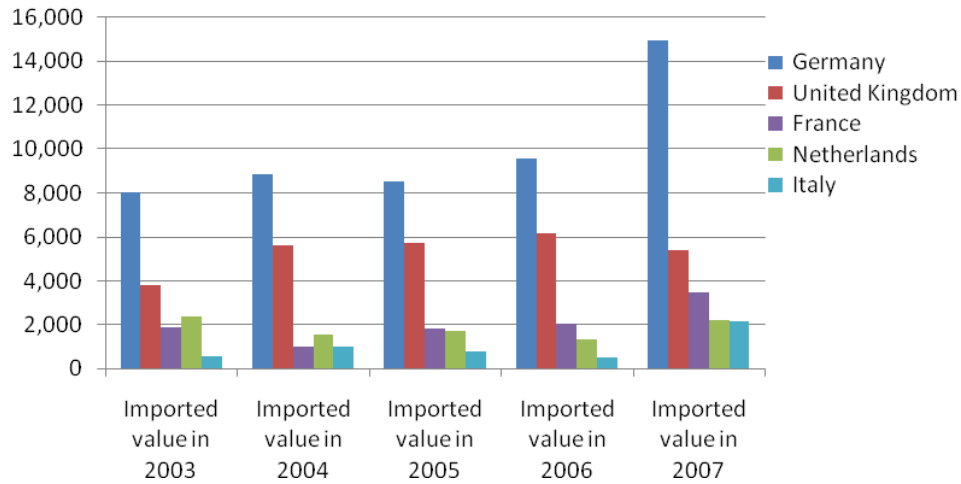
World's Import & the TOP 5 Country Importers of Agaricus dried Wild Mushrooms ('000\$)



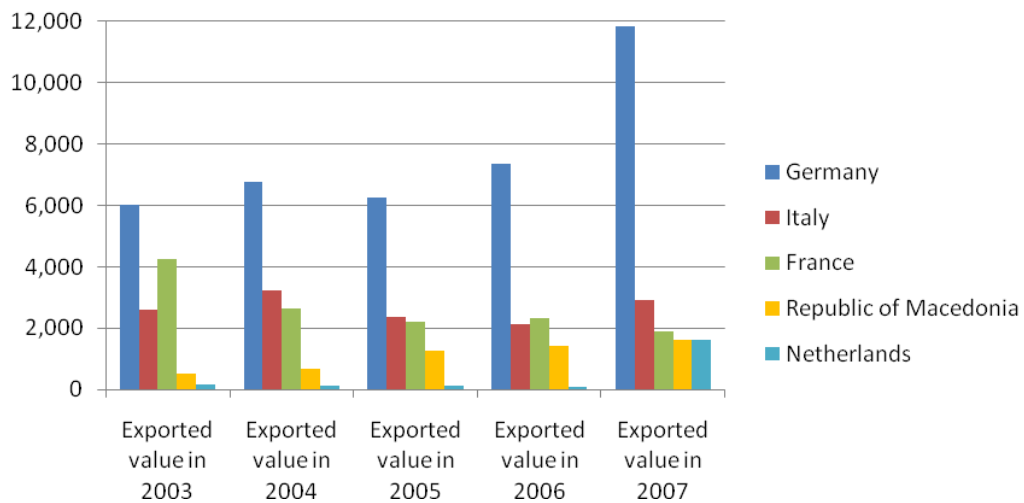
World's Export & TOP 5 Country Exporters of Dried Agaricus spp. Wild Mushrooms ('000\$)



TOP 5 European Country Importers of Agaricus dried Wild Mushrooms



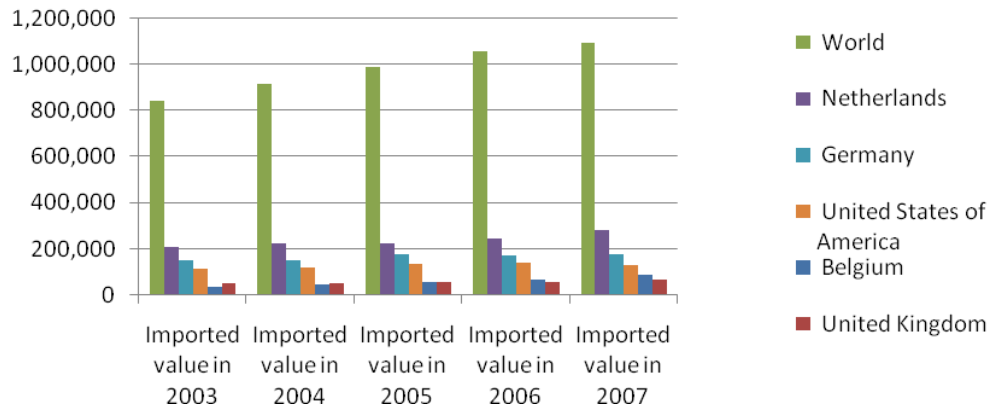
Top 5 European Exporters of Dried Agaricus spp. Wild Mushrooms ('000\$)



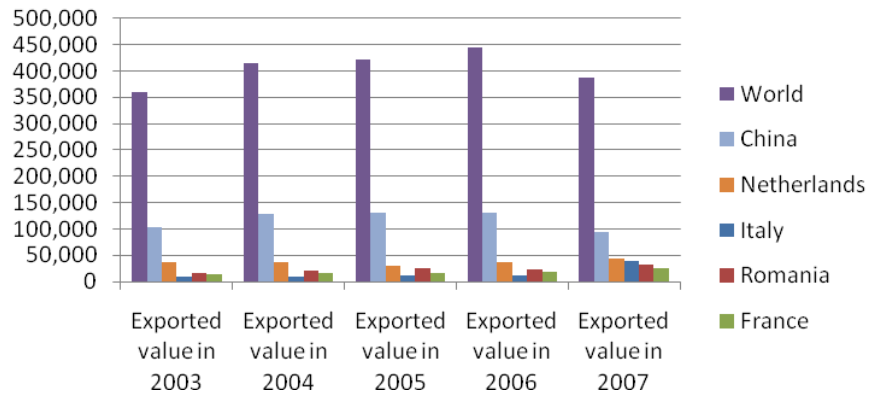
5.4.6. Lichen & Mosses

The lichens and mosses are mostly imported in the Netherlands, Germany, USA, Belgium and UK. Some of the importers are also the major exporters in the world which indicates that large amount of the imports are also exported i.e. re-exported to other countries. When it comes to most of the WGsPs this occurs especially for Germany and Netherlands from the European countries.

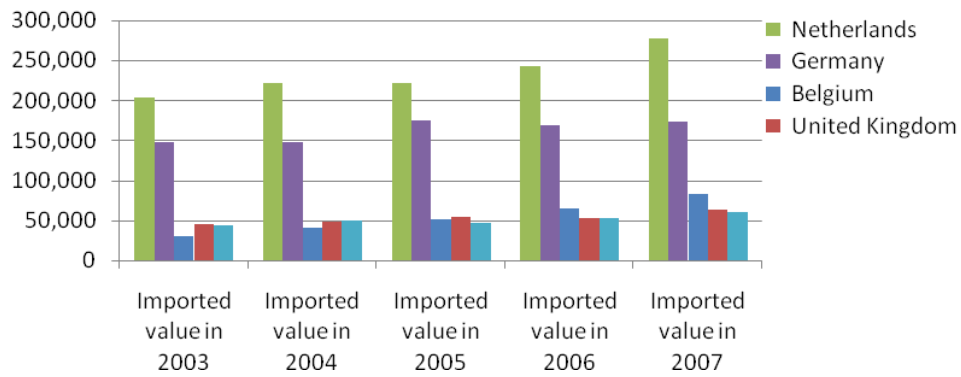
World's Import & the TOP 5 Country Importers of Lichens and Moss ('000\$)



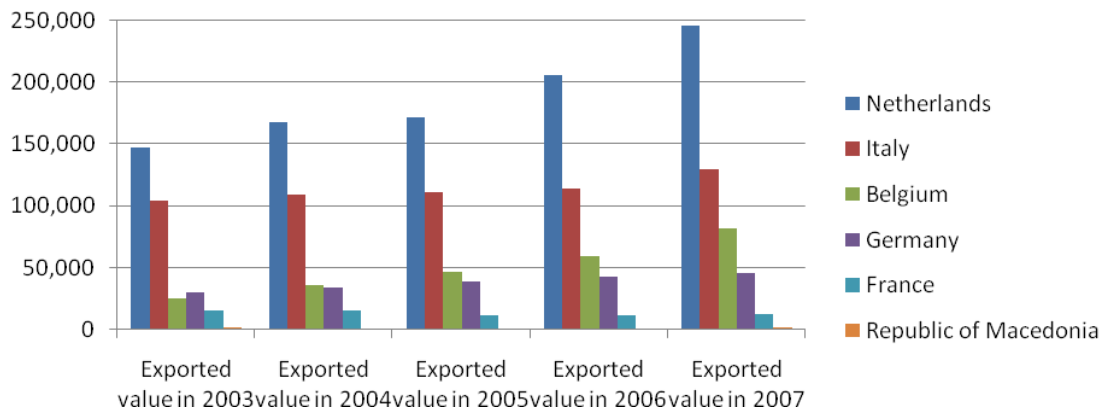
World's Export & TOP 5 Country Exporters of Lichen and Moss ('000\$)



TOP 5 European Country Importers of Lichens and Moss ('000\$)



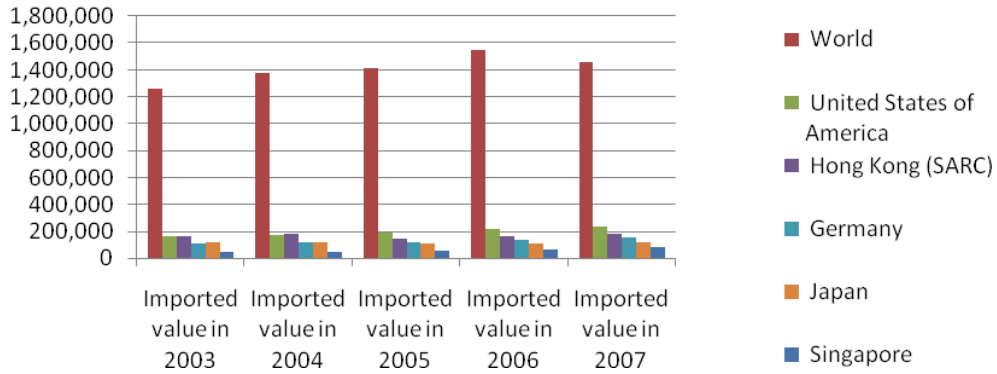
Top 5 European Exporters & MK of Lichen and Moss ('000\$)



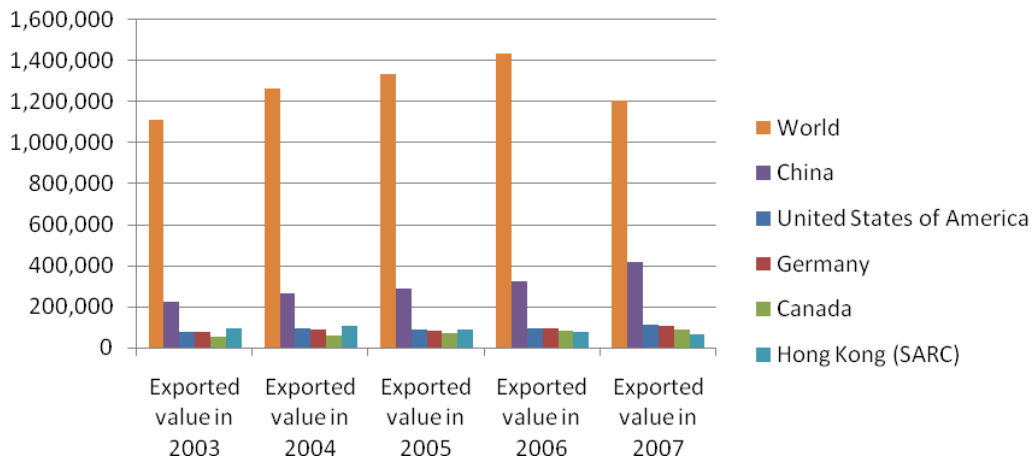
5.4.7. MAP

The imports of the MAP are most significant for USA, Hong Kong, Germany, Japan and Singapore, while the exports are from USA, Hong Kong, Germany (re-exports) and China and Canada.

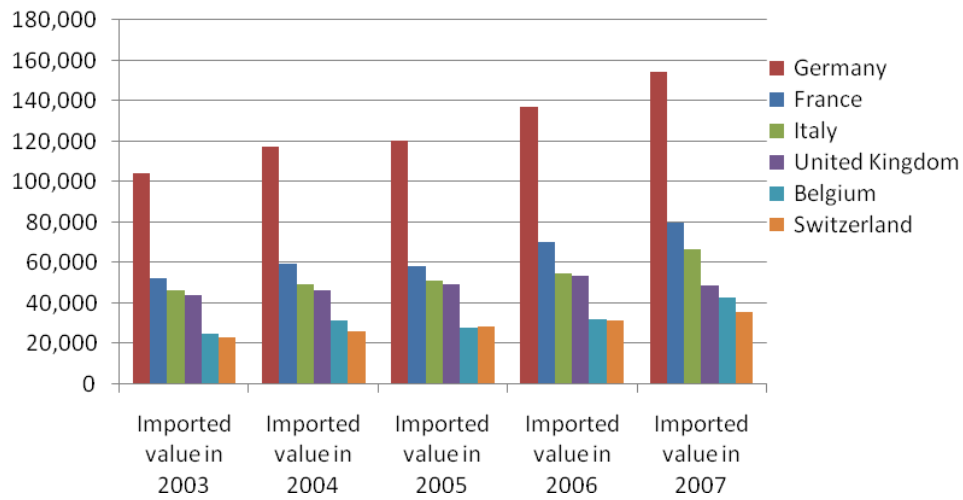
World's Import & the TOP 5 Country Importers of MAP ('000\$)



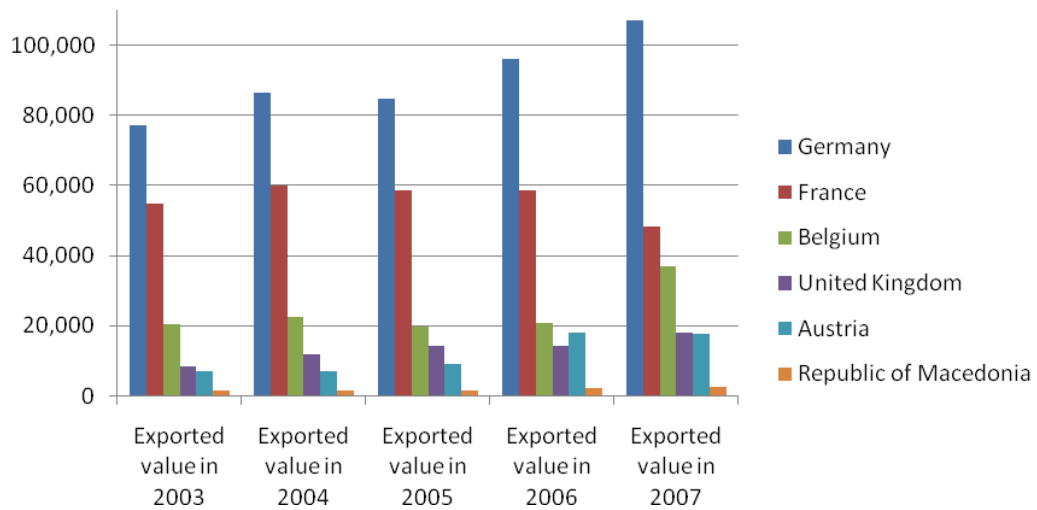
World's Export & TOP 5 Country Exporters of MAP ('000\$)



TOP 5 European Country Importers of MAP ('000\$)



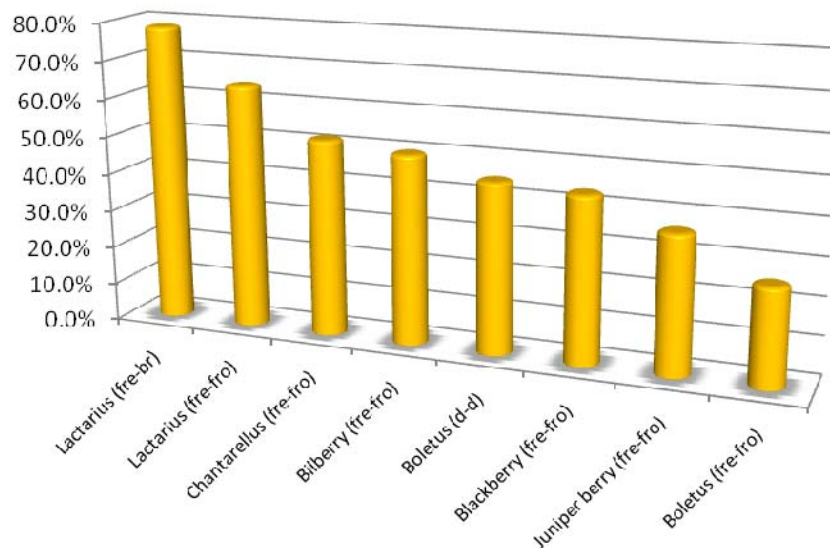
Top 5 European Exporters & MK of MAP ('000\$)



5.5. Prices

Average prices of selected WGP products in the last three years ¹¹ EUR/kg						
Product	Product group	Buy-out Price		Selling Price		Gross Margin %
Wild Mushrooms	Boletus	5.2	Fresh	7.0	Frozen	25.7%
	Boletus	22.0	Dried	40.0	Dried	45.0%
	Chantarellus	12.0	Fresh	25.0	Frozen	52.0%
	Lactarius	2.2	Fresh	6.2	Frozen	64.5%
	Lactarius	0.9	Fresh	4.2	Brined	78.6%
Berries	Blackberry	0.9	Fresh	1.6	Frozen	43.8%
	Bilberry	1.6	Fresh	3.2	Frozen	50.0%
	Juniper berry	0.7	Fresh	1.1	Frozen	36.4%

Gross Margin % for WGP



The average prices in the table above are based on the interviews conducted for this study. The prices are expressed in Euro per kg, where the traders and processors gave information on the average price they pay to the gatherers and/or agents who are supplying them with material and the selling prices for their clients mainly on their export markets.

The information above indicates that the raw material is mostly bought as fresh as collected, except for the Boletus mushroom which can be supplied to the traders and processors in semi-processed form through drying. The fresh wild mushrooms bought from

¹¹ Information projected of the received data from interviews

the traders are then frozen, dried or brined. The berries are mostly frozen and then sold to the export markets.

The highest selling price per kg of the wild mushrooms listed above is dried Boletus where the gross margin reaches 45%, however even though the price of the Chantarellus and the Lactarius is lower per unit, the gross margin achieved per kilogram of frozen Chantarellus reaches 52%, frozen Lactarius has an average gross margin of 64%, and brined for Lactarius 78%.

The wild berries have lower price per kg compared to the wild mushrooms however the gross margin that the traders get from frozen berries, is also significant, and range from 36% for frozen juniper berry and 50% for frozen bilberry.

6. Employment within the WGP's Value Chain

The employment data related to WGP in official data bases does not exist. The reasons for these lay on the limitations in collection of such data, since there is no registration of collectors, as no registration of the large portion of seasonal workers, engaged during the season. In this respect the following data is based on the interviews with companies, State Statistical Office and Ministry of environment and spatial planning, as an orientation data for the sector.

Collectors

The number of collectors is around 12.000 people on the national level. This data arises from the quantities buy-out by the companies, and quantities exported, with some averages for collection quantities of mushrooms, lichens, berries and MAPs. The number of collector is increasing. Even the collection is traditional activity of the population living near the forests; it used to be diminished during the phases of industrialization of Macedonia. The collection was again re-introduced as the market required high quantities with good buy-out of the products from the early 90's. In the recent period (last 3-5 years) the number of collectors increases. Many middle age people, unemployed, coming out from the large bankrupted companies involve themselves as collectors. Pressured by great poverty and limited job opportunities, the high altitude areas in Macedonia continue their tradition for collection.

Buy-out companies and traders

The buy-out companies and independent traders are almost the same that organize the export. There are approximately 80 companies and around 100 independent, not registered traders that organize the buy-out of the products.

Processing and Export

The processing is organized in around 20-30 companies in Macedonia, where the estimations are that around 600 persons are permanently employed. The companies engage around 3000 persons during the season in the processing. The processing companies organize the export of the products.

As a general overview around 20.000 families in Macedonia have regular links in the sector, season by season. The sector employees around 600 persons, engages around 3.000 seasonal workers for a period of 4 months, meaning additional 1000 permanent employments.

The employment opportunities are large, but they depend on the organization and regulation of the sector. Once the integrated system of collection, processing and export monitoring will be organized¹², it will be much easier to record the number of employments as well as to plan future business, further employments.

7. Legal Framework for the WGP

In Republic of Macedonia there is regulation on the collection of wild products (including wild mushrooms, MAP and lichens). The regulation is consisted of:

- *Forest Law -It authorizes the public enterprise "Makedonski sumi" to manage with all natural resources on the forest areas;*
- *Regulation on the methods for use and collection of non forest products, where the companies are supposed to pay for the use of forests, based on the previously signed Contract with the public enterprise or the Ministry of Environment;*
- *Nature Protection Law that regulates the protection of the biodiversity through establishment of system of measures for protection of the wild species, their habitats and ecosystems and secures the sustainable usage of it. The Law regulates the existences and compilation of red lists of threatened fauna and flora (including wild mushrooms, MAPs, lichens), and regulates the system of permits for trade (export) of threatened species by issuing export permit D4 and CITES certificate for trade of species on the CITES list;*
- *Strategy for protection of biodiversity of Republic of Macedonia with Action Plan, adopted in 2004 providing directions for sustainable use of the nature resources, and stimulating the cultivated production of medicinal and aromatic plants.*

Collection Standards

Republic of Macedonia has not adopted its own collection standards for WGP. It relies on the international standards for collection, accepting it through ratification of conventions and international agreements for WGP collection, protection and trade.

¹² *As it is planned by the Ministry of Environment and Spatial Planning it should be in force from March 2009*

The standards commonly state that the area where gathering takes place has to be identifiable. Sustainability and/or stability are key words in the standards. Standards specifically require collection to take place only from a stable ecosystem. All standards require gathering to be carried out in a manner that does not exceed sustainable yields. Most of the standards deal with the collection activity and leave open whether or not the land used for collection of specific products is cultivated. The standards merely apply to the collected products and include some additional requirements to prevent contamination with prohibited substances. (More on international standards in Annex 1)

Contamination/Laboratory Tests

Wild collection areas must not have been treated with non-allowed substances in recent history, usually for a period of at least three years. The contamination is various, from extensive use of farmland in the surrounding of the collection area, to heavy industry air, water or soil pollution. The contamination of the wild collection areas at moment is solved through the process of organic certification of the collection area, where all the contamination factors are covered and analyzed.

In the several decades experience, Macedonian products are almost no contaminated, meaning even there are certain levels of contamination substances acceptable, and our products show almost no presence of it. At the moment the products in Macedonia are checked for contamination only if they are for export, when it is required to have Radiological Certificate. Two laboratories are certified for these tests, one in the Republic Health Protection Agency, and one at the Veterinary Faculty. The tests are checking the presence of Ce_{137} and Ce_{134} . Macedonian products show almost no presence of radioactivity, as the permitted limit is 600 berkelium, and in Macedonian mushrooms are up to 50 berkelium.

Trade permits

Macedonian Law on nature protection, as well as the ratified conventions on protection of threatened species of flora and fauna, and the convention of trade of threatened species (CITES) regulate that the export of these species must be based on the export licenses issued by the Ministry of Environment and Spatial Planning. Each company that plans to export any of the threatened species of lichens, medicinal and aromatic plants or wild mushrooms placed on the List of threatened species (Annex 2), must apply for export license. The section for protection of nature within the Ministry of Environment and Spatial Planning (MOEPP) based on the requested documents (Registration List of the company, Application Form, and previous used license for export) gives recommendation for the quantity and species that the applicant should be licensed to export in the next six months. The legal sector within the MOEPP approves the recommendation and the license is finally issued by the Minister.

The section for protection of nature also recommends the prohibition for export of certain species for certain time period to the Minister, where he decides whether and for how long should be prohibited.

In the interviews made with the representatives of this sector it is obvious that the recommendations are given mainly based on the previous experiences. For any serious, integrated approach in measure of the supply, regulation on the quantities exported and permits issued there is a need of existence of scientific information (mapping) as well as field information and full documentation on the trade.

At the moment this is not the case. There is some mapping for specific products realized on specific locations, but it is far less than it is required. There are no tracked and systemized information on the licenses issued and licensed used, even this information is required and should be submitted by the companies.

On the other hand the ratification of certain conventions for threatened species in many cases does not respond on the field situation in the country. The conventions imply certain regulations over the protection, trade, based on the international projections, researches. Many of the wild mushrooms in Macedonia are used sustainable, they appear in large quantities and they are not threatened at this stage, but according to the international conventions they are subject of regulation.

8. Main Issues in the Value Chain

- *The WGP's generate income for local population in the undeveloped areas of the country and it can be sold quickly*
- *The sector provides employment and can generate enough capital to create opportunities for next generations*
- *Labor in rural areas (particularly of the women) is rewarded*
- *The products are perceived as one of highest quality products on the export markets with recognized "brand" among traditional EU traders*
- *The products have more than one buyer*
- *There are price differentials depending on the quantity*
- *There are price differentials for different product qualities*
- *The supply depends mainly on the climate conditions*
- *No pre-harvesting activities*
- *It is nature sustainable activity*
- *A market chain exists that connects producers to consumers*
- *It increases tax revenues to national government and export earnings*
- *The sector is not organized*
- *The legal framework is not clear and operational (collection licenses, personal tax, concessions)*
- *The system on integrated management of the natural resources is not applied*
- *No mapping of the collection areas/quantities*
- *The prices are market driven*
- *Weak marketing and promotion of the sector*
- *Limited (traditional) markets*
- *No final products*
- *Absence of any type of branding*

9. Conclusions and Recommendations

- *This sector provides livelihood for the most vulnerable groups in Macedonia. This is especially relevant for mountain regions in Macedonia. Unofficially 20.000 people appear as collectors. Considering this, measures should be taken to ensure the further sustainable commercialization of this sector without jeopardizing the nature balance.*
- *There is conflicting information regarding the real possible harvesting capacity for different product. For more expensive mushrooms (Boletus and Morchella) it is wide spread opinion that majority of the mushrooms are collected. For other cheaper varieties this is not the case and opinion is that not more than 15% of the available quantities are collected. Without investing in detail mapping it will be very difficult to adequately consider the influence of this sector and the potential hazards that are connected with extensive harvesting.*
- *Scientifically Macedonia is very rich in its biodiversity. Unfortunately its biodiversity is not studied enough by the experts in order to make detailed inventory of the diversified species of flora and fauna. Further to that is essential to organize a process of mapping of different important WGP, analyze and valorize its importance from economic aspects and in the same time develop mechanisms for its protection.*
- *The whole system should be followed with adequate and appropriate monitoring mechanisms that will provide constant picture for this sector and provide necessary tools for protection of the most vulnerable and threatened species. In that sense it is very hard to identify what and where can be commercialized, to what level, and for how long.*
- *During the whole research we got conflicting information regarding the role of different government organizations/institutions in this sector. Although legally it appears that the public enterprise "Makedonski Sumi" and the National parks (for its territory) are responsible for organizing the sector, on the field you get different feeling. It will be essential to organize adequate mechanisms for future management and sustainable use of the available resources. This process should lead into adequately shearing of the responsibilities among all VC players.*
- *EPICENTAR has a very strong opinion related to the organization of the processors especially in the wild mushrooms chain. The high profits that appear at certain periods in combination with weak government monitoring structures contributed for creation of system where there is lack of information sharing and cooperation between the processors. Solving this problem is priority for the further SUSTAINABLE development of this sector. System of price control, common market approach, branding, and protection of endangered species could be established only through organized network of traders and processors that cooperate with the government for sustainable use of natural resources. Licensing of companies that could appear as buyers and exporters is strongly recommended.*
- *As it could be observed in this study majority of our export markets are three countries. The relations between Macedonian companies and traders from these countries are traditional. As a direct consequence of this limited market penetration very often our producers are facing problems for providing fair prices for their products. Often our products are re-exported on other markets by the*

traditional buyers. Limited attempts had been made to increase the potential markets and the value added for the product. Packing, labeling and certifying the production is limited in quantities.

- *The issues with personal income tax are especially valid for this sector considering the profile of the average collector. Few years ago there was an attempt to enforce collection of tax through processors that seriously damaged the sector and directly several companies. Although from then attempts were made to correct this problem, legally the problem still exists. It is strongly recommended to solve this problem.*

10. References

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Annex 1: Conventional collection international standards

The large majority of medicinal and aromatic plant species currently traded is collected from the wild. In addition to bodies active in the organic sector, there are several non-organic organizations and initiatives that also address wild collection practices. For organic standard setters these organizations and initiatives and their published documents or standards can be an important source of improvement of their wild collection standards.

Three non-organic standards dealing with wild collection are presented and compared below.

These are:

- *International Standard for Sustainable Wild Collection*
- *WHO Guidelines on Good Agricultural and Collection Medicinal Plants.*
- *FSC Principles and Criteria for Forest Stewardship*

ISSC-MAP

The development of an International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP) is a joint initiative of the German Federal Agency for Nature Conservation (BfN), World Wide Fund for Nature (WWF)/TRAFFIC, Germany, the World Conservation Union (IUCN), Canada, and the IUCN Medicinal Plant Specialist Group (MPSG) of the Species Survival Commission (SSC).

Based on existing general conservation guidelines, the initiative and the final standard is intended to provide specific guidance and criteria for the sustainable wild collection of MAPs. The initiative builds on existing principles and guidelines, such as those of IFOAM, the Forest Stewardship Council (FSC), and the Fair-trade Labeling Organizations International (FLO). The objective of ISSC-MAP is "to provide a framework of principles and criteria that can be applied to the management of MAP species and their ecosystem; to provide guidance for management planning; to serve as a basis for monitoring and reporting; and to recommend requirements for certification of sustainable wild collection of MAP resources.

The standard is divided into three sections covering responsible collection practices, legal and ethical requirements and responsible management and business practices. Each section contains principles and criteria, the latter indicating results of adherence to the principles. The development of indicators and verifiers is announced in order to complement the document.

GACP for medicinal plants

The World Health Organization (WHO) guidelines on good agricultural and collection practices (GACP) for medicinal plants⁹ were published in 2003. The main focus of this document is to improve the quality of herbal medicines, since poor quality may result in negative health consequences. Therefore the document predominately focuses on quality control and safety. A further objective is to encourage and support sustainable cultivation and collection.

The WHO GACP guidelines are divided into five sections. Section 1 provides an introduction, section 2 deals with good agricultural practices for medicinal plants and section 3 with good collection practices. In section 4 general technical aspects such as post harvest processing, packaging or labeling are covered and section 5 deals with other relevant issues, like ethical and legal considerations and research.

FSC policy on NTFP certification

Forest Stewardship Council (FSC) accredited certification bodies certify forest operations according to the FSC Principles and Criteria for Forest Stewardship. Although there are no specific NTFP standards, FSC allows certifiers to include certification of NTFPs in their scope of activity. NTFPs coming from certified forests may carry the FSC logo on-product. Standards used must be prepared or adapted in the region for that particular NTFP. Certifiers may also develop their own NTFP standards. FSC does not require that such standards be formally approved by FSC.

There is also a draft guidance document for certification bodies for the assessment of NTFPs. This document aims at applying FSC principles and criteria to the evaluation of harvesting methods of NTFP. The FSC certification scheme of NTFPs is still under development. Whether or not FSC will amend the existing policies and finally adopt the guidance document mentioned above is still being discussed.

Other forest certifiers like Rainforest Alliance or Soil Association, both FSC accredited, have already developed their own NTFP standards.

Rainforest Alliance, operating the Smart Wood programme for forest certification, published its own NTFP Certification Standards in November 2002.

A comparison has been done between the draft "Guidance for FSC accredited certification bodies in the assessment of non timber forest products (September 2000)", the WHO guidelines on good agricultural and collection practices (GACP) for medicinal plants, as well as the ISSC-MAP, and is presented in a table in Annex 3.

Annex 2: List of threatened species of wild mushrooms and medicinal/aromatic plants

List of threatened species of lichens, medicinal and aromatic plants

Дабов лишај (*Evernia prunastri* (L.) Ach)
Исландски лишај (*Cetraria islandica* (L.) Ach)
Аконитум (*Aconitum divergens* Panc.)
Пролетен гороцвет (*Adonis vernalis* L.) CITES II
Бел слез (*Althaea officinalis* L.)
Кучешки салеп (*Anacamptis pyramidalis* (L.) Rich.) Fam Orchidaceae CITES II
Мечкино уво (*Arctostaphylos uva-ursi* (L.) Sprengel)
Црвен кантарион (*Centaureum erythraea* Rafin)
Бивонов мразовец (*Colchicum bivonae* Gus.)
Македонски мразовец (*Colchicum macedonicum* Koshanin)
Мразовец (*Colchicum pieperianum* Markgr.)
Прстест (пегав) салеп (*Dactylorhiza maculata* (L.) Soo)
Велигденче, кралевско цвеќе (*Daphne blagayana* Freyer)
Крупен напрсток (*Digitalis grandiflora* Miller)
Темен напрсток (*Digitalis feruginea* L.)
Линцура (*Gentiana lutea* L. subsp. *symphiandra* (Murb.) Hayek) D5
Точкеста линцура (*Gentiana punctata* L.)
Обичен сладунец (*Glycyrrhiza glabra* L.)
Живоинов смил (*Hetechrysum zivojinii* Cernjavski&Soshka)
Крстест копитник (*Hepatica nobilis* Miller)
Обичен кантарион (*Hypericum perforatum* L.)
Изоп (*Hyssopus officinalis* L.)
Смрека (Modra smreka) (*Juniperus communis* L.)
Волчја нога (*Licopodium clavatum* L.)
Барско кокиче (*Leucosium aestivum* L.)
Горчлива (блатна) детелина (*Menyanthes trifoliata* L.)
Широколистен салеп (*Orchys laxiflora* Lam.) Fam Orchidaceae CITES II
Војнички салеп (*Orchys militaris* L.) fam Orchidaceae CITES II
Божур (*Peonia masculata* (L.) Miller)
Божур (*Peonia peregrina* Miller)
Петров крст (крстец) (*Paris quadrifolia* L.)
Пролетна јаглика (*Primula veris* L.)
Обична медуница (*Pulmonaria officinalis* L.)
Седефче (*Ruta graveolens* L.)
Бозел (*Sambucus nigra* L.)
Чистец (*Sideritis raeseri* Boiss&Heldr.)
Македонски шарпланински чај (*Sideritis scardica* Griseb.)
Емова мајчина душица (*Thymus oehmianus* Ronniger&Soshka)
Марианино лале (*Tulipa mariannae* Lindtner)
Шарпланинско лале (*Tulipa scardica* Bornm.)
Бела чемерика (*Veratrum aum* L.)
Криптограма (*Cryptogramma cryspa*)

Кралска осмунда (*Osmunda regalis*)
 Козинец (*Astragalus physocalyx*)
 Прстест салеп (бозовинаец ветен) (*Dactylorhiza sambucina*) fam Orchidaceae CITES II
 Родопски еноец (*Galium rhodopaeum*)
 Крунестоцветен граор (*Coronilla coronata*)
 Кандилка (*Fritillaria gussichiae*)
 Водено оревче (*Trapa natans*)
 Кокиче (*Galanthus nivalis*) CITES II
 Српска рамонда (*Ramonda serbica*)
 Марсilea (*Marsilea quadrifolia*)
 Воден папрат (*Salvinia natans*)
 Алдрованда (*Aldrovanda vesiculosa*)
 Див мајорам (*Origanum vulgare* L.)
 Обична жалфија (*Salvia officinalis* L.)

List of threatened species of wild mushrooms

Јајчарка, булка (*Amanita caesarea* (Scop:Fr.) Pers)
 Јајчеста мувоморка (*Amanita ovoidea* (Bull:Fr.) Link.)
 Кафеав дупчар (*Boletinus cavipes* (Opat.) Kalchbr.)
 Остроног вргањ (*Boletus appendiculatus* Schff.)
 Фехтнеров вргањ (*Boletus fechtneri* Velenovsky)
 Едноставен вргањ (*Boletus impolitus* Fr.)
 Напашен вргањ (*Boletus pulverulentus* Opat.)
 Кралски вргањ (*Boletus regius* Krobh.)
 Жолто-црвен вргањ (*Boletus rhodoxanthus* (Kromb.) Kallembach)
 Месест вргањ (*Boletus torosus* Fr.)
 Аметисна лисичарка (*Cantharellus cibarius* var. *amethysteus* QuOI)
 Игличарка (*Heřicium* spp.)
 Јудино уво (*Hirneola auricula-judae* (Bull:St.Am.) Berk)
 Мартовка (*Hygrophorus marzuolus* (Fr:Fr) Bres.)
 Циновска пуфка (*Langermania gigantea* (Batsch:Pers) Rostk.)
 Висока смрчка (*Morchella elata* Fr.)
 Ветрогонова габа (*Pleurotus eryngii* (D.C:FR) QuOI.)
 Моликово волчјо лепче (*Suilus sibiricus* (Sing.) Sing.)
 Тартуфи (*Tuber* spp.)
 Шампињони, ливадарки (*Agaricus* spp.)
 Меденки (*Armillaria* spp.)
 Црн вргањ (*Boletus aereus*)
 Летен вргањ (*Boletus aestivalis*)
 Напукнат вргањ (*Boletus reticulatus*)
 Обичен вргањ (*Boletus edulis*)
 Боров вргањ (*Boletus pinophilus*)
 Оловносива пуфка (*Bovista plumbea*)
 Црна пуфка (*Bovista nigrescens*)
 Полска пуфка (*Calvatia utriformis*)

Лисичарка (*Cantharellus cibarius* var. *cibarius*)
Црна труба (*Craterellus cornucopioides*)
Жолто еже (*Hydnum repandum*)
Рујница, портокалова млечка (*Lactarius deliciosus*)
Лососова млечка (*Lactarius salmonicolor*)
Полукрвава рујница (*Lactarius semisanguifluus*)
Крвава рујница (*Lactarius sanguifluus*)
Самовилско каранфилче (*Marasmius oreades*)
Конусовидна смрчка (*Morchella conica*)
Буковка (*Pleurotus ostreatus*)
Ѓурѓевка (*Calocybe gambosa* (Fr.) Donk; syn. *Tricholoma georgii* (Clusius: Fr.) Quel)
Костеновка (*Xerocomus badius* (Fr.: Fr.) Gilb.; syn. *Boletus badius* Fr.: Fr.)