# HERBS & SPICES
## SUB-SECTOR ANALYSIS

SOCIO-ECONOMIC IMPACT OF THE COVID-19 CRISIS IN AGRICULTURE

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## Acknowledgements

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# CONTENTS

# TABLES

# FIGURES

# LIST OF ACRONYMS

| | |
|---|---|
| AFSARD | Agency for Financial Support of the Agriculture and Rural Development |
| GAP | Good Agriculture Practice |
| FITD | Fund for Innovation and Technology Development |
| FVA | Food and Veterinary Agency |
| H&S | herbs and spices |
| HORECA industry | HOtels, REstaurants and COffee industry |
| MAFWE | Ministry of Agriculture, Forestry and Water Efficiency |
| MAPs | medicinal and aromatic plants |
| MASPs | medicinal, aromatic and spicy plants |
| ME | Ministry of Economy |
| NES | National Extension Service |
| NWFP | non-w ood forest products |

# EXECUTIVE SUMMARY

This report is focused on analysis of the sub-sector herbs and spices. The main objective of the study was to provide an in-depth overview of the situation and selected value chains in the sub-sector H&S with a special emphasis on key stakeholders' identification, identification of constraints, possibilities and power distribution in the selected value chains, effects of the COVID-19 crisis, possible innovations, IT solutions and digitalization, environmental, climate change and gender issues. The gathered data and information shall serve for recommendations for future sustainable development of the sub-sector H&S. The assignment has been performed under the guidance and supervision of the Social Inclusion Unit with participation of three national and one international consultant.

Data, information, discussion and recommendations presented in this report are based on team meetings, desk research information, available national documents and statistics, conducted telephone surveys for 41 agricultural producers and 15 agricultural companies, and 34 documented interviews with different H&S stakeholders.

The sub-sector H&S includes a variety of crops which are different by many means: botanical classification, production practices and utilization. There is no unit within the MAFWE responsible for the sub-sector H&S. In the current National Strategy for Agriculture and Rural Development 2014-2020, cultivated H&S are vaguely mentioned, without their clear position. The only official data about the H&S area of cultivation is from organic production. It is highly recommended that MAFWE and other responsible institutions should publish relevant production data, establish multidisciplinary working groups and ensure a clear position of H&S in future policy documents.

The cultivation area of H&S in organic production varies in years with an increasing trend. Yet, the area and number of H&S producers is very small, although production of 35 H&S crops is subsidized by the state. Nevertheless, there is need for clarification of the H&S crop list for subsidies to avoid their malpractice.

Additionally, H&S production and processing are financed under is IPARD Measure 7 – Farm diversification and business development, with very low utilization of this fund. Increased fund utilization can be achieved with better dissemination of IPARD fund benefits and assistance for the stakeholders in the application process.

The main actors in the H&S sub-sector are individual farmers and companies as primary producers; processing, trade, retail and HORECA companies. The value chains of herbal teas, lavender essential oils, herbs for fresh consumption, and paprika spice were analyzed in depth and evaluated for area and production, key stakeholders, value and markets.

The COVID-19 crisis has had a severe impact on sale prices and volumes, labour availability and transport in H&S primary production, while processing and trade were severely impacted in regards to procurement of raw materials and other inputs, transport of the products and engagement of workforce. No company reported a positive impact of the COVID-19 crisis on their business. Possible solutions for the impact of COVID-19 and similar crises are state aid to most vulnerable stakeholders (a short-term solution) and support for rapid business adaptation approaches in line with COVID-19 and similar crises (a long-term solution).

Digital solutions and IT tools are desirable in H&S sub-sectors, as good sources of information and promotion on social media. The best IT solution for H&S producers is introduction of mobile applications for a climate and natural disaster alert system connected to an early warning system for emergence of diseases and pests and their suitable treatment. Also, creation of digital content as videos of H&S production and processing processes might highly contribute to reinforcement and promotion of H&S products and companies. These materials can be used on social media for promotion of herb biodiversity and organic production, and can contribute to higher consumption of H&S products.

Entering the H&S production and business is an innovation by itself. Most of the producers who entered the production of medicinal and aromatic herbs are progressive and bold producers who wanted to start something new and challenging. There are several positive examples of innovation businesses in the H&S sub-sector which can serve as positive cases for development of innovative businesses (micro-salad production, innovative packaging and selling). Furthermore, production of H&S gives different opportunities for development of small businesses, particularly involving women as business developers and carriers: production of local herbal tea packages, production of homemade oil and spirt infusions with local herbs, production of artisan soaps, production of lavender bags, etc.

The H&S sub-sector shall be seen as one of the most environmentally and climate-change-friendly from all the agricultural sub-sectors because most of the production is done under organic certification that is environmentally friendly by all means. Cultivation of wild autochthonous herbs and old varieties for paprika spice is in line with current recommendations to combat climate changes. All these facts speak about the need for the H&S sub-sector to be further developed and supported as an advantageous one in terms of environment and climate protection.

The data collection and interviews for this survey were conducted after the first wave of the COVID-19 crisis, in July and August 2020. It is obvious that the COVID-19 crisis will continue in the next period, which speaks of its long-term and debilitating effects on the economy, including agriculture. This analysis should contribute to overcoming not only the effects of the COVID-19 crisis, but also to strengthen and improve the HS& sub-sector through initiation and support of small businesses that can be operated at home and provide supplementary finance to the family budget, especially to the most vulnerable families living in rural areas and having limited access to jobs and a source of income.

# 1. BACKGROUND

The pandemic caused by the new disease (COVID-19) is unique in the history of modern society and in addition to health facilities around the world, it has tested all other capacities in each country, regardless of the intensity of the impact on the infected, sick and dead.

In a pandemic, the movement of people and food and non-food goods is restricted, or at least slowed down and delayed. In such times, one thing is certain worldwide; it is essential that health and food production systems function. Agriculture is the only industry that provides primary products for fresh consumption and raw materials for the food and non-food processing industry. Hence, there is a necessity of agricultural activities in the "corona time". At this moment, the importance of agricultural producers, regardless of their size, and the independence of a region/country to produce enough quality food to meet the needs of its population is obvious.

During the pandemic, many scientists around the world sent a clear message that not a single inch of land should be left uncultivated and that agriculture and agricultural production should be the principle of management and priority of all countries that have favorable natural conditions for agriculture. The production and consumption of locally produced food is gaining importance in pandemic conditions due to limited communication and transport. But in a pandemic, the consumption of locally produced food is even more important because such food reaches table fresh, without additional treatments and transport that affect the content of nutrients, directly affecting the health and immunity of people. Such a concept of production and consumption of local products would lead in the long run to a sustainable production system, greater care for the environment and a sustainable local economy.

Agricultural production in the future, regardless of the development of the situation, must adapt to new economic conditions, rely on local resources (use of indigenous varieties, development of production of mineral and organic fertilizers, means of protection and other raw materials needed in agricultural production), agri-technical measures to be based on local scientific and professional research and recommendations, and undertake appropriate agri-technical activities based on previously performed laboratory analyses.

Living conditions at all levels set during the COVID-19 pandemic will make new life habits and behaviors in the post-COVID-19 time. The world will no longer be the same, including the

food production chain, from production areas to supermarkets and open-air markets as the last link in that chain. The faster and smarter agriculture adapts to the new rules, the more successfully it will deal with the consequences of the pandemic.

The UNDP Social Inclusion Programme initiates interventions that aim at rapid assessment of the effects of COVID-19 on companies within the agriculture sector. The analysis in the agriculture sector includes three specific sub-sectors: fruits, vegetables, and herbs and spices sub-sectors.

This report is focused on analysis of the sub-sector herbs and spices. The main objective of the assignment is to provide in-depth information and understanding of the situation of individual producers and MSMEs in the respective value chains of the herbs and spices sub-sector that were the most affected in the current situation under the crises caused by COVID-19. It needs to identify the actors involved, their linkages and the status of the appointed target groups in each value chain segment.

The analysis needs to assist in identifying constraints and opportunities for individual producers to participate in selected value chains, to analyze the differences in power (positions) in selected value chains, and to discover opportunities for individual producers to improve their position in the value chain, but also upgrade the status of MSMEs in the value chain, and thus improve the production and income from agriculture. It is especially important in view of the COVID-19 crisis and the limited access to market and sales for both target groups – individual producers and MSMEs of the sub-sector herbs and spices.

The assignment is performed under the guidance and supervision of the Social Inclusion Unit with participation of three national and one international consultant.

# 2. METHODOLOGY AND APPROACH

The main objective of the study was to provide an in-depth overview of the situation and selected value chains in the sub-sector H&S with special emphasis on key stakeholders' identification, identification of constraints, possibilities and power distribution in the selected value chains, effects of the COVID-19 crisis, possible innovations, IT solutions and digitalization, environmental, climate change and gender issues. The gathered data and information shall serve for recommendations for future sustainable development of the sub-sector H&S.

The national consultant performed information-gathering by desk research data collection, participation in the development of questionnaires for agricultural producers and processors and traders SMEs and field interviews with stakeholders in the sub-sector H&S. Additionally, the national consultant participated in all the meetings with other national and international consultants, the UNDP project management team, where different aspects and needs of this study were discussed and fortified.

## Desk research and data analysis

During the desk research, the national consultant gathered the available national reports, strategies, statistical data, as well as legislation and policy documents important for agriculture in general, including the H&S sub-sector. The majority of gathered documents are uploaded in the AgriTeamAnalyses group on Microsoft Teams.

## Value chain selection and elaboration

The H&S value chain selection was difficult to be made due to lack of official data about previously conducted sub-sectoral research, production areas and market values of the sub-sector products. During the ongoing process for the H&S value chain selection, there were several meetings with national consultants, the international consultant and the UNDP management team, where the indicators for value chain selections were discussed.

Based on desk research information, available national documents and statistics, as well as personal knowledge and field research, 4 value chains were selected from the evaluation and further in-depth elaboration – herbal teas, lavender essential oil, herbs for fresh consumption, and paprika spice. The evaluation criteria and evaluation scores of value chains in the H&S sub-sector are presented in Annex 1.

## Telephone survey

The telephone survey for agricultural producers and agricultural companies was conducted

by the research agency BRIMA DOO, part of the KANTAR Group under UNDP reference: RFP 44/2020 for conducting a survey on the effects of COVID-19 with the CATI (Computer Assisted Telephone Interview) method and the Questionnaire scripted for the CATI instrument.

The telephone survey for agricultural producers was conducted from 11th to 21st August 2020 with a random selection from the database of individual agriculture producers. The sample size of the target group was 41 agricultural producers of H&S.

The telephone survey for agricultural companies was conducted from 24th to 3rd August 2020 with a random selection from the database of companies in the H&S subsector – screening questions during the introduction that these companies are traders and/or processors of H&S. The sample size of the target group was 6 traders and 9 processors of H&S.

The research agency BRIMA DOO provided a detailed statistical, narrative and visual report from both telephone surveys. The provided data is used in the relevant chapters of this report.

## Interviews

During the field work, 34 interviews were conducted in total by the national consultant for the sub-sector H&S. The interviews were conducted mostly by phone and several in person.

As a pre-set interview, questions were used from the form presented in Annex 2. In the field work period 10 agricultural producers, 7 processors and traders, 2 input suppliers, 3 NGO organizations, 1 financial institution, 7 national institutions, and 3 experts were interviewed.

Data and information gathered from the field interviews are presented in this report, respectively in the relevant chapters.

# 3. GENERAL SUB-SECTOR OVERVIEW

The sub-sector H&S includes a variety of crops which are different by many means: botanical classification, production practices and utilization. There is no department or unit within the MAFWE that is responsible for the sub-sector H&S, nor a defined sub-sectoral group H&S within Article 22 from the Law on Agriculture and Rural Development (275/2019). In the National Strategy for Agriculture and Rural Development 2014-2020, cultivated H&S are merely mentioned several times, as crops which need more attention for future cultivation.

This position of H&S in the framework of agricultural national institutions is due to several factors:

- Different crops can be considered as H&S. Some of the plants when consumed fresh are classified as vegetables, while the same plants when consumed dried are considered herbs or spices;
- In some classification systems, the H&S classification is made according to their cultivation practices. There are herbs which are cultivated on a large scale as field and industrial crops, and others that are cultivated in protected areas as vegetables. In many agricultural textbooks and teaching curricula, H&S are presented as part of alternative crops, industrial crops, medicinal and aromatic crops. In Macedonian professional terminology, H&S are always associated with medicinal and aromatic plants, which is not fully correct;
- Additional confusion in H&S is brought by the final consumption and the industry they enter. Fresh and dried H&S may be consumed as food or they can enter the food processing industry, beauty and cosmetics industry, pharmaceutical industry and beverage industry. Thus, H&S are not typical agricultural crops, like vegetables, fruits and grapes;

The sub-sector H&S is 'invisible' regarding the official data. There is no statistical data to support H&S cultivation area and yields, neither from the State Statistical Office nor from MAFWE annual reports. According to the representative of MAFWE[1], the reasons for no H&S data about production, yield and market are small areas, small yields, unstable production, etc.

Partially, the sub-sectoral classification of H&S is stipulated in the Regulation for Directed Payments as part of the governmental Programme for financial support of agriculture, where different H&S are categorized either as field crops or vegetables. There is an extensive

1 Documented interview: MAFWE representative, 10.07.2020.

list of 32 annual MASPs[2] and a list of 13 perennial MASPs which are subsidised as vegetables (horticultural) crops. Since 2019, anise has been categorized as a field crop due to malpractice of subsidies.

Traditionally, MAPs are foraged from wild populations for personal usage and for selling. Wild herb collection is considered to be work which generated additional income for the rural population. According to the Nomenclature for Agricultural Products, products from forestry, hunting and fishing and services connected to them, wild herbs and forests fruits are listed as forestry products (НЗШРУ, 2018). Therefore, all the analyses in this study refer to cultivated H&S.

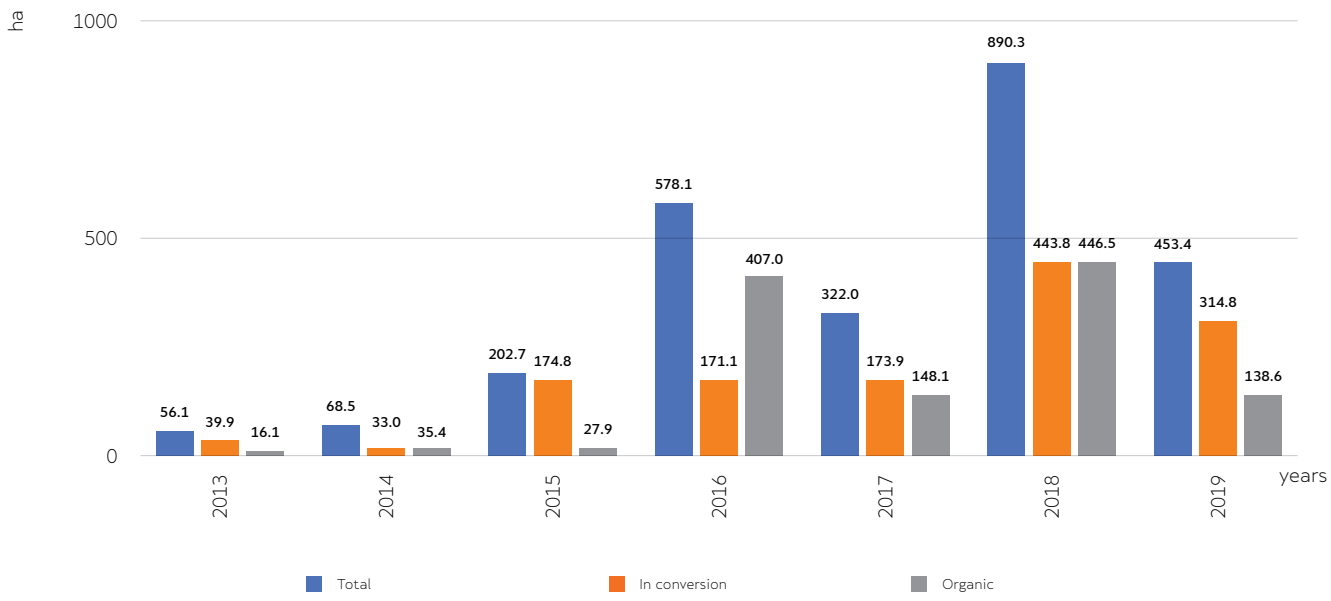
2 In Macedonian agricultural and professional terminology, plants under the sub-sector 'Herbs and spices' are recognized as either MAPs (medicinal and aromatic plants) or MASPs (medicinal, aromatic and spicy plants). In this report, the term 'MAPs' is used as an equivalent for 'herbs and spices' whenever official state documents are discussed. Also, the term 'MAPs' is used for 'medicinal and aromatic plants', which are herbs, different plants and part of plants used in production of herbal teas and the traditional and commercial pharmaceutical industry.

The IPARD National Programme 2014-2020 gives another insight to the position of the sub-sector H&S. In the IPARD National Programme 2014-2020, Annex 12: List of Annex I products from the Treaty, H&S are listed under:

- Chapter 09 – Coffee, tea and spices, excluding mate, and,
- Chapter 12 – Oil seeds and oleaginous fruit; miscellaneous grains, seeds and fruit; industrial and medical plants; straw and fodder, specifically.

Regarding the utilization of IPARD funds, the most important for the H&S sub-sector is Measure 7 – Farm diversification and business development. The type of eligible investment support is granted for investments in physical assets for introduction/modernization of alternative agriculture production on a farm as to increase the income potential of the agriculture holding. Support is granted to investments proposed for diversifying the economic activities in rural areas related to forestry and food processing, which are not supported under the measures "Investments in physical as-

Figure 1 **Cultivation area of H&S in organic production (2013-2019)**




Source: State Statistical Office, based on the Report on Organic Production published by MAFWE

sets of agricultural holdings" and "Investments in physical assets concerning processing and marketing of agricultural and fishery products", and the final product of the economic activities is not in Annex I of the Treaty (as presented in Annex 12 to the Programme).

Measure 7 – Farm diversification and business development – is open to different areas of: 1. Alternative agriculture production, including cultivation of herbs, seeds, and other spices and aromatic crops; and 2. Investments in the production of food products and beverages, including alcoholic products of grapes or fruit and beer, tea and herbal extracts and spices and herbs.

All the above stated contributes for better understanding of the sub-sector H&S and data, information and analysis further presented in this report.

## 3.1 Area and production

There is no data available (areas, yields, processed quantities, export-import quantities and values) for the H&S sub-sector in conventional production and the only official data available for herbs is in organic production with a detailed presentation of cultures and the area under cultivation, but no harvested quantities and yields.

The cultivation area of H&S in organic production is presented in Figure 1. There is a growing trend in organic cultivation of H&S from 2013 (56.1 ha) to 2019 (890.3 ha), with a 50% decrease in 2019 (453.37 ha). On the other hand, there is obvious diversification of cultivated crops from 2017 to 2019 (Table 1). In 2017, only 7 H&S were cultivated, the number of species increased to 14 and 17 in 2018 and 2019, respectively. The H&S crops cultivated on the biggest area are anise, fennel, dog-rose, milk thistle, curry pant, chamomile, lemon balm, lavender, and white mustard. Crops such as mint, marshmallow, thyme, cowslip, marjoram, sage and mountain tea are cultivated on areas of 2.5 ha or less. Parsley and rucola are the only H&S plants which are cultivated for fresh consumption and their organic cultivation is accidental and on insignificant areas. Yet, the number of H&S producers, individual farmers and compa-

Table 1 **H&S cultivation areas by crop (2017-2019)**[4]

| Crop | 2017 (ha) | 2018 (ha) | 2019 (ha) |
|---|---|---|---|
| Fennel | / | / | 259.36 |
| Anise | 206.78 | 438.24 | 41.21 |
| Dog-rose (*Rosa canina*) | 23.01 | 15.92 | 34.21 |
| Milk thistle (*Silybum marianum*) | / | 18.35 | / |
| Coriander | / | / | 19.40 |
| Curry plant | 16.06 | 3.47 | 17.06 |
| Chamomile | / | 34.63 | 14.00 |
| Lemon balm | 16.06 | 5.00 | 5.76 |
| Lavender | 6.10 | 7.93 | 7.25 |
| White mustard | / | / | 7.00 |
| Mint (ha) | / | 2.50 | 2.50 |
| Marshmallow | / | 1.30 | / |
| Thyme | / | 1.69 | 1.69 |
| Cowslip | / | 0.94 | 0.94 |
| Marjoram | / | 0.60 | 0.60 |
| Sage | / | / | 0.24 |
| Mountain tea (*Sideritis scardica*) | / | / | 0.07 |
| Parsley | 0.01 | / | / |
| Rucola | / | 0.04 | 0.03 |
| **Total area cultivated (ha)** | 268.02 | 530.61 | 151.96 |

Source: Registry for Organic Producers of Organic Agricultural Production in 2017-2019, MAFWE; own calculation

nies, is very small – around 25 organic producers in 2017 and 2019, and 64 organic producers in 2018[3].

The variation of the production size and number of producers show that this sub-sector is unstable and depends on many factors, such as market size, selling channels and state subsides. The visible decline of H&S size production in 2019 is due to a decrease of state subsides for anise production, when anise was transferred from MASPs to field crops (Regulation for closer criteria for direct payments 2018, 2019 and 2020 issued by the Government of the Republic of North Macedonia).

3 Registry for Producers of Organic Agriculture Production (2017-2019).

Table 2 **Quantity of exported and imported H&S in tons**

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | Average |
|---|---|---|---|---|---|---|
| Export (t) | 1,198 | 1,173 | 1,511 | 1,966 | 1,840 | 1,538 |
| Import (t) | 1,026 | 1,516 | 1,252 | 1,147 | 1,386 | 1,265 |
| Balance | 172 | -343 | 259 | 819 | 454 | 272 |

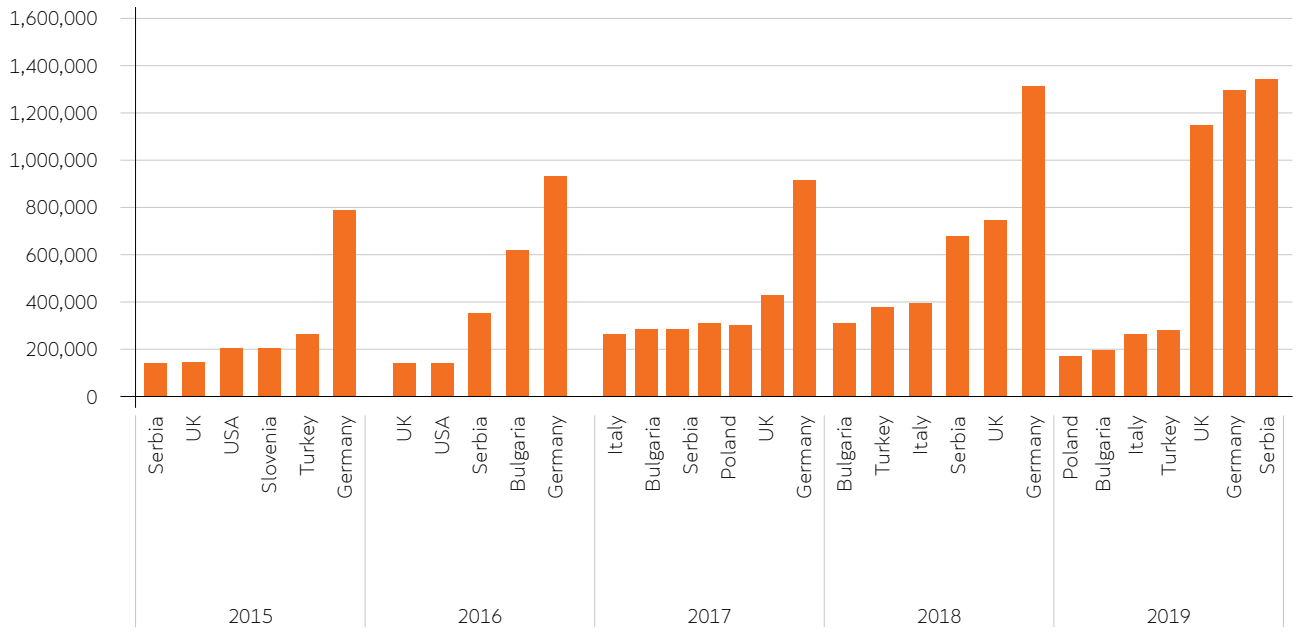
Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation

Table 3 **Value of exported and imported H&S in $US**

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | Average |
|---|---|---|---|---|---|---|
| Export ($US) | 2,952,557 | 3,236,172 | 3,783,685 | 4,902,869 | 5,631,470 | 4,101,351 |
| Import ($US) | 3,465,282 | 5,439,589 | 3,665,540 | 3,560,947 | 4,508,632 | 4,127,998 |
| Balance | -512,725 | -2,203,417 | 118,145 | 1,341,922 | 1,122,838 | -26,647 |

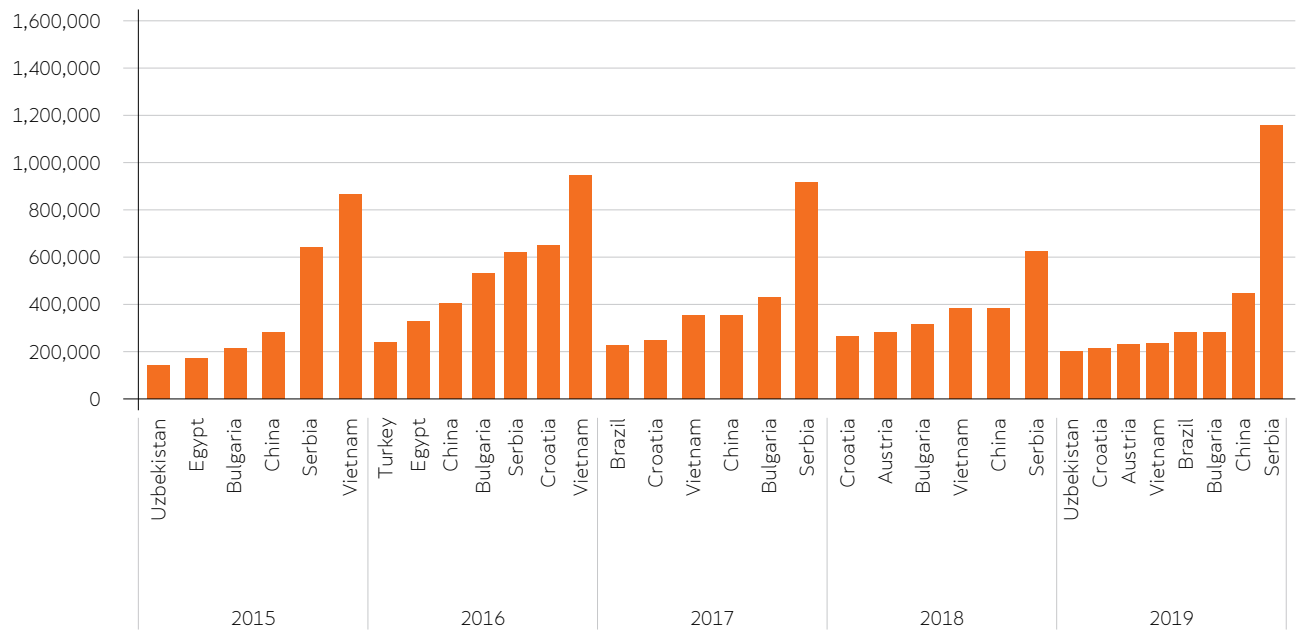
Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation

Figure 2 **H&S export markets in US$ (2015-2019)**




Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation.

Figure 3 **H&S import markets in US$ (2015-2019)**




Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation.

## 3.2 Key stakeholders

The key stakeholders in the sub-sector H&S are the main actors and sub-actors (supporters) of selected value chains.

The main actors in the sub-sector H&S are the following:

- agricultural producers of H&S;
- companies which produce, process and/or traders H&S;
- traders/retailers/of H&S and HORECA companies;
- Generally, the support/sub-actors in the sub-sector H&S are the following:
- agricultural suppliers of cultivation inputs (seeds, seedlings, fertilizers, pesticides);
- national governmental institutions: MAFWE, ME, AFSARD, IAPRD Agency, FVA, NES, etc;
- academia and experts: agricultural faculties, institutes and high schools, Faculty of Pharmacy, Institute of Biology, private advisory consultants and companies;
- organic certification bodies and quality assurance laboratories;
- agricultural non-governmental associations;
- national and international donator programmes and projects;
- financial institutions: commercial banks, bank savings, Macedonian Development Bank.

## 3.3 Value and markets

The exported quantities of H&S vary between 1,173 t (2016) and 1,996 t (2019), with 1,538 t average export in the past 5 years. The imported quantities vary between 1,026 t (2015) and 1,516 t (2016). The average imported quantity of H&S is 1,265 t in the past five years, with a negative balance only in 2016 (343.0 t) - (Table 2).

4 There is a difference between officially reported organic cultivated areas of H&S and calculated areas from the data presented in the Registry for Organic Producers (2017-2019).

The export value of H&S each year is increasing, and it ranges from $2,952,557 US (2015) to $5,631,470 US (2019), while the highest import value was noticed in 2016 ($5,439,589 US). On average, the country export and import values of H&S are $4 million US (Table 3).

The highest export values of H&S are reported for Serbia, the UK, the USA, Slovenia, Italy, Turkey, Bulgaria and Germany. Germany is the best export destination for H&S (Figure 2). The highest import values of H&S are reported for Uzbekistan, Egypt, Bulgaria, Serbia, Croatia, Vietnam, China and Serbia. Serbia, China and Vietnam are countries which most H&S are imported from (Figure 3).

The export/import quantities and values show that although H&S are a small production and processing sub-sector, still they highly contribute to the agricultural economy taking into consideration the size of production to export values. A comparison between H&S export in 2019 (1,840 t with a value of $5,631,470 US) and tomatoes (20,190 t with a value of $13.2 million US)[5] shows that H&S are more expensive export commodities as compared to tomatoes. Future development of sub-sector products can be directed in the production of commodities and raw materials that are now imported, and the production of semi-final final products that shall have higher export values compared to the export of H&S as raw materials.

5 Data from the analysis underway VEGETABLE SUB-SECTOR ANALYSIS, Socio-Economic Impact of the COVID-19 Crisis in Agriculture.

# 4. VALUE CHAIN OVERVIEW

## 4.1 Value chain – Herbal teas

### 4.1.1. Area and production

The Republic of North Macedonia is very rich in wild medicinal and aromatic herbs that can be cultivated for different utilization, including processing for herbal teas. Cultivation of medicinal and aromatic herbs is a relatively new practice in the country. Traditionally, the herbal tea industry is based on wild herb collection, redemption and processing in herbal teas for different purposes, such as herbal infusions, medicinal mixtures, nutritional supplements, etc.

Table 4 presents cultivated areas in organic agriculture with crops and herbs that can enter the herbal tea industry. It is worth noting that some of these crops/herbs, such as fennel and anise, except for the herbal tea industry, can enter the beverage and food processing industry. Lemon balm, besides the tea industry can enter the industry for essential oils. Obviously, there are fluctuations in the area and crops cultivated within the years: in 2017 only anise and dog-rose were cultivated, in 2018 – 8 crops, while in 2019 the number increased to 11 different herbs. Until 2019, anise and fennel were not separated as crops, hence the first data for fennel cultivation is reported in 2019. The decrease of anise cultivation in 2019 is due to transfer of anise from MASPs (vegetables) to field crops under the Regulation for Direct Payments. There are significant areas under the production of mountain tea (*Sideritis*), but due to no subsidies for its cultivation, there is no evidence for the production. On 14.01.2020, the Government of the Republic of North Macedonia made a decision for Ordinance to supplement the Decree on closer criteria for direct payments, users of funds, a maximum amount and method of payment for 2020 (Official Gazette No. 13/2020), where *Sideritis scardica* and *Sideritis raeseri* are added in Appendix 3 (List of perennial cultivated medicinal, aromatic and spicy plants) of the Decree.

Table 4 **Cultivated areas of MAPS for herbal teas (2017-2019)**

| Crop | 2017 (ha) | 2018 (ha) | 2019 (ha) |
|---|---|---|---|
| Fennel | / | / | 259.36 |
| Anise | 206.78 | 438.24 | 41.21 |
| Milk thistle | / | 18.35 | 35.0 |
| Chamomile | / | 34.63 | 14.0 |
| Dog-rose | 23.01 | 15.92 | 19.4 |
| Lemon balm | / | 5.0 | 5.76 |
| Mint | / | 2.5 | 2.5 |
| Marshmallow | / | 1.3 | / |
| Thyme | / | 1.69 | 1.69 |
| Cowslip | / | 0.94 | 0.94 |
| Sage | / | / | 0.24 |
| Mountain tea | / | / | 0.07 |
| **Total** | **229.79** | **518.56** | **380.17** |

Source: Registry for Organic Producers of Organic Agricultural Production in 2019, MAFWE; own calculation

In 2019, in total 113.55 tons from 29 herbs were organically certified (Figure 4). Based on personal knowledge and field work, a majority of these quantities are wild herbs collected by wild herb collectors all over the country and redeemed by trading and processing companies. A majority of these quantities enter the processing and pharmaceutical industry for preparation of herbal teas for different purposes, including phytotherapy and other phytomedications.

In 2019, 1.000.000 units of herbal tea bags and small packages were reported for processing, 700.000 herbal tea bags and small packages for export and 1.400 units (200 g packages) of medicinal tea mixes.

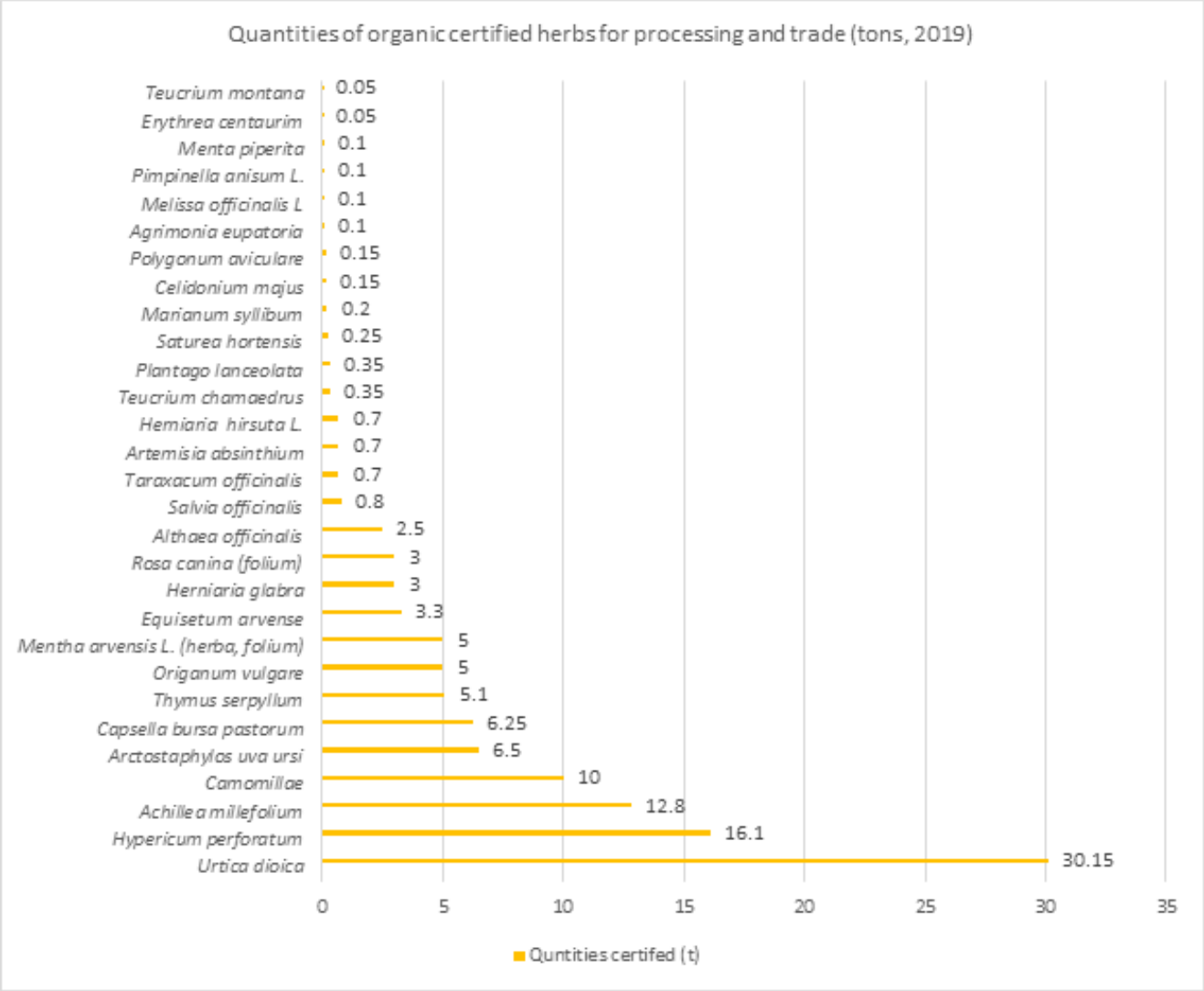
### 4.1.2. Key stakeholders

The key actors in the value chain of herbal teas are agricultural producers, companies in the herb business (primary producers, processors, traders) and wild herb collectors.

In 2019, there were 9 individual producers and 4 companies that cultivated anise (*Pimpinella anisum* L.), 3 individual producers of anise and 1 company that cultivated fennel (*Foeniculum vulgare* L.). Based on personal knowledge and field work, part of the anise and fennel production enters the herbal tea industry in Alkaloid or it is exported to EU countries as raw material for herbal teas and the food industry, while part enters the beverage industry for anise-based spirits.

There is no list of the exact number of mountain tea producers, but there is a very active group of producers in the Gevgelija area (village Sermenin, Kozuf Mountain), growers in the Skopje area (Kitka Mountain) and the Kriva Palanka area. In the village of Sermenin, there are 15-20 persons who cultivate mountain tea on 5-6 ha with an overall production of 6-7 tons. The pro-

Figure 4 **Quantities of organic certified herbs for processing and trade (tons, 2019)**



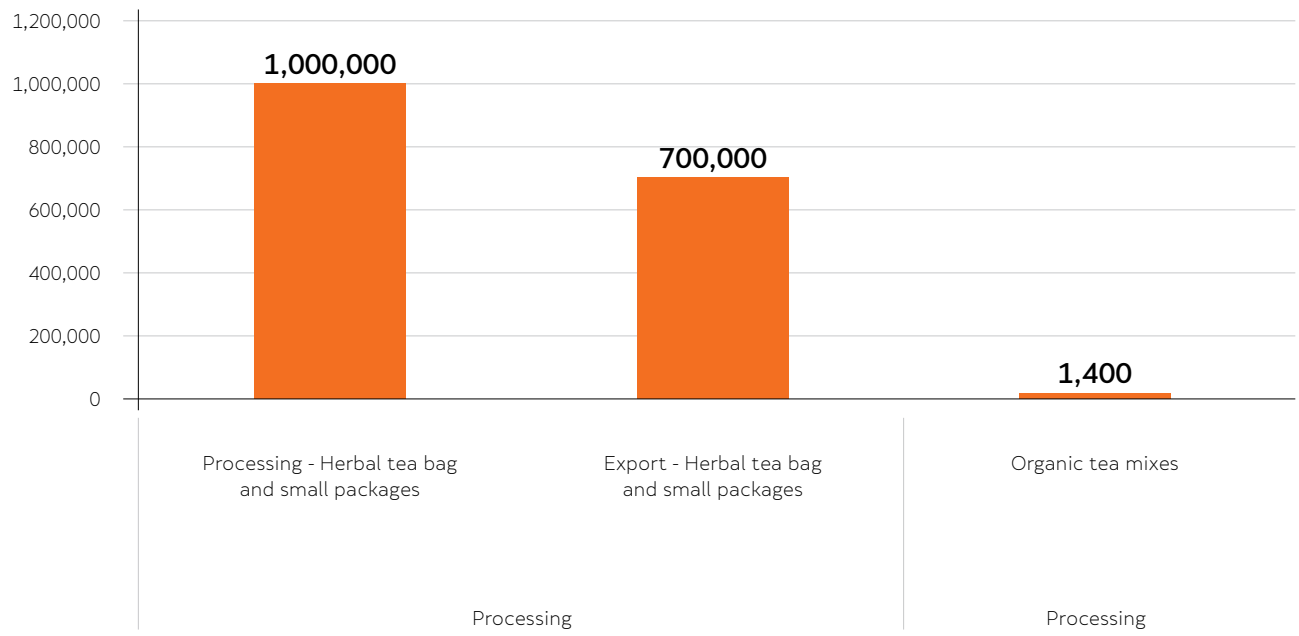

Source: Registry for Organic Producers of Organic Agricultural Production in 2019, MAFWE; own calculation

ducers collect seeds from natural populations of *Sideritis scardica* and cultivate it in their own fields. The producers don't cooperate with processors and traders due to low buying prices, but they sell dry tea through their own channels.[6]

There are collectors foraging wild herbs and they sell them either through their own distribution channels or to few processing companies and traders that buy and use it as raw material either for tea production or for export. Again, there is no official data about the quantities and prices. We shall bear in mind that wild collected plants are not part of agricultural production, but they provide additional income for the rural population. According to different sources, there are between 20.000 and

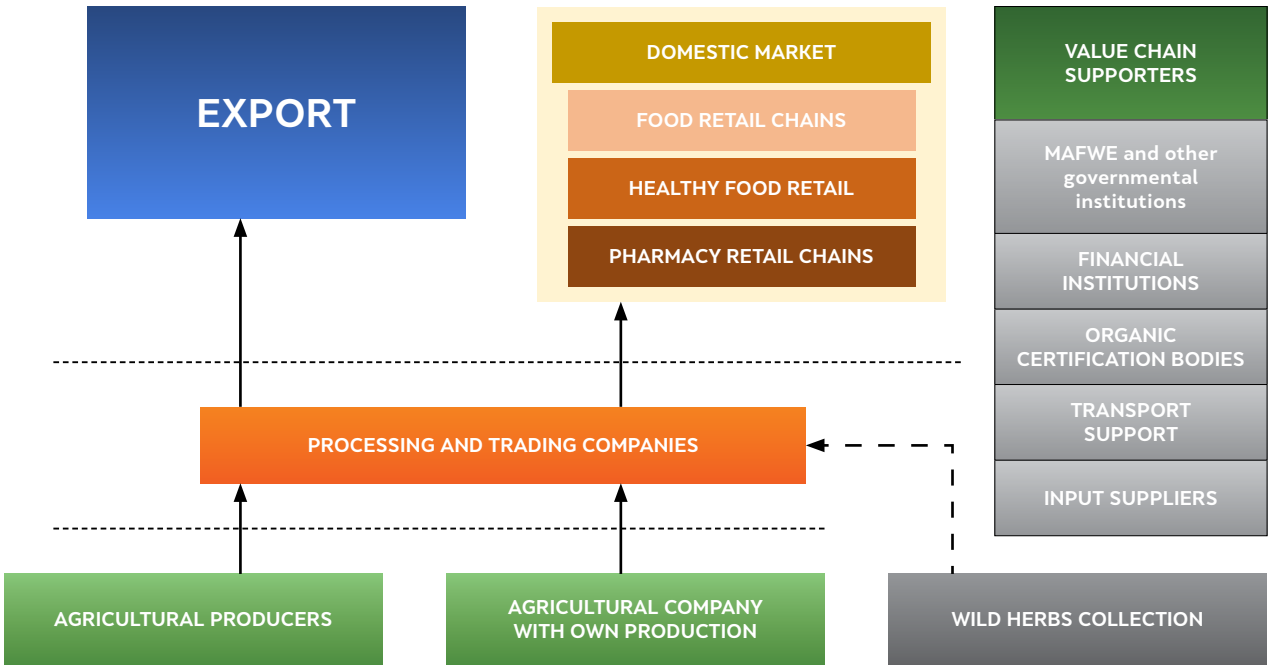
6 Information gained from field work. A documented interview with a *Sideritis scardica* producer from Gevgelija, June 2020. The phone interview was conducted as part of the preliminary information collection for the analysis of the herbs & spices sub-sector.

Figure 5 **Units of organic herbal tea and tea mixes (2019)**




Source: Registry of organic producers of organic agricultural production in 2019, MAFWE; own calculation.

Figure 6 **Herbal teas value chain map**



50.000 families that are engaged in collecting wild herbs, fruit and fungi in the country. In the past, wild herbs and fruits collectors were supported by different donor projects (UNDP, SIPPO, GEF, UNEP, etc).

At the moment, five companies are major actors in the MAPs business: Koro DOO/ Konimeks Holding, Flores DOO, Roza Kanina DOOEL and Alkaloid (a detailed description of the companies' profile is given in Annex 3). There is no official data for the size of the domestic market that these companies control. However, their competitors in the business are traders importing herbal teas.

Supporters of the herbal teas value chain are input suppliers, transport support, organic certification bodies, financial institutions, MAFWE and other governmental institutions.

### 4.1.3. Value and markets

According to the International Custom Nomenclature, herbs for herbal teas are listed and traded under the HS code 121190 – "Plants and parts (including seeds and fruits) n.e.c. in heading no. 1211, used primarily in perfumery, pharmacy or for insecticidal, fungicidal purposes; fresh or dried, whether or not cut, crushed or powdered". Export and import quantities and values presented in Table 5 and Table 6 refer to all herbs traded under the HS code 121190. These commodities include many plants and parts of plants which have different utilization and are recognized as MAPs in the EU and world terminology, thus further will be referred to as MAPs. There is no statistical data only for herbs for herbal tea export and import.

It is obvious that there is growing export and import of all herbs in the country, with the highest exported quantity (564.82 t) and value ($1,984,071.00 US) in 2019.

Table 5 **Quantity of exported and imported MAPs in tons (2015-2019)**

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|---|---|---|---|---|---|---|
| Export (t) | 205.85 | 270.05 | 200.12 | 403.85 | 564.82 | 1,644.68 |
| Import (t) | 191.67 | 385.65 | 183.45 | 162.37 | 235.85 | 1,158.99 |
| Balance | 14.18 | -115.61 | 16.68 | 241.47 | 328.97 | 485.69 |

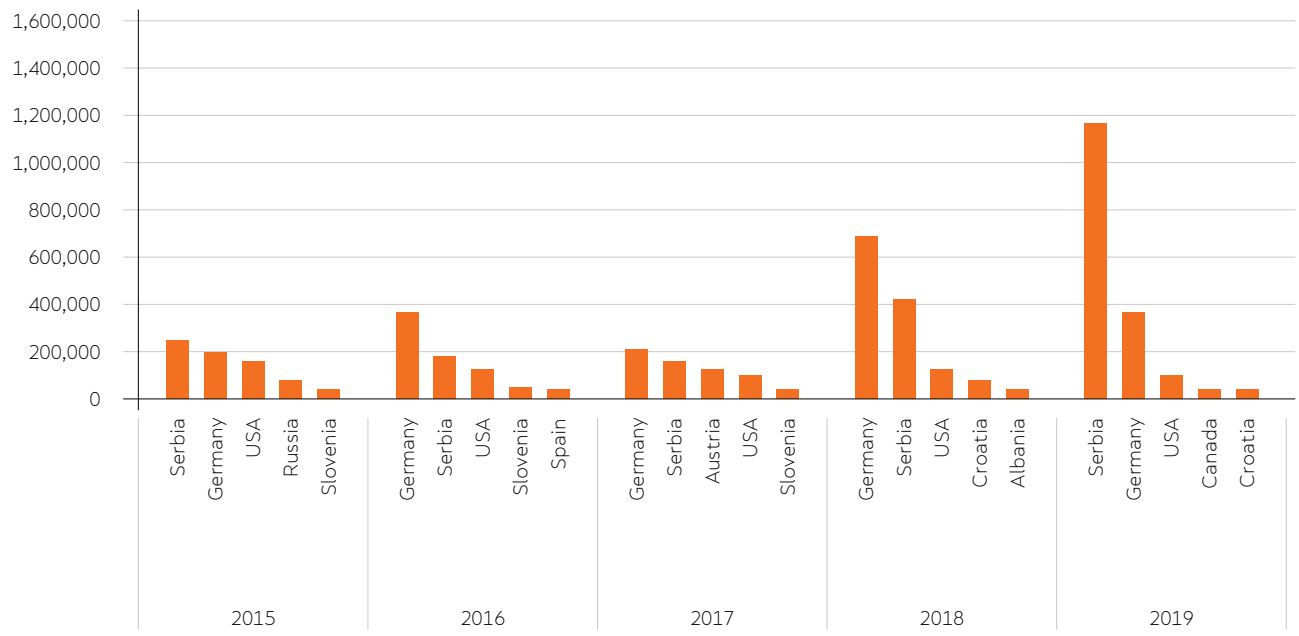
Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation

Table 6 **Value of exported and imported MAPs in $US (2015-2019)**

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|---|---|---|---|---|---|---|
| Export (t) | 1,042,907.00 | 1,104,440.00 | 901,753.00 | 1,692,628.00 | 1,984,071.00 | 6,725,799.00 |
| Import (t) | 1,060,996.00 | 2,217,518.00 | 1,078,811.00 | 1,333,899.00 | 1,816,022.00 | 7,507,246.00 |
| Balance | -18,089.00 | -1,113,078.00 | -177,058.00 | 358,729.00 | 168,049.00 | -781,447.00 |

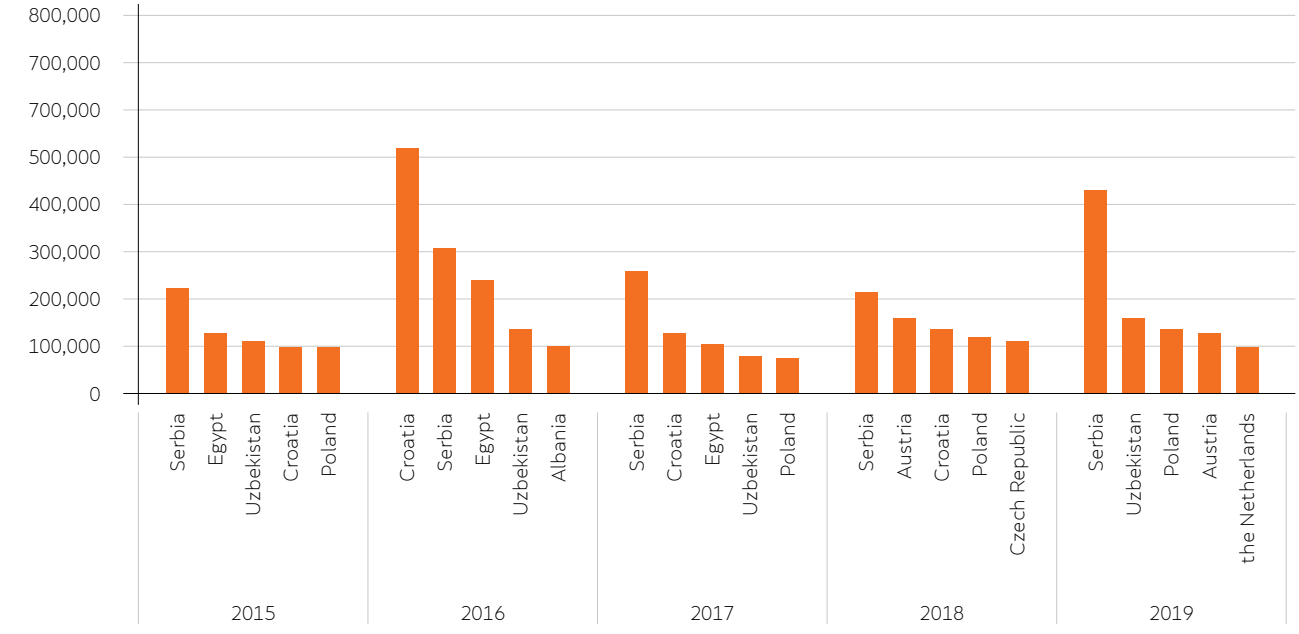
Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation

Figure 7 **MAPs export markets (2015 – 2019)**




Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation.

Figure 8 **MAPs import markets (2015 -2019).**




Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation.

In the last five years, the top export destinations of Macedonian MAPs are Serbia, Germany, the USA, Slovenia, Austria, Croatia, Spain and the Russian Federation (Figure 7). On the other hand, we import MAPs from Serbia, Croatia, Egypt, Uzbekistan, Albania, Poland, Austria, Czech Republic and the Netherlands (Figure 8).

The export/import data shows that the Republic of North Macedonia exports cheaper MAPs and imports more expensive ones. This is mostly due to export of raw and import of semi-ready or ready products. This information shows that the capacities for processing and development of products from MAPs that are available in the country shall be a priority for development of the H&S production and processing.

## 4.2 Value chain – Lavender essential oil

Botanically, there are at least 3 lavender species, but true lavender or English lavender (*Lavandula angustifolia*) is most commonly cultivated for extraction of essential oil. In the Regulation for closer criteria for direct payments 2020, only true lavender (*Lavandula angustifolia*) is listed as lavender species eligible for subsidises and it is mostly used for essential oil production.

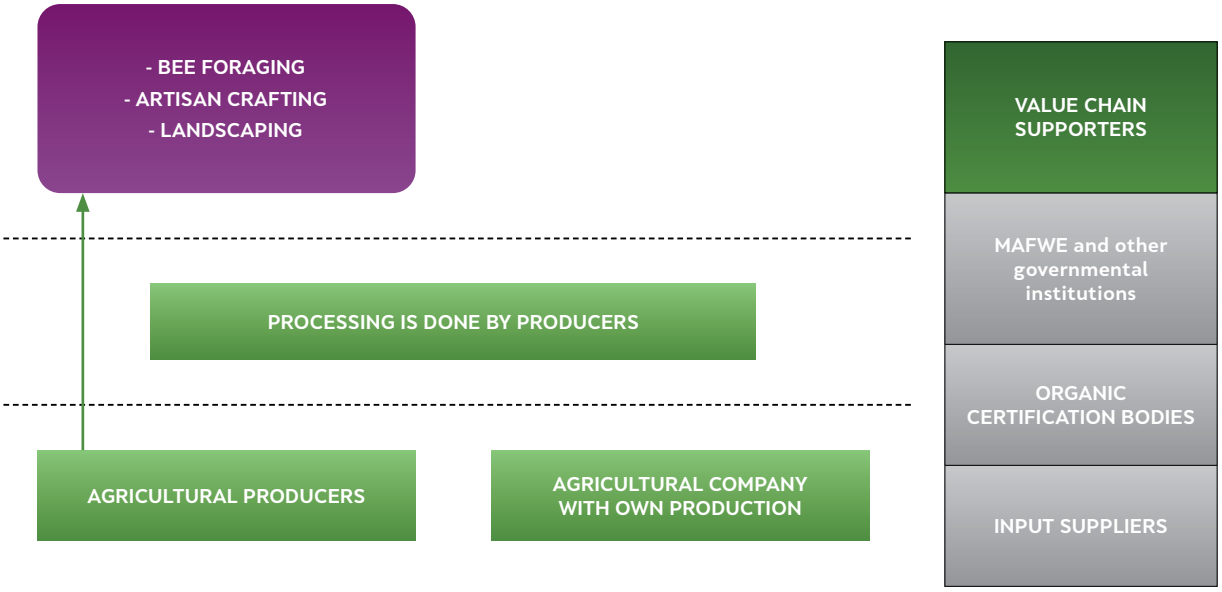
### 4.2.1. Area and production

According to the Registry for Organic Producers from MAFWE in 2019, 7.25 ha lavender are cultivated in the country by 5 producers, from which 4 are individual producers with small fields (a total production area of 1,95 ha) and one company 'Lavita Agro AB'[7] from Skopje (5.41 ha). There is no official data for harvest of fresh lavender biomass, neither for essential oil yields.

It is worth to be mentioned that beside laven-

7 Although the company 'Lavita Agro AB' was contacted several times for conducting a documented interview, there was no willingness for it to be conducted. The only information given was that lavender cultivation is a new business and it is difficult to sell it.

Figure 9 **Lavender essential oil value chain map**



der cultivation for essential oil, recently there are other herbs, such as curry plant and lemon balm, which are cultivated for essential oil extraction. Usually, individual agricultural producers and companies which are involved in medicinal and aromatic plant production for different purposes also cultivate herbs for essential oil extraction.

### 4.2.2. Key stakeholders

The key actors in the value chain of lavender essential oil are only agricultural producers. Lavender production has been introduced in the country in recent years from enthusiasts, organic farmers, beekeepers, and cosmetic artisans. Although the producers extract essential oil or hydrolat, they don't have regular buyers, and thus either keep it until further selling or find a way to include it in some artisan business. Since lavender cultivation and essential oil extraction is a rare and recent practice, the value chain insights are given by two individual cases noted during field work for this study (Annex 4).

Supporters of the lavender essential oil value chain are MAFWE, other governmental institutions, organic certification bodies and input suppliers.

### 4.2.3. Value and markets

There is no data available about the quantities, value and markets for lavender essential oil.

## 4.3 Value chain – Herbs for fresh consumption

Parsley and wild mint are herbs that in the Macedonian cuisine are used traditionally as fresh for flavouring salads and cooked dishes. Traditionally, they are grown in small home gardens, even in pots.

With the change of nutrition habits of the population and the development of the HORECA industry, there is growing need for a variety of fresh herbs, such as rucola, different varieties of mint, marjoram, estragon, corn salad (*Valerianllena locusta*). This need contributes to the introduction of a variety of fresh herbs into production practices of agricultural producers.

### 4.3.1. Area and production

Unfortunately, there is no data about cultivation areas and production quantities of herbs for fresh consumption. The complete absence of data for production of fresh herbs is due to small cultivation areas, which are not submitted for state subsidies and selling of the products mainly for cash. Thus, there is no system to evidence the area and production of these crops. Based on personal knowledge and conducted interviews, most fresh herb production comes from the South-eastern region (Strumica, Valandovo and Gevgelija), and smaller production in Skopje and the Veles area.

### 4.3.2. Key stakeholders

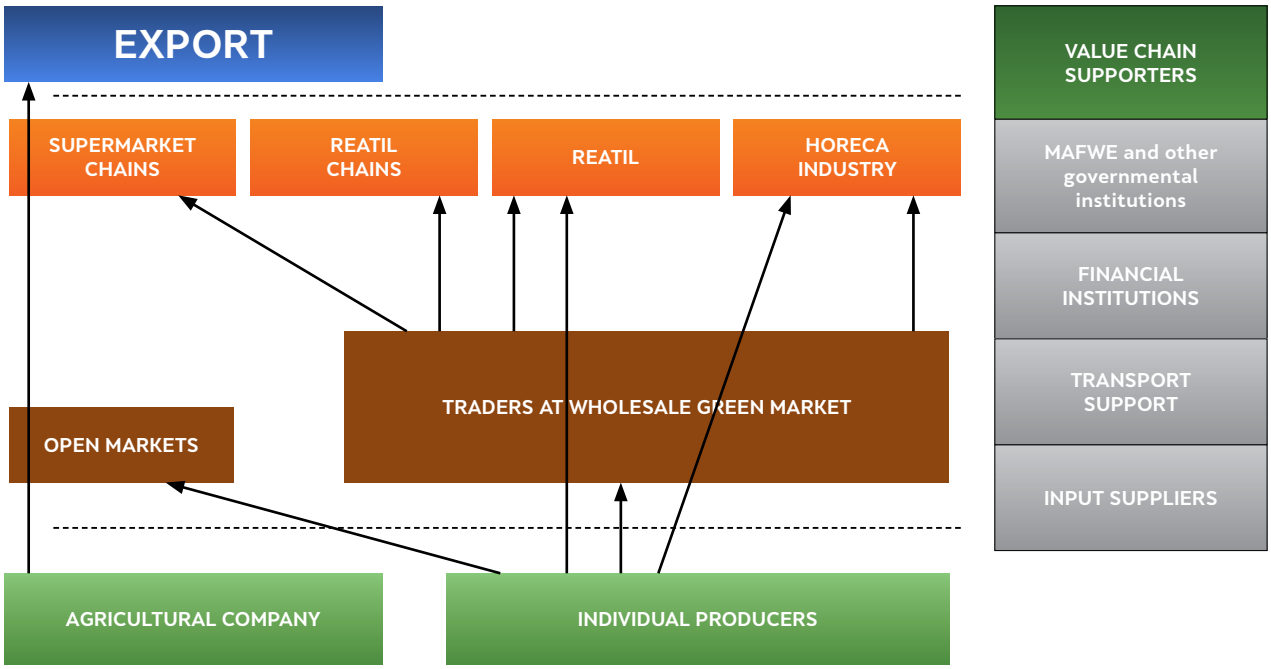
The key actors in the fresh herb value chain are producers, traders, retailers and the HORECA industry.

There are two types of agricultural producers of fresh herbs. The first one, who can be considered traditional fresh herb producers are very small-scale producers, so called gardeners (Мас: бавчаџија, бахчеваџија, бавчаџиство), who have small field plots near towns and produce a variety of horticultural crops (parsley, wild mint, celery, swiss chard, carrots, okra) and sell them personally as vendors at local open markets. This concept of fresh herb cultivation still exists, but it is done mainly by older producers and it is slowly disappearing as a profession. The second type of fresh herb producers is those who produce fresh herbs besides other crops (vegetables, fruits, grains...) or producers who do agriculture as additional work. Usually, they produce fresh herbs in protected conditions, and they see it as a source of extra cash income for their household. Three cases of fresh herb producers are presented in Annex 5 for better understanding of the fresh herb value chain.

Fresh herbs are sold via four channels: personally – by producers; traders; retailers and the HORECA industry.

1. Traders who operate at the wholesale green market in Strumica and Skopje – those traders work with a variety of horticultural crops and usually have close collaboration and

Figure 10 **Value chain map of fresh herbs**




personal contact with fresh herb producers. Mostly, they are in daily communication and traders pre-order needed quantities from producers for a certain day of delivery. Traders sell and/or distribute fresh herbs to their long-term clients, such as supermarket chains, the processing and HORECA industry.

2. Retailers (small shops, vendors at local markets) usually buy directly from the local fresh herb producers or from traders at the wholesale green market in Strumica and Skopje.

3. The HORECA industry supplies their needs for fresh herbs directly from the producers or from traders at the wholesale green market.

Supporters of the fresh herb value chain are MAFWE, other governmental institutions, financial institutions, transportation companies and input suppliers.

### 4.3.3. Value and markets

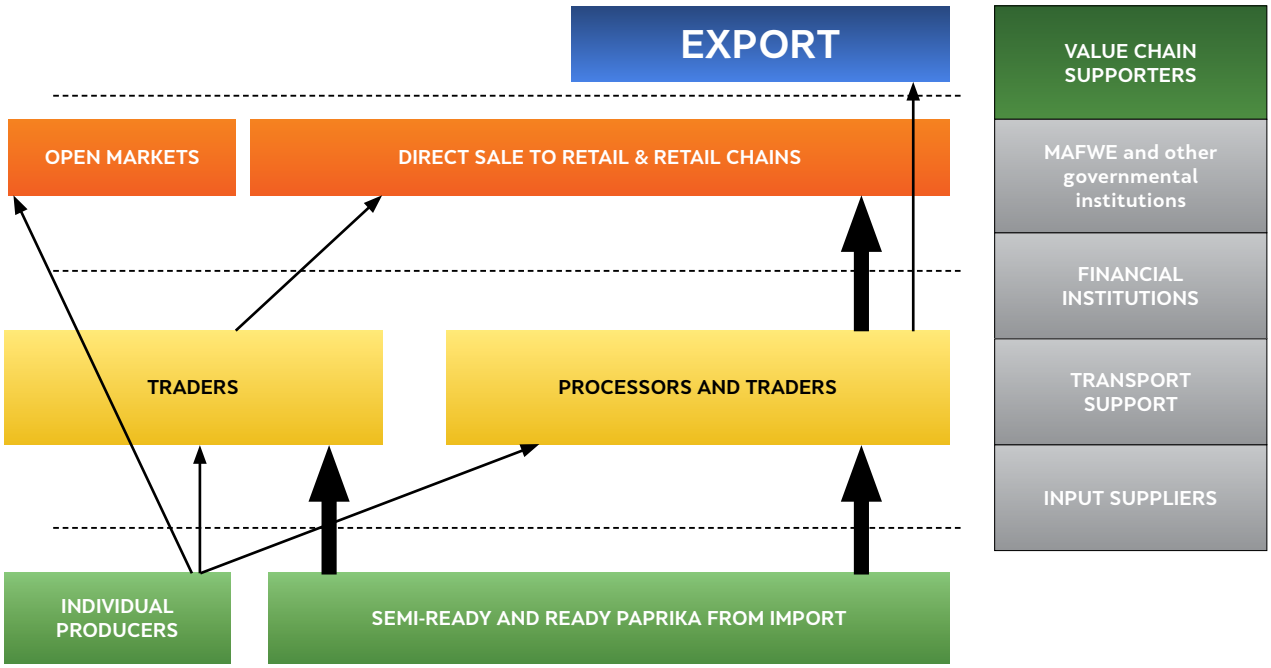
There is no data about the value and markets of the fresh herbs. The fresh herbs are sold in bunches packed in small plastic bags. The prices depend on market supply/demand, season and whether it is sold to traders, retailers or the HORECA industry.

Usually, fresh herbs are sold only domestically, with rare examples of export as the company 'Agro 9-ti km'. In supermarket chains imported 'ready-to-eat' rucola and other green mix salads are available from import, mainly from Greece.

## 4.4 Value chain – Paprika spice

Paprika spice is the most traditional spice used in the Macedonian cuisine for flavouring cooked dishes and an essential part of Macedonian roux for stews. In the Macedonian cuisine, paprika spice is as essential as salt and

Figure 11 **Paprika spice value chain**




black pepper. In the past, there were large areas cultivated with pepper varieties suitable for production of paprika spice. Also, there is a long tradition for cultivation of sweet and hot paprika varieties in home gardens. Fruits are sun-dried and used for homemade sweet and hot paprika spice, as well as preparation of many traditional foods in winter and during the religious periods of fasts.

### 4.4.1. Area and production

Pepper is widely cultivated all over the country, but all the data about cultivated areas and yields refer to pepper cultivation in general, without differentiation among pepper types and the purpose of their cultivation. Furthermore, pepper is subsidized as a crop, regardless of whether it is for fresh consumption, food processing or paprika spice processing. There is no official data about cultivation areas and yields, yet cultivation areas and quantities are decreasing over the years.

### 4.4.2. Key stakeholders

There are paprika producers, mostly in the Negotino (village Krivolak and Pepelishte), Demir Kapija (village Przdevo) and Bitola (villages Bukovo, Bistrica and Kravari) areas. It is produced on small plots; the raw material is processed into paprika spice by the growers and small quantities are sold to processing companies. Two cases of paprika spice producers are presented in Annex 6 for better understanding of their role in this value chain[8].

The companies 'Sika', 'Rajska gradina' and 'Agrova' do paprika additional processing and full processing in the country. 'Sika' and 'Agrova' have their own processing capacities in the village of Przdevo (Demir Kapija) and the village Coloshevo of (Veles). They buy pepper as raw material for paprika production from local growers, with additional import of paprika. The company 'Rajska gradina' uses imported paprika raw material and with additional processing and packaging sells it to local supermarket

8 Based on personal knowledge and information gathered during field work.

Table 7 **Quantity of exported and imported paprika in tons (2015-2019)**

| Year | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Export (t) | 7.7 | 15.7 | 9.4 | 29.9 | 9.7 |
| Import (t) | 406.7 | 478 | 350.7 | 392.3 | 421.6 |
| Balance | -399.0 | -462.3 | -341.3 | -362.4 | -411.9 |

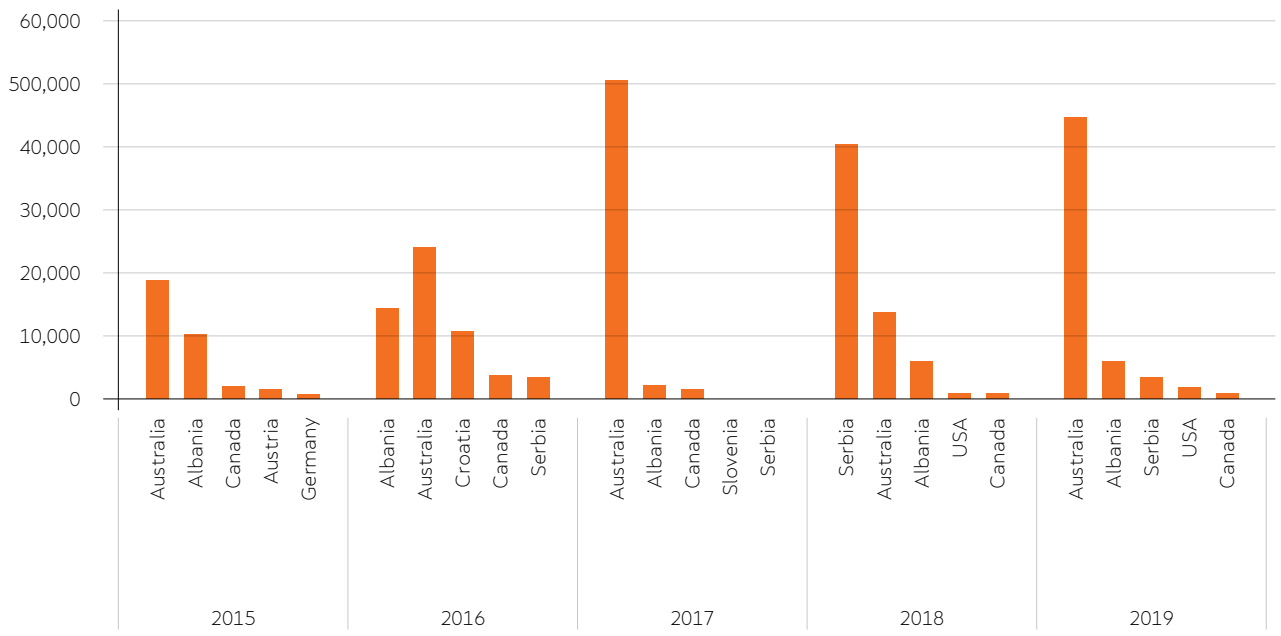
Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation

Table 8 **Value of exported and imported paprika in $US (2015-2019)**

| Year | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| Export ($US) | 34,684.00 | 58,298.00 | 55,120.00 | 62,935.00 | 56,795.00 |
| Import ($US) | 567,242.00 | 597,312.00 | 525,056.00 | 549,076.00 | 622,573.00 |
| Balance | -532,558.00 | -539,014.00 | -469,936.00 | -486,141.00 | -565,778.00 |

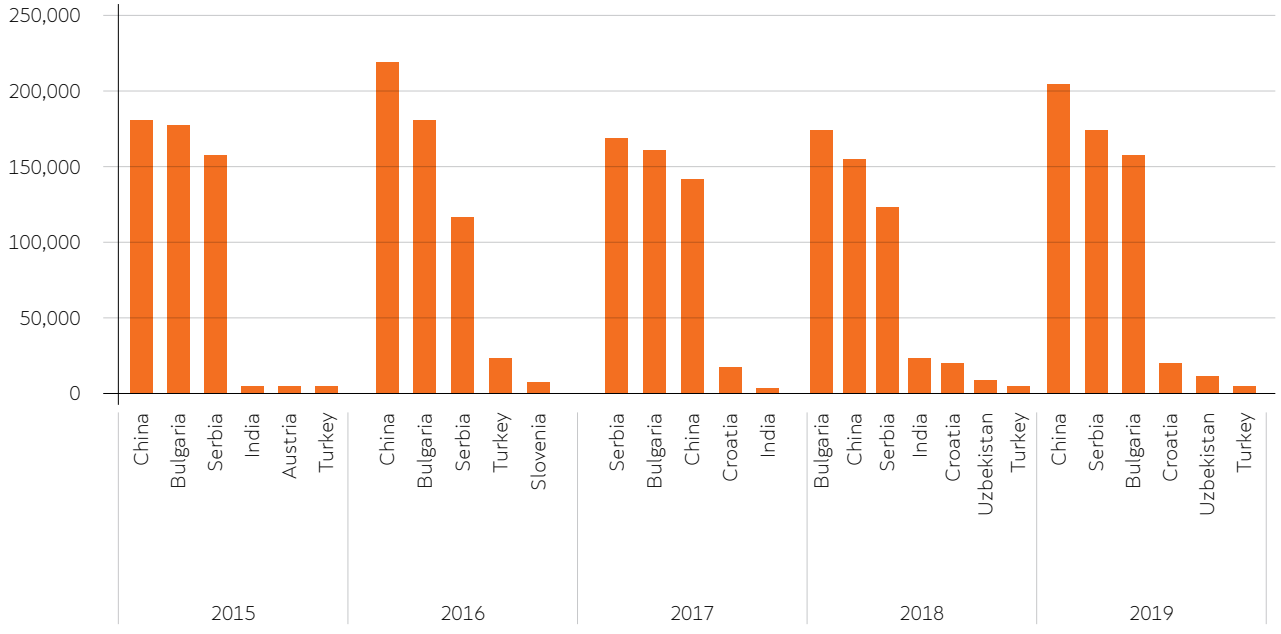
Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation

Figure 12 **Paprika export markets (2015-2019)**




Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation

Figure 13 **Paprika import markets (2015-2019)**




Source: UN COMTRADE Database, https://comtrade.un.org/data/, own calculation.

chains. Companies that do paprika processing also do trade with paprika and other dry spices[9].

There are many companies which do trading with dry spices, including paprika. The paprika spices they trade, re-pack and sell to retailers are imported and the country of origin is declared on the package.

Supporters of the paprika spice value chain are MAFWE, other governmental institutions, financial institutions and input suppliers.

### 4.4.3. Value and markets

According to the official export/import data, there has been a negative balance of around $500,000.00 US export/import value for paprika spice in the last five years (Table 7 and Table 8).

In the last five years, the export destinations of Macedonian paprika spice are Australia, Albania, Serbia, Canada and the USA (Figure 12), while paprika spice is dominantly imported from China, Serbia and Bulgaria (Figure 13).

The data presented shows that the Republic of North Macedonia imports raw material and paprika spice, although it has excellent conditions and a long-term tradition and experience in growing pepper varieties for production of paprika spice. The reasons for this situation are several: low redemption prices for raw material offered by the companies, small quantities and ununiformed quality of raw material and general decrease of number of agricultural producers. Yet, primary producers and processors cannot find a common language and interests to increase the production of paprika raw material, neither are processors willing to enter primary production of paprika raw material and make their business more sustainable. This shortage of paprika raw material is an issue to be considered in the creation of MAFWE policies and measures for stimulation of paprika primary production.

9 Based on personal knowledge and information gathered during field work.

# 5. MAIN FINDINGS

As stated in the previous chapter of this report, official data about the H&S sub-sector and selected value chains are scarce. Accordingly, all significant findings for selected issues important for this study are based on a telephone survey conducted with 41 agricultural producers and 15 processing and trade companies, as well as documented interviews conducted by national consultants during the field work.

## 5.1 Socio-economic impact of the COVID-19 crisis in agriculture

For about half of all targeted individual agriculture producers (49%), the COVID-19 crisis has an impact on their business, where 46% of agricultural producers of H&S declared that their agricultural business was affected by the COVID-19 crisis (Figure 14).

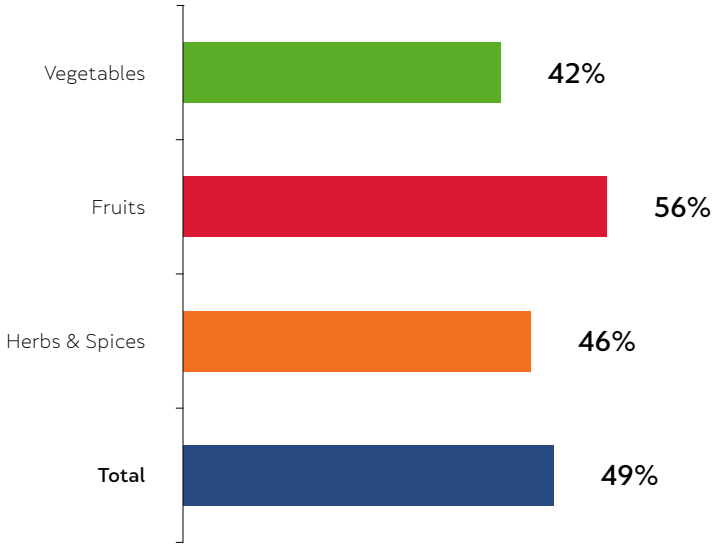
H&S producers who answered that COVID-19 has a negative impact on their work/business were asked about the severity of this impact for a set of aspects (Figure 15).

Among producers of H&S, the COVID-19 pandemic has the most severe negative impact on sales prices, sale volumes and labour availability, while transport was severely to moderately affected. The least affected part in H&S primary production was availability of production inputs.

The COVID-19 pandemic also has an impact on the agriculture producer's relations with buyers/ processors of their products. The most important effects, ranked by priority, from highest to lowest effect are:

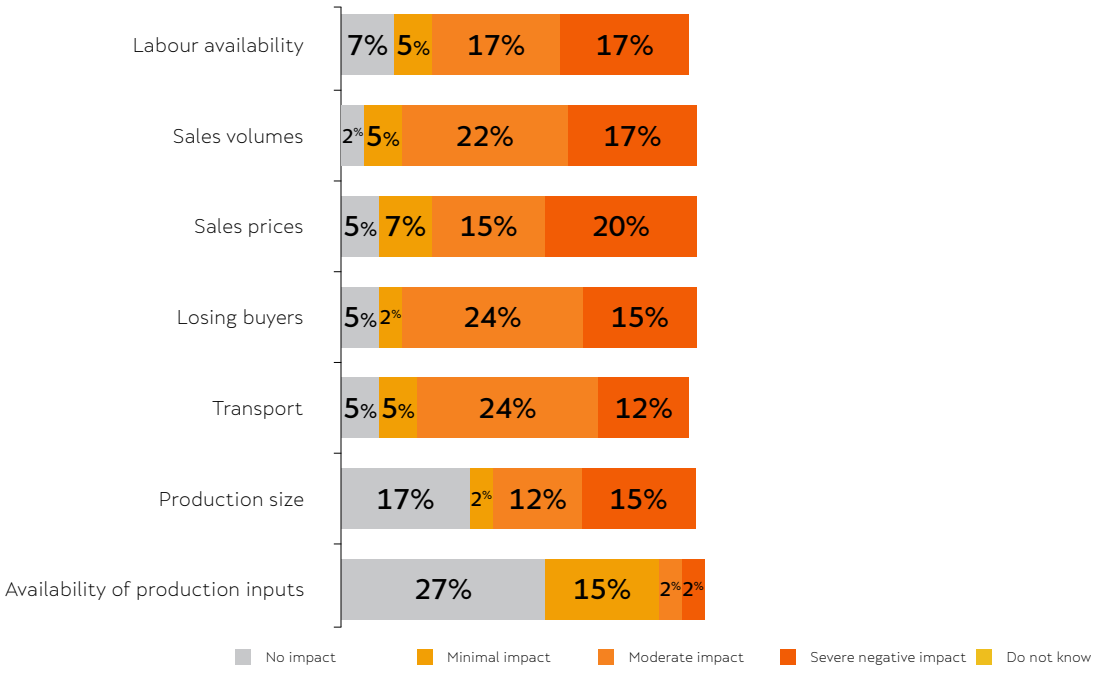
- Producers have still not signed a seasonal contract;
- The contracted product price is lower/ higher because of COVID-19;
- The contracted product quantity is lower/ higher because of COVID-19;
- The cancellation or change of the terms of the annual contract, signed before the season;
- The terms of multi-annual contracts were changed;
- Spontaneously as the "Other" aspect which the COVID-19 pandemic has a negative impact on was "travelling restrictions".

Figure 14 **Impact of COVID-19 on agricultural production in three sub-sectors**



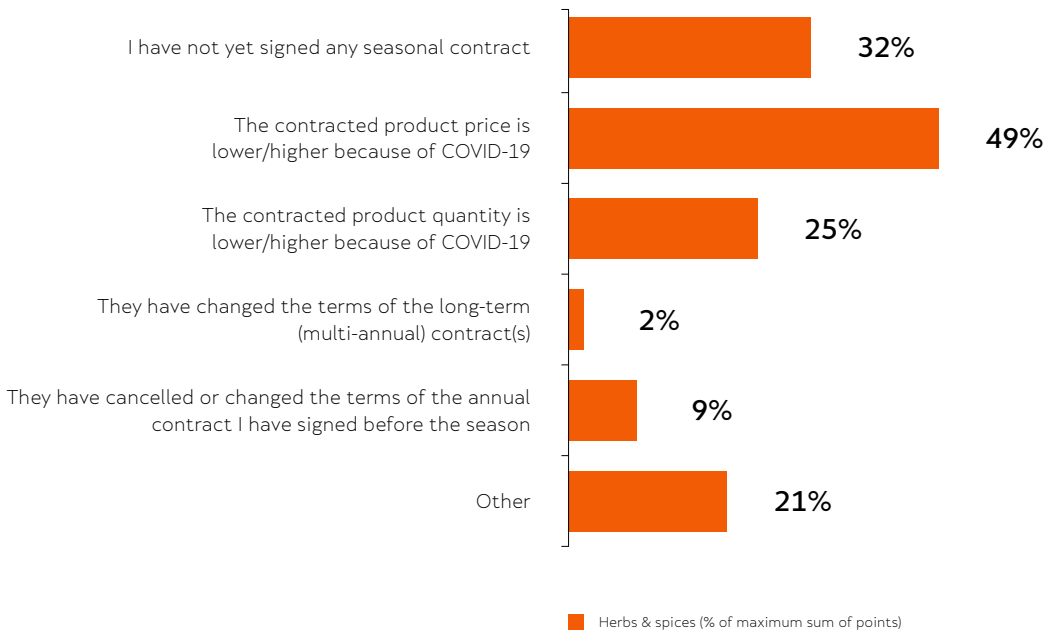

Source: UNDP survey, 2020

Figure 15 **COVID-19 effect on different aspects of primary agriculture production in H&S**




Source: UNDP survey, 2020

Figure 16 **COVID-19 crisis and its impact on relation between agriculture and traders / processors in sub-sector H&S.**




Source: UNDP survey, 2020

Overall, in the three sub-sectors, the most severe negative impact of COVID-19 among all observed agricultural companies is on the engagement of the workforce (33%) and sales quantities (29%). No impact at all of COVID-19 is stated among 61% of all companies in procurement of other inputs (packaging materials, boxes, glass jars, etc.). However, 19% of all companies declared an impact of COVID-19 on sales prices.[10]

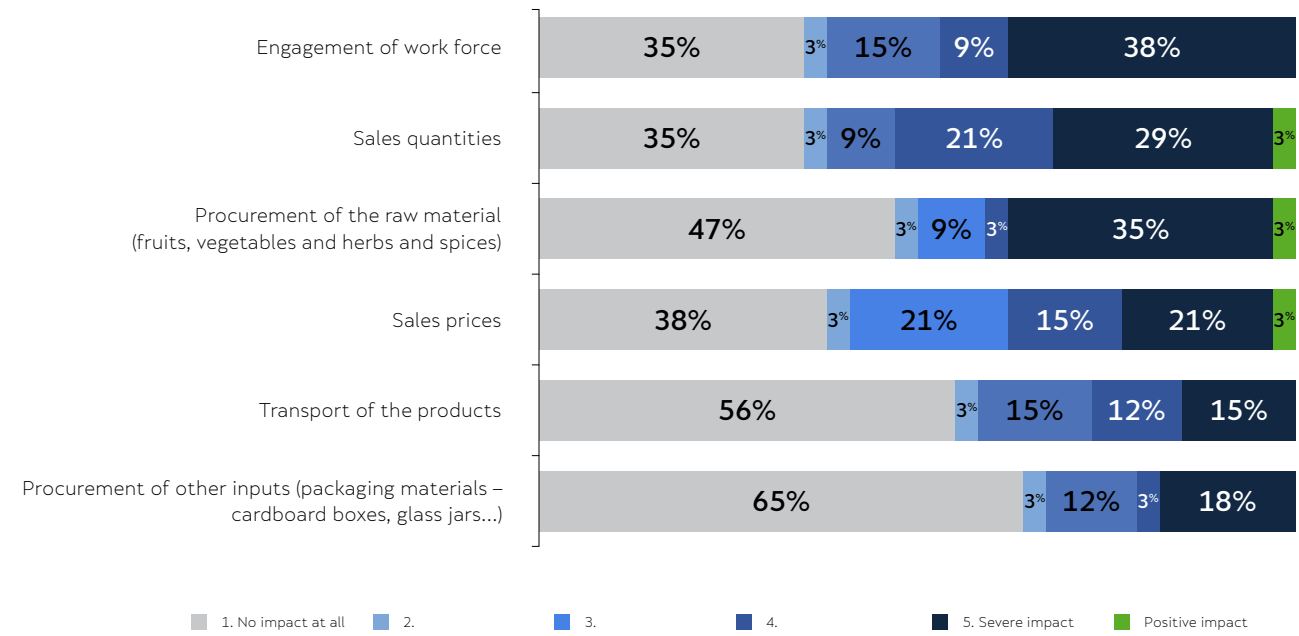
The most severe negative impact of COVID-19 among traders is on the engagement of workforce (38%), procurement of raw materials (35%) and sales quantities (29%), while the least severe negative impact is procurement of other inputs (18%) and transport of the products (15%). Only 3% of all traders have stated effects of the COVID-19 crisis on procurement of the raw material, sales quantities and sales prices (Figure 17).

The most severe negative impact of COVID-19 among processors is on sales quantities (29%) as well as on engagement of workforce (29%), followed by transport of the products (24%), procurement of raw materials (20%), sales prices (18%) and procurement of other inputs (16%). However, only 6% and 4% of producers' companies declared a positive impact of the COVID-19 crisis on sales quantities and engagement of workforce, respectively (Figure 18).

The severe negative impact of COVID-19 among companies dealing with H&S is with a slight variation in more segments: procurement of raw materials (33%), procurement of other inputs (27%), transport of the products (27%) and engagement of workforce (27%). It is interesting that the severe negative impact has a lower percentage regarding sale quantities and sales prices. No company reported a positive impact of the COVID-19 crisis on their business (Figure 19).

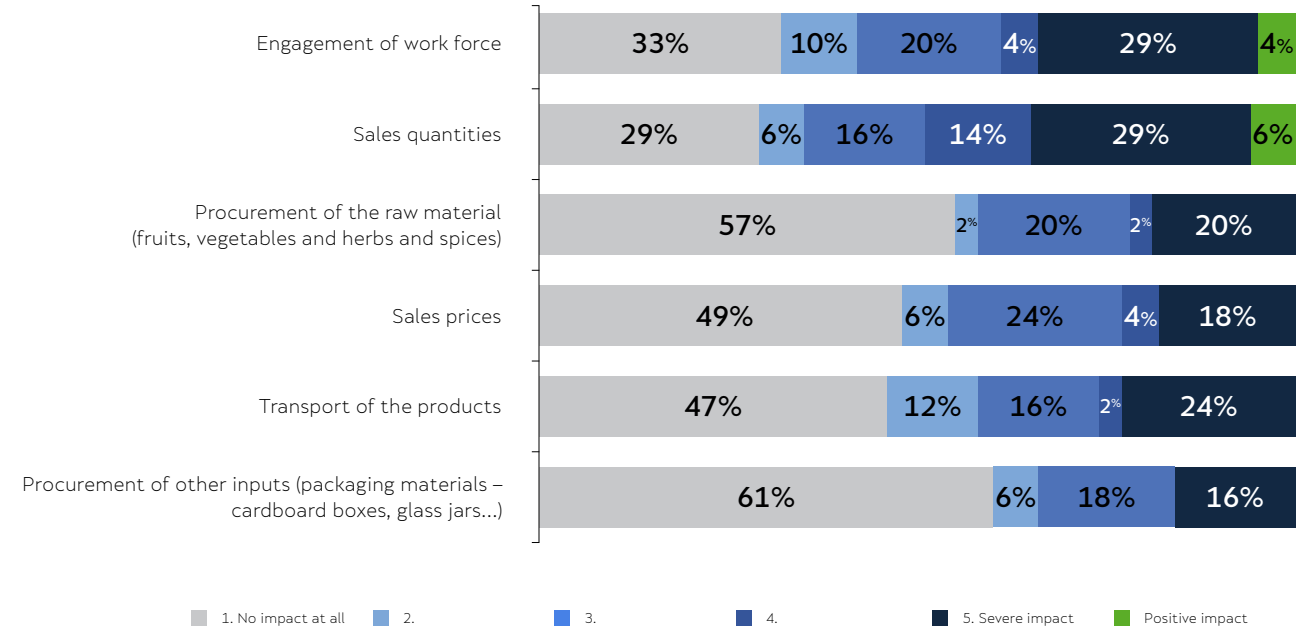
10 BRIMA narrative report - Agricultural companies - producers of Vegetables, Fruits and Herbs & Spices: production, usage of innovations, digital usage, impact of COVID-19 and environment/climate change on their work/business.

Figure 17 **Impact of COVID-19 on traders' companies in three sub-sectors – vegetables, fruits, herbs & spices**



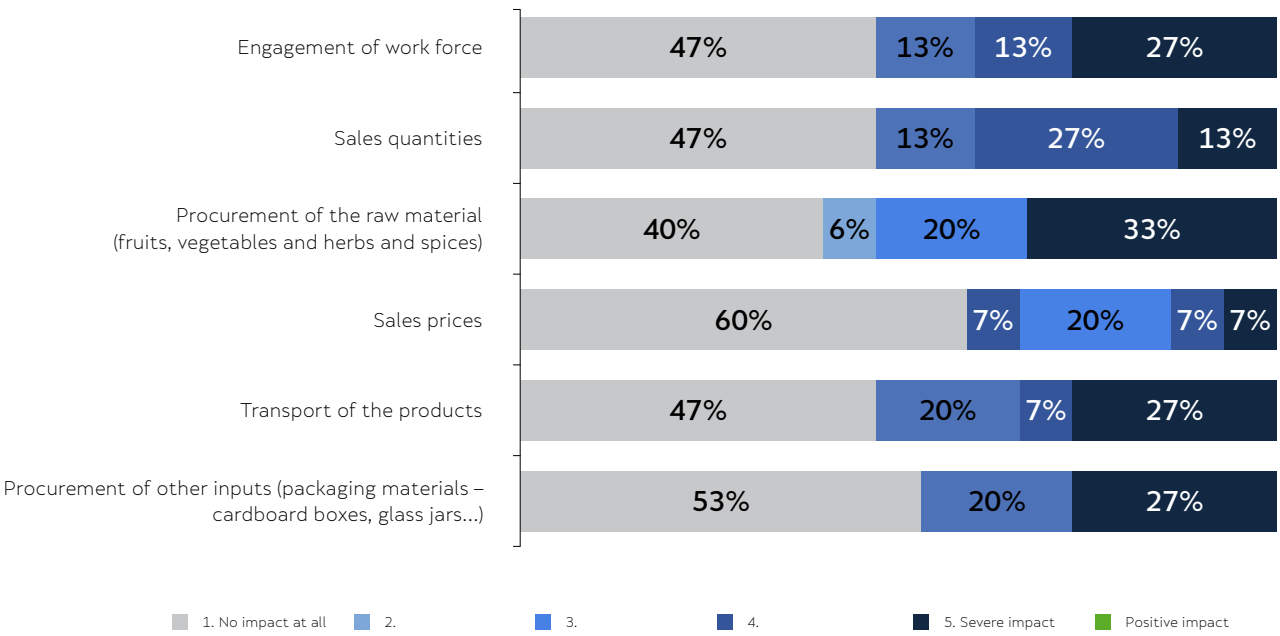

Source: UNDP (2020).

Figure 18 **Impact of COVID-19 on producers' companies in three sub-sectors – vegetables, fruits, herbs & spice**




Source: UNDP survey, 2020

Figure 19 **Figure 19. Impact of COVID-19 on H&S producer/trader companies**




Source: UNDP (2020).

The COVID-19 effect brought up all the flaws and shortages of the H&S sub-sector that exist in normal business conditions. The sub-sector's stakeholders need to be involved in the creation of a better business environment with proactive collaboration with governmental and other bodies. There is need for enlargement of primary production of raw materials which is possible to be developed only with a strong contract farming system between farmers and companies. Also, processing and trading companies might be stimulated to enter their own production, thus decrease their dependence on imported raw materials and make their business more sustainable. Generally, the agricultural sector has been facing a shortage of qualified and unqualified work force in the past years. The COVID-19 crisis just highlighted this shortage. In collaboration with H&S companies, MAFWE, the Employment Agency, the Ministry of Labour and Social Policy, possible solutions can be found for redirection of unemployed working power, who are beneficiaries of social, health and other state services. Such a measure should be directed especially to persons who were laid off as a result of the COVID-19 crisis.

Individual farmers selling their products at open markets and vendors/retailers at open markets were interviewed for the impact of COVID-19 on their H&S products[11]. Their business was highly negatively impacted by movement restrictions and closure/limited working time of open markets. Moreover, 60-70% of their fresh commodities were thrown away because the closure or open markets was done overnight. There was no measure and no initiative for management or donation of fresh commodities that they couldn't sell.

Another severely negatively impacted H&S business was production and selling of fresh herbs. The biggest consumer of fresh herbs is the HORECA industry. Due to the long-term closure of hotels and restaurants and no celebrations, most fresh herbs' producers either

11 Documented interviews with:
A paprika producer from Negotino, 25.07.2020
Two vendors at the local market in Strumica, both interviews done on 25.07.2020

throw away, decrease or stop their production[12].

Last but not least, the COVID-19 crisis has a significant effect on rural women. They are the most affected by the COVID-19 crisis because they have field and household work, in addition to the fact that their children are at home and they need to help them with online school and homework. The restriction of movements and closure of open markets reduced their income because the traditional selling channel was closed. The restrictions contributed to less availability of seasonal workers who can replace women in fields, when they are busy with their home engagement.

## 5.2 Sub-sector and value chain insight and interventions

H&S are not defined as a separate sub-sector in the MAFWE. The reported cultivated areas for direct payments are small and insignificant, H&S are a variety of crops/plants that are heterogenous in terms of botanical classification, cultivation practices and their utilization as raw material and final products. Hence, H&S cultivation is not included in MAFWE Annual Reports. In the National Strategy for Agriculture and Rural Development 2014-2020, H&S is mentioned several times, but only as possible crops for future development in agricultural production.

There is no data about H&S cultivation, except organic production of H&S, thus there is lack of reliable information about the potentials, opportunities and constraints in the H&S sub-sector. MAFWE lacks general information about identification of suitable agroclimatic regions for H&S cultivation, profitable minimal cultivation size, investment costs, demand and supply, selling and available markets and generated income from H&S production and products. Also, there is need for clarification of the H&S list for subsidies in the Regulation for direct payments in order misuse of H&S cultivation just for the sake of subsidies to be avoided in the future. Regarding IPARD funds, H&S are eligible for financial assistance under the IPARD Programme, Measure 7 - Alternative agricultural production because there is no data about their importance and potential as crops[13].

H&S production is performed under agricultural legislation in power for production of all plant crops[14]. Organic cultivation is highly practiced in the H&S sub-sector, therefore the Law on Organic Agricultural Production (State Official Gazette 146/2009, 53/2011, 149/2015, 39/2016 and 132/2016) and its by-laws are very important for the development of H&S primary production.

A lot of medicinal and aromatic plants enter the H&S industry from their natural populations. The only legislation specificity that applies to the H&S sub-sector is the regulation of collection of wild herbs from natural populations and trade and export of affected and protected wild plants and fungi[15]. This legislation is not important for the H&S primary production, but it is very important for the H&S processing and trading companies who process, trade and export wild herbs as raw material.

The collection of wild plants, fungi, lichens and their parts is regulated by the Law on Nature Protection. The collection of NWFP (non-wood forest products) by MAFWE is covered by the Law on Forests (2009), chapter Use of other forest products and Article 72 of the mentioned law. In addition to the above two laws, there are a number of by-laws (regulations). The most relevant by-laws that define the collection of NWFP and endangered and protected wild plants and fungi are: the Rulebook on issuing a permit for collection of affected and protected wild species of plants, fungi and animals and their parts prepared by the MoEPP, as well as the Rulebook for other forest products prepared by MAFWE. The regulations of both Ministries regulate in detail the ways of collecting plant resources. According to the

12 Documented interviews with:
A fresh herb producer from Gevgelija, 27.06.2020
A fresh herb producer from the Strumica area, 27.07.2020
A representative of the HORECA company from Gevgelija, 04.08.2020

13 Documented interview with a MAFWE representative, 10.07.2020.

14 Annex 7. List of legislation in agriculture relevant to the vegetables, fruits, and herbs & spices sub-sectors.

15 Detailed information, including VC of wild collected plants and fungi are available in GEF, UNEP & MoEPP: Користење на диви видови растенија и габи во Република Северна Македонија, 2020.

Rulebook of the MoEPP, the Directorate of Environment, Sector for Nature issues permits for collection of protected and endangered wild species, while according to the Rulebook of the MAFWE, the permits are issued by PE Nacionalni sumi. The regulations of both Ministries provide a detailed explanation and definition of the method of collection and which tool is appropriate for the collection of certain plant resources. However, the Rulebooks do not prescribe a mechanism for obtaining an accurate assessment of the current status of wild plant species (GEF, UNEP & MoEPP: Користење на диви видови растенија и габи во Република Северна Македонија, 2020).

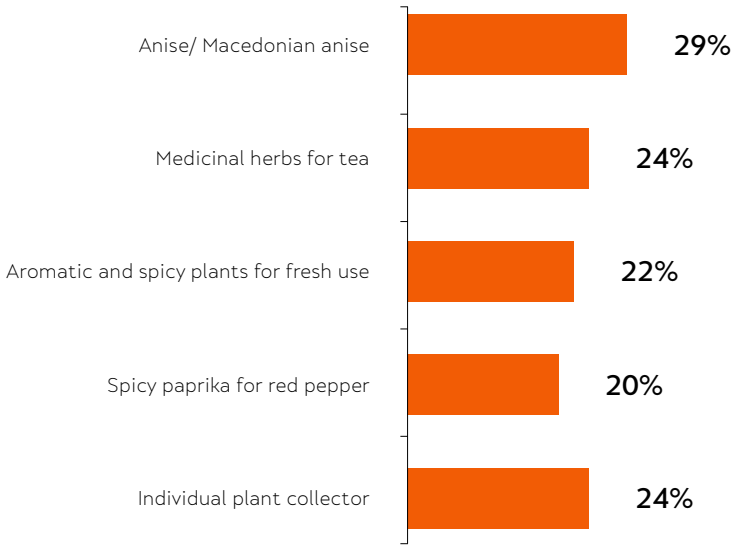
Export/import and re-export of endangered and protected wild species is regulated by the Law on Nature Protection. The MoEPP also issues D4 licenses for export/import and re-export and a CITES license/certificate for international trade in species listed on CITES attachments. There is an extensive list of required documents for the whole process of purchase, processing, sale and export of affected and protected wild plants and fungi. Every company that exports a species that is on the list of affected species requires an export permit from the MoEPP, the Sector for Nature at the Ministry of Environment and Physical Planning of the Republic of Northern Macedonia (GEF, UNEP & MoEPP: Користење на диви видови растенија и габи во Република Северна Македонија, 2020).

All the above stated suggests that there is a need for consolidation of H&S data availability from MAFWE and better intra-sectorial communication between MAFWE and MoEPP in H&S-related policies and its management for future strengthening, development and improvement of the sub-sector.

## Agricultural producers of H&S

According to the telephone survey, the targeted producers of Herbs & Spices in roughly similar proportion produce Anise/Macedonian anise (29%), medicinal herbs for tea (24%), aromatic and spicy plants for fresh use (22%), spicy paprika (20%) (Figure 20).

Figure 20 **Type of H&S agricultural producers targeted in telephone survey**




Source: UNDP (2020).

Table 9 **Ownership and cultivation of land in H&S production**

| Main primary production | | Total land of the household (in decares) | Cultivated land (including rented land) by the household (in decares) | Cultivated land with H&S by the household (in decares) |
|---|---|---|---|---|
| Herbs & spices | Mean | 61.1 | 53.1 | 9.8 |
| | Median | 10 | 20 | 4.0 |
| | Minimum | 0 | 0 | 0.0 |
| | Maximum | 1000 | 370 | 60.0 |

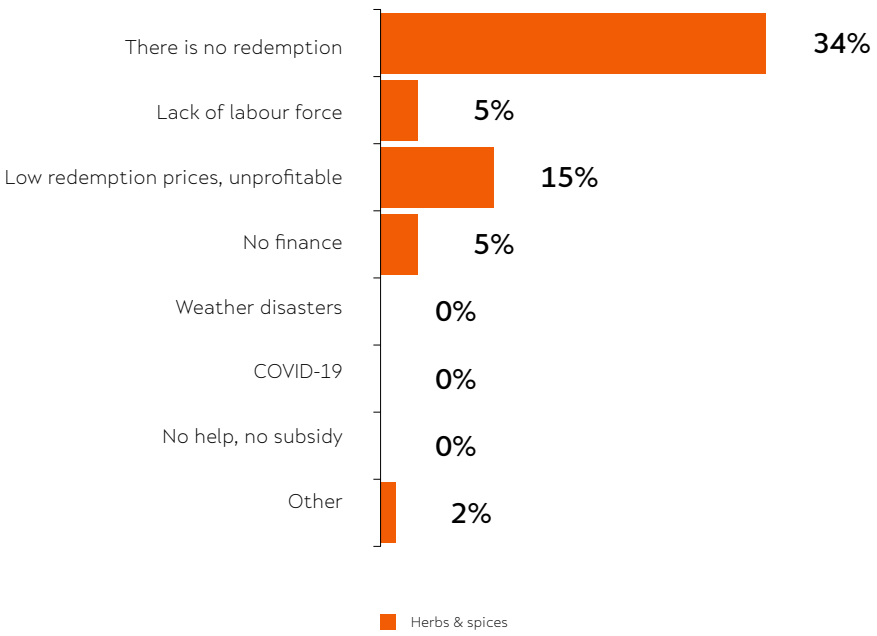
Table 10 **Percent of households according to the size of cultivated land of H&S**

| Cultivated land (including rented land) by the household | Herbs & spices (%) |
|---|---|
| 0-2.5 decares | 41 |
| 2.51 - 5 decares | 12 |
| 5.1 - 10 decares | 12 |
| 10.1 - 15 decares | 7 |
| 15.1 - 25 decares | 15 |
| 25.1+ decares | 12 |
| **Total** | **100%** |

According to contacts with these producers the number of individual wild herb collectors (24%) – people who collect these kinds of herbs & spices in woods, hills and mountains – decrease every year, which is consistent to other information resources.

The H&S producers on average own 61.1 decares of land. On average, they cultivate H&S on 9.8 decares, while the rest of the cultivated 53.1 decares are used for other crops (Table 9). Accordingly, as expected, the agricultural households do not rely on one type of crop in their production. It must be noted that in H&S there are 10 producers with no cultivated land

Figure 21 **Reasons for no increase of H&S production**




Source: UNDP (2020).

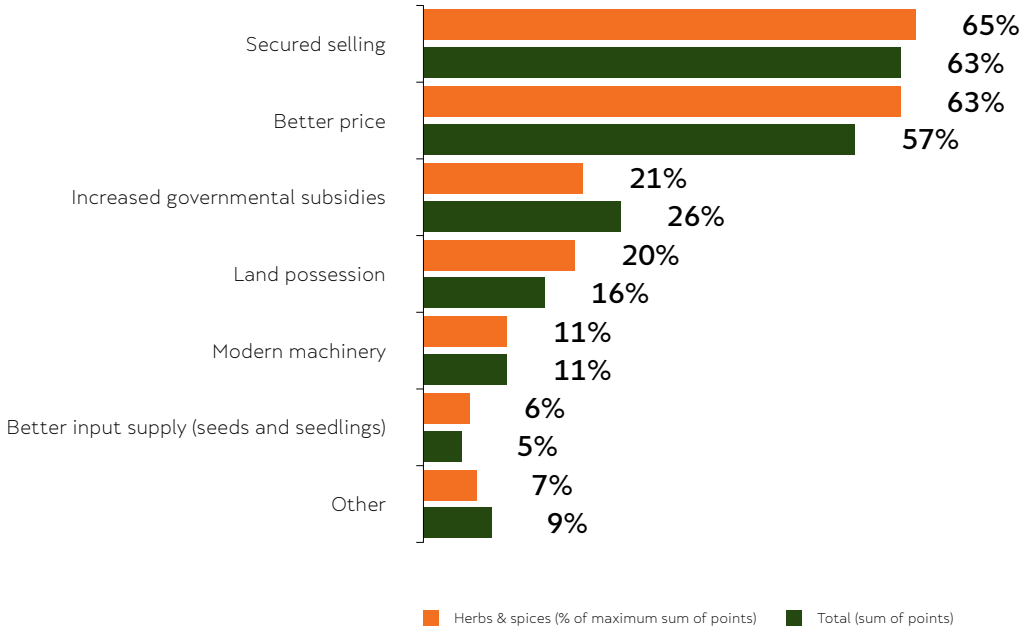
because they are individual plant collectors, thus the minimum cultivated land is 0 decares, while the maximum H&S cultivated land is 10 ha. Most H&S cultivation is on very small area – 65% of production is done on fields up to 10 decares (1 hectare), while 35% on a production area bigger than 10 decares (1 hectare) (Table 10).

According to the telephone survey, only 15% of the agricultural producers plan to increase their existing production. The main reason for no increase of existing production is no redemption (34%), together with low redemption prices, low redemption price and low profit (15%), lack of labour force (5%) and no finance (5%) (Figure 21).

The ranking of key factors for increasing the crop cultivation that is missing at the moment showed that increased cultivation of H&S can be achieved with secured selling (65%), better price (63%), increased governmental subsidies (21%), land possession (20%), modern machinery (11%), better input supply (6%) and other factors (7%). The percentage of key factors ranking by H&S agricultural producers is similar with the ranking in the other two sub-sectors (Figure 22). Consequently, individual producers have the same problems and obstacles in their business, regardless of the commodity they produce.

Taking into consideration that producers own small and fragmented fields, and 20% of them see land possession as a key factor for the increase of their production is worth to be mentioned that land ownership issues are one of the hottest issues in Macedonian agriculture. The fragmented land is due to traditional succession practices. A lot of farmers don't own the land they cultivate because of unfinished inheritance procedures, and they are not eligible for subsidy application. In the past years, a lot of land is uncultivated and abandoned as a result of migration of the rural population or working in other sectors, but the land is not on sale. If there are fields which are on sale, it is difficult for a farmer to buy several plots in one place and make a field bigger than 1 hectare or more. This is more difficult to be done in hilly and mountainous parts of the country that are suitable for production of medicinal and aromatic herbs because the fields are even

Figure 22 **Key factors missing at a moment for increasing the H&S cultivation**




Source: UNDP (2020).

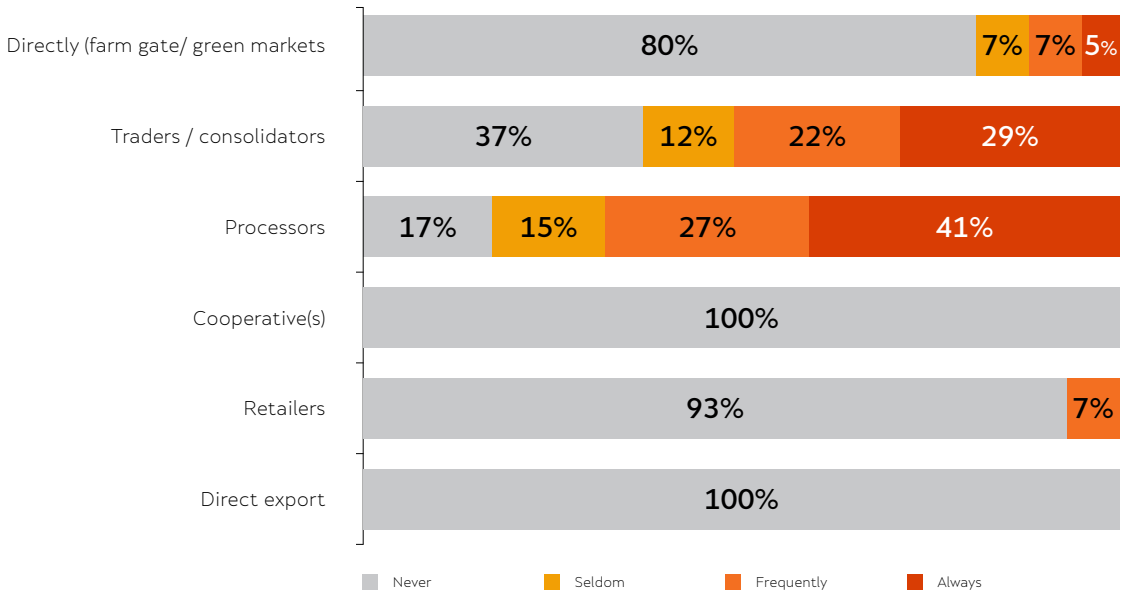
smaller. Land rent practices and prices depend on the region, but usually fields are rented for a short period of time and based on oral agreements. There are known cases where fields are rented for a very small fee or free of charge just for their maintenance.

Most of the state land is already rented, but there are announcements for renting on state agricultural land for different purposes (primary production and investments in processing industry) and different periods of time. The ownership and distribution of state land are regulated with the Law on Agricultural Land.

Improvement of each agricultural sub-sector is connected to available financial means, either from personal earnings or provided by bank loans. Modern machinery is available through several suppliers offering different payment modes (monthly rate, discount for cash payment, etc). Commercial banks offer bank loans for business development, but those are seen as loans with complex administration and high interest, thus farmers find them unsuitable for their business. Bank savings, such as Moznosti and FLUM, provide better loans with lower interest and easer administrative procedures suitable for development of small businesses, including agriculture. IPARD funds are a good source for improvement of machinery and production practices, but farmers face payment of machinery in advance, complex administration procedures for IAPRD application and uncertainty for refund of spent finances. The H&S sub-sector is the lowest for utilization of IPARD funds as compared to other agri-sectors.

Regarding selling of production and cooperation with traders and processors, most of the products sell to traders/consolidators and processors (Figure 23). 41% of H&S agricultural producers always sell their products to processors and in a lower percentage to traders (29%). Other selling channels are used in a very small percentage: 19% direct sell, 7% sell to retailers and "not at all" for selling to cooperatives or as direct export. This data is in line with information about selling channels collected during the field work. None of the agricultural producers is part of a cooperative nor do they have enough quantities for direct export. Only producers of fresh herbs and paprika can sell directly to retailers because of the specificity of their

Figure 23 **H&S producers selling channels.**




Source: UNDP (2020).

product. Unfortunately, there are few functional cooperatives in the country established for other agricultural sub-sectors. Although there were several projects and state support for establishment of cooperatives, farmers don't see their benefits from establishment and membership in cooperativities, which is mainly due to mistrust and bad past experiences.

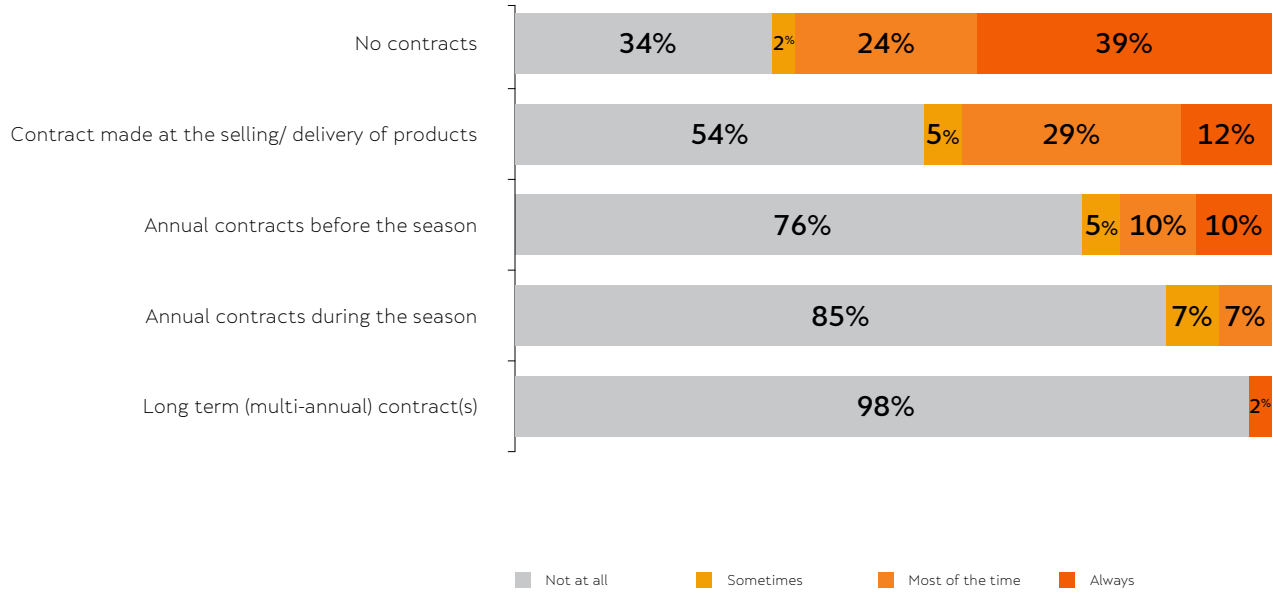
Producers of H&S in most cases are with no contract (39% always, and 24% most of the time) for selling of products. Only 25% of the producers might have annual contracts before the season, while 14% might sign contracts during the season. Long-term (multi-annual) practically does not exist (Figure 24). According to the conducted interviews with agricultural producers, there are possibilities for contract farming for MAPs and paprika, but either the offered prices per kilo commodity are low or the traders/processor don't keep contracted prices. Therefore, there is bad past experience with contract farming and no real willingness among producers for it[16].

The most challenging obstacle (problem) for H&S individual agricultural producers for their business is market demand for a particular product, climate and natural disasters and availability, quality, experience and cost of labour force. Access to finance is ranked as the fourth important obstacle for development of H&S primary production. Under "other factor" spontaneously are mentioned: guaranteed redemption, low selling prices, irrigation, etc. (Figure 25).

Based on this data, the most challenging obstacle in H&S primary production is connected to product selling prices, insecurity of product selling, availability of markets and a fair relationship with processors and traders.

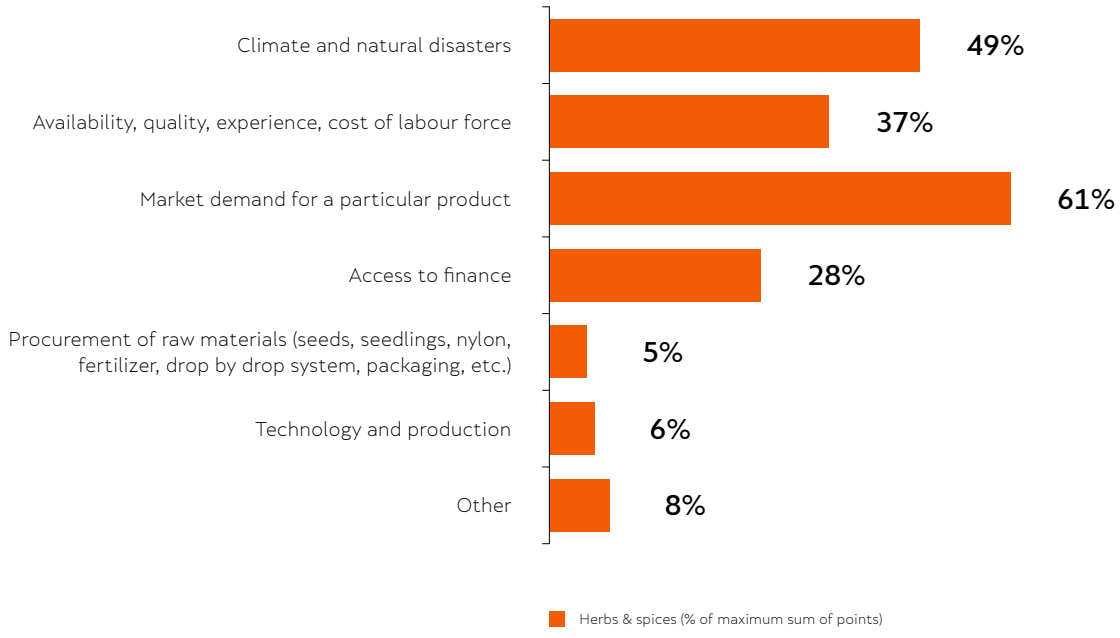
16 Conducted interviews with Mile Delov (mountain tea producer), Ile Dumov and Biljana Veslinova (paprika producers).

Figure 24 **Contract farming in H&S production**




Source: UNDP survey, 2020

Figure 25 **Challenging obstacles for H&S agricultural producers**




Source: UNDP survey, 2020

## Agricultural companies in the H&S sub-sector

Most of questioned H&S companies are established as a DOOEL (LLC = Limited liability company one person) (67%), 20% are a DOO (LLC = Limited liability company), while 13% are established as a joint venture (Figure 26). When observing the companies according to the dominant subsectors, the companies trading/processing Herbs & Spices are dealing with 53% fresh, 40% dried, 5% canned, and there are no frozen activities (Table 11).

The average number of employees in H&S companies is 9.3 (Figure 27a), where trading

Table 11 **Core activity of H&S companies**

| Dominant sub-sector | Herbs & spices | % |
|---|---|---|
| Core sales activity | Fresh | 53 |
| | Canned | 7 |
| | Dried | 40 |
| | Frozen | 0 |
| | **Total** | 100% |

Figure 26 **Structure and ownership of H&S companies**

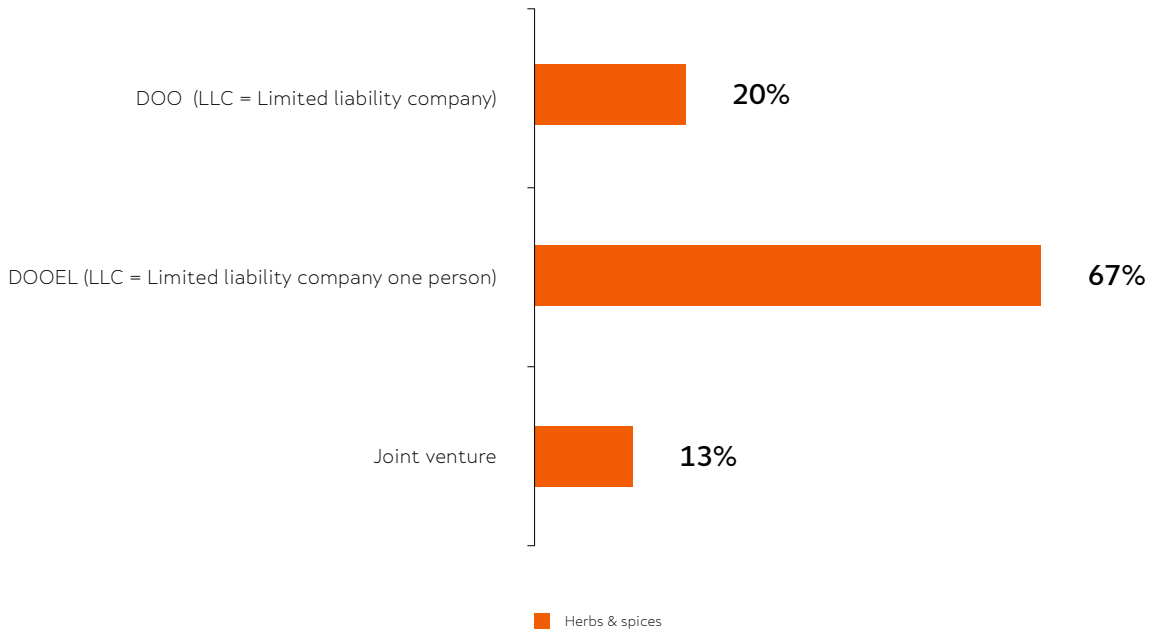
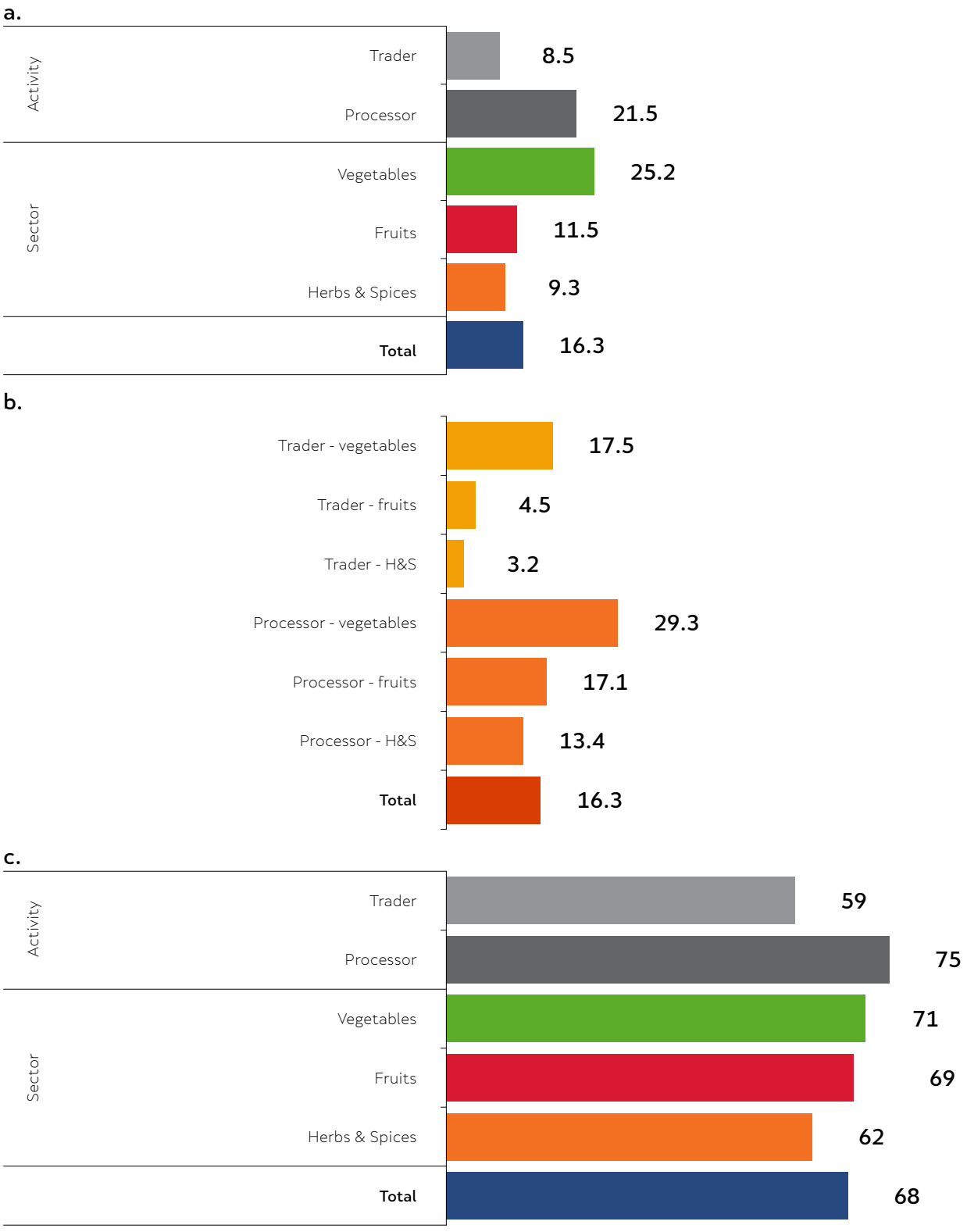


Figure 27 **a) Mean values of the number of full-time employees; b) Mean number of employees in processing and trading companies; c) Mean number of days for hired seasonal labour**




Source: UNDP survey, 2020

Table 12 **Agricultural companies and distribution of their sub-sectoral business**

| % of companies Vegetables % | | Dominant sub-sector | | | Main activity | | |
|---|---|---|---|---|---|---|---|
| | | Fruits | H&S | Trader | Processor | Total | |
| | | % | % | % | % | % | |
| Traded/ processed in 2019 | Vegetables | 100 | 24 | 13 | 41 | 57 | 51 |
| | Fruits | 50 | 100 | 7 | 74 | 59 | 65 |
| | H&S: - Anise/ Macedonian anise | 6 | 3 | 40 | 9 | 12 | 11 |
| | H&S: - Herbs for tea | 9 | 3 | 60 | 9 | 20 | 15 |
| | H&S: - Dried spices for nutrition | 13 | 3 | 13 | 3 | 12 | 8 |
| | H&S: - Other (most common) | | 3 | 47 | 3 | 14 | 9 |
| | **Total** | 178% | 134% | 180% | 138% | 173% | 159% |

Source: UNDP survey, 2020

companies employ 3.2 persons, and processor companies employ 13.4 persons (Figure 26 27b). On average, in the H&S sub-sector, seasonal workers are hired for 62 days, which is less than 6 days compared to the total average of seasonal working days in this survey (Figure 26 27c).

Most of the companies, besides dealing with raw materials/products in their core sub-sector, also deal with other products/raw materials. Accordingly, companies dealing with H&S, also deal with vegetables and fruits (Table 12).

On average, 8.55 t anise, 6.65 t herbs for tea, 1.8 t dried spices for nutrition and 0.3 t other[17] H&S are processed/traded by different agricultural companies working with commodities in the three sub-sectors (Table 13).

Companies dealing with H&S in the highest percentage get raw materials from their own production (39.3%) and about a quarter (25.7%) from individual plant collectors. Other sources are mentioned in equally low shares (in a range 5.7%-7.7%) (Table 14). Trading/processing capacities utilized in 2019 by H&S companies are up to 87% and it is the highest as compared to the other two sub-sectors (Figure 28). Furthermore, 73% of H&S companies are willing to increase their operating capacities (Figure 29). Provision of herbs as raw materials from natural populations is limited by their variable natural abundance and current legislation. Thus, processing capacities shall gain their raw material by H&S cultivation. All these suggest that there is a need for strengthening the collaboration between individual farmers and companies via contract farming for cultivation of H&S. The other solution is for processors to introduce their own production of raw materials, as there are existing examples.

The main factors for increasing trading/processing capacities are: new markets secured by the company (31%), access to finance (25%), and availability of labour force (19%). More efficient production technology, increased interest for redemption and sufficient supply of raw materials are less important factors for H&S

17 "Other" mentioned raw materials for trading/processing in H&S as individual cases are: white birch, *Equisetum arvense, phacelia, buckwheat, nettle, calendula, mint, medicinal herbs, lavender, lemon balm and drugs for more severe diseases.*

Table 13 **Average quantities of processed/traded H&S in tons by dominant sub-sector and main activity of the companies**

| Quantities (mean value in tons)[18] | Dominant sub-sector | | | Main activity | | |
|---|---|---|---|---|---|---|
| | Vegetables | Fruits | H&S | Trader | Processor | Total |
| | (tons) | (tons) | (tons) | (tons) | (tons) | (tons) |
| Quantity in 2019 of H&S - Anise/ Macedonian anise | 0.05 | 4.0 | 4.5 | 4.5 | 2.0 | 3.3 |
| Quantity in 2019 of H&S - herbs for tea | 1.55 | 1.0 | 3.96 | 5.5 | 2.1 | 3.0 |
| Quantity in 2019 of H&S - Dried spices for nutrition | 1.0 | 0.5 | 0.3 | 0.3 | 0.85 | 0.7 |
| Quantity in 2019 of H&S - Other Herbs & Spices | -- | 0.3 | -- | -- | 0.3 | 0.3 |

Source: UNDP survey, 2020

Table 14 **Share of utilized raw materials in H&S processing and trading**

| | Share from individual farmers | Share from domestic traders | Share from import | Share from cooperatives | Share from agriculture companies | Share from their own production | Share from individual plant collectors | Total |
|---|---|---|---|---|---|---|---|---|
| | (row%) | (row%) | (row%) | (row%) | (row%) | (row%) | (row%) | (row%) |
| Mean | 5.7 | 7.7 | 7.7 | 7.3 | 6.7 | 39.3 | 25.7 | 100% |
| | | | | | | | | |
| Minimum | 0 | 0 | 0 | 0 | 0 | 0 | 0 | --- |
| Maximum | 35 | 100 | 100 | 80 | 100 | 100 | 100 | --- |

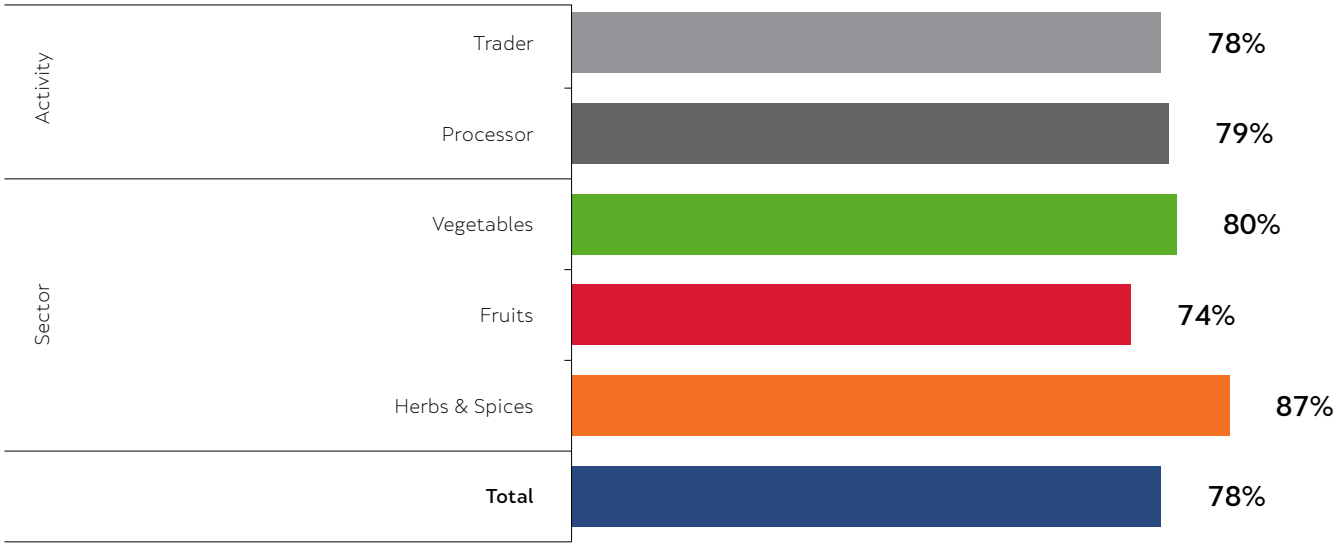
Source: UNDP survey, 2020

business growth and expansion (Table 15).

The most important factors that impede functioning of value chains and full utilization of trade and processing in the H&S sub-sector in terms of 'technology, workforce and infrastructure', listed according to their importance, are: "Availability of the seasonal workforce", "Qualified labour (for full-time employment)", "Production equipment obsolescence", and "Products (raw materials) varieties" are equally ranked. The intensity of the first two factors is much higher than the other ranking factors (Figure 30).

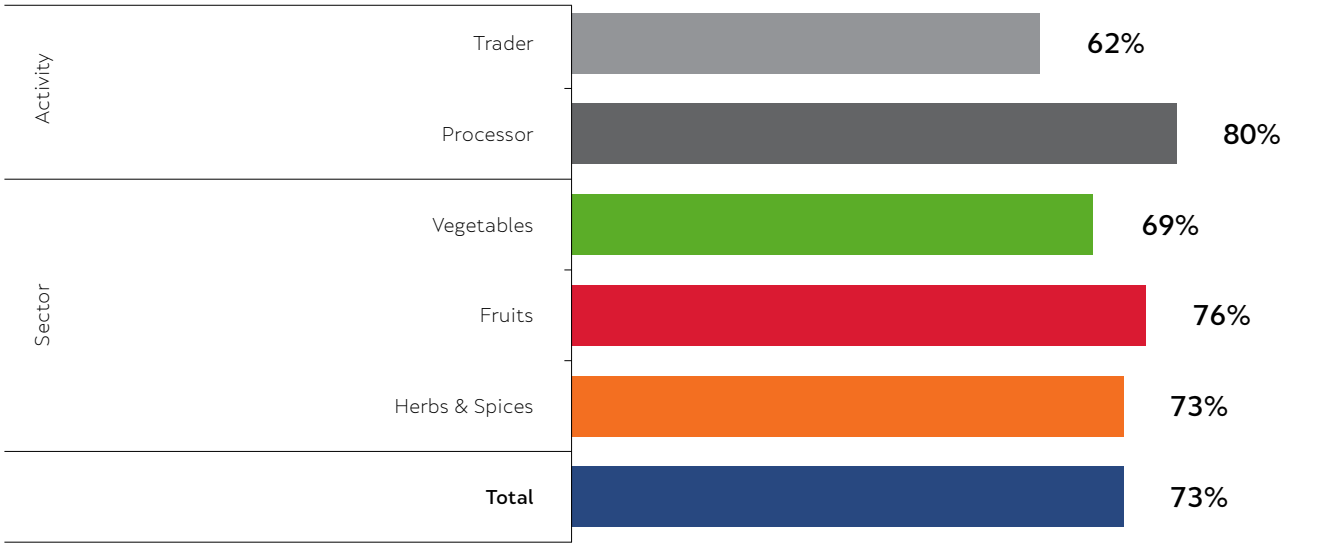
18 Note that mean values are calculated with a smaller statistical mass and can be assumed as indicators.

Figure 28 **Trading/processing capacities in 2019**




Source: UNDP survey, 2020

Figure 29 **Possible increase of business capacities**




Source: UNDP survey, 2020

Table 15 **Main factors for increasing capacities of a company for trading/processing**

| Factors for increasing capacities of a company for trading/processing | H&S (%) |
|---|---|
| New market(s) secured by the company | 31 |
| Access to finance | 25 |
| Availability of the labour force | 19 |
| New equipment and machinery | 3 |
| More efficient production technology | 6 |
| Increased interest for redemption | 6 |
| Other reasons | 6 |
| Sufficient supply of raw material | 3 |

Source: UNDP survey, 2020

The seasonal workforce in H&S is domestic, and it is hired daily or for a short period of time. The companies faced a shortage of available workforce in regular times and this shortage became a bigger issue during the COVID-19 crisis due to lockdowns and movement restrictions because seasonal workers travel from one to another village. The field seasonal workers never receive formal contracts or any other type of benefits, such as health and social insurance. There are many reasons for this situation (existing policies, vulnerability of workers, disrespect of laws, etc.) and basically both sides – those who hire and the workers – take advantage of this.

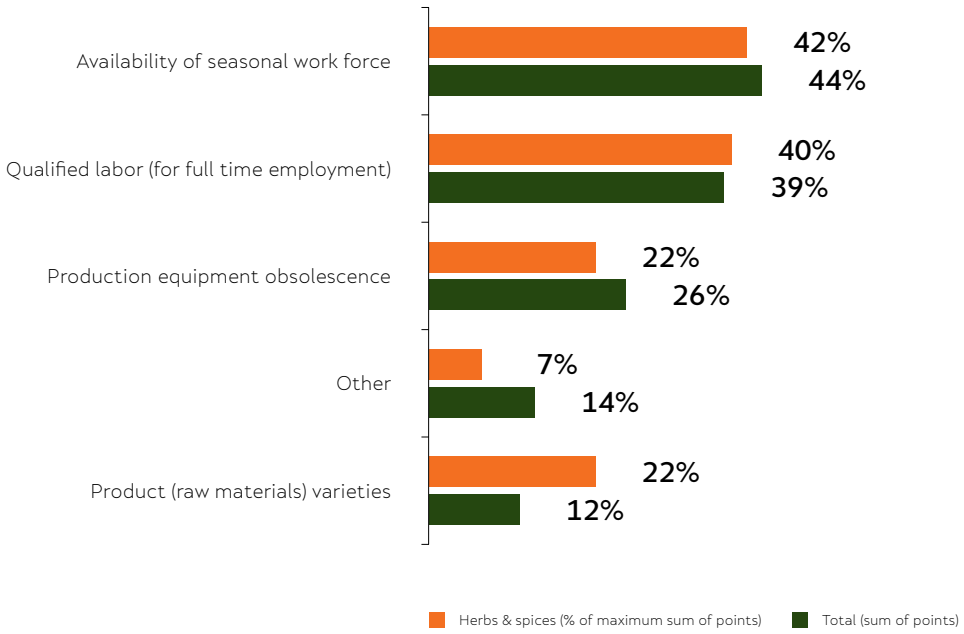
For all the traders in the three sub-sectors, when speaking about 'technology, workforce and infrastructure' the first-ranked factor that impedes the "value chain" functioning is: availability of seasonal workforce, qualified labour. Processing companies have similar impediments: availability of seasonal workforce and qualified labour. Other spontaneously mentioned factors as individual cases are: finance, land allocation, new markets, protection of domestic production, transport and storage[19].

In the H&S sub-sector, the most important factors that impede the value chain functioning in terms of 'market characteristics and business environment', from strongest to weakest are: "Lack of buyers", "Access to capital", "Discontinued supply of raw materials", "Other" and "Inability for imports of raw materials for processing". Under "Other" spontaneously mentioned factors are high costs with transportation, late payment, and weak capacity (Figure 31).

Overall, for the traders as well as for the processing companies, when speaking about market characteristics and the business environment, the first-ranked factor that impedes the "value chain" functioning is: "lack of buyers", the second-ranked factor is "access to capital". For processing companies "discontinued supply of raw materials" and "inability for imports of raw materials" are more important than for trading

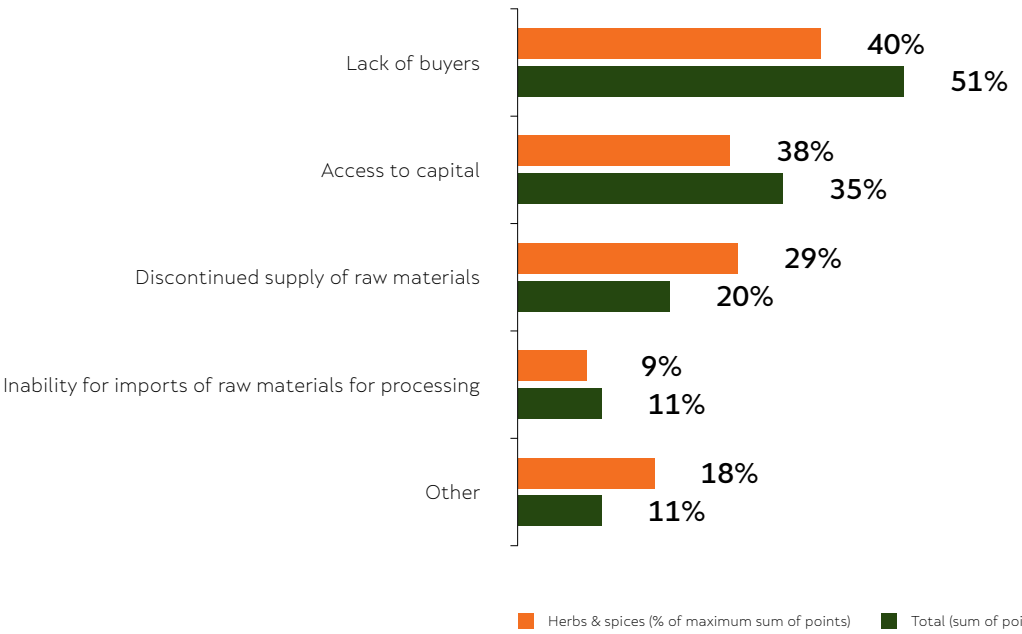
19 BRIMA narrative report - Agricultural companies - producers of Vegetables, Fruits, and Herbs & Spices: production, usage of innovations, digital usage, impact of COVID-19 and environment/climate change on their work/business, this finding is not supported by the figures presented in the report.

Figure 30 **Ranking of factors that impede functioning of the VC (value chains) and full utilization / potential increase in trade/ processing – about: Technology, workforce and infrastructure?.**




Source: UNDP survey, 2020

Figure 31 **Ranking of factors that impede the functioning of the VC (value chains) and full utilization / potential increase in trade/ processing – about: Market characteristics and business environment.**




Source: UNDP survey, 2020

Table 16 **Marketing and sales activities of H&S companies**

| Mean value (in %) | Packed under private labels | Packed under your own brand | Packed without branding | In bulk (selected, calibrated, etc.) | In bulk (as it was, without any additional operation) | Total |
|---|---|---|---|---|---|---|
| | (row%) | (row%) | (row%) | (row%) | (row%) | (row%) |
| Total traders | 7 | 14 | 25 | 34 | 20 | 100% |
| Total processors | 22 | 55 | 8 | 12 | 3 | 100% |
| | | | | | | |
| Herbs & Spices | 4 | 59 | 5 | 13 | 19 | 100% |

Source: UNDP survey, 2020

Table 17 **Frequency of utilization of selling channels**

| Mean value (in %) | Traders/ Wholesalers/ Distributors | Processors and food industries | Retailers | Direct sales (own retailing and online) | Total |
|---|---|---|---|---|---|
| | (row%) | (row%) | (row%) | (row%) | (row%) |
| Total trader | 56 | 21 | 12 | 11 | 100% |
| Total processors | 57 | 17 | 16 | 10 | 100% |
| | | | | | |
| Herbs & Spices | 32 | 29 | 9 | 30 | 100% |

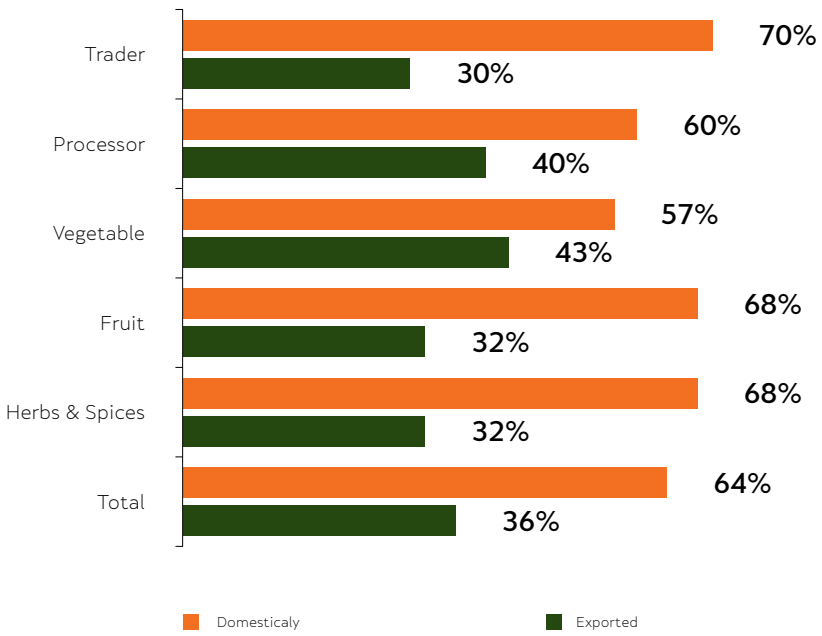
Source: UNDP survey, 2020

companies[20].

Generally, all traders sell more in bulk (selected, calibrated etc. commodities) (34%) and packed without branding (25%). All processing companies sell more packed under their own brand (55%) and packed under a private label (22%). Companies dealing with H&S mostly sell packed under their own brand (59%), some sell selected and calibrated products in bulk (13%) and in bulk without additional operation (19%), few sell under private labels (4%) and packed without branding (5%) (Table 16). H&S products are in 68% of cases sold domestically and

20 BRIMA narrative report - Agricultural companies - producers of Vegetables, Fruits, and Herbs & Spices: production, usage of innovations, digital usage, impact of COVID-19 and environment/climate change on their work/business.

Figure 32 **Export/import ration by sub-sector**




Source: UNDP survey, 2020

in 32% were exported (Figure 32).

When speaking about the sale in 2019, the three selling channels of traders/wholesalers/distributors, processors and food industries and direct sales have the same participation in selling H&S products. The less utilized selling channel is via retailers (Table 17).

## 5.3 Digital and ICT

### H&S agricultural producers and digitalization

Usage of any kind of innovative and modern digital solutions/IT or sources of information in the work of agricultural producers shows that about 2% of H&S producers do not use any digital solutions, while 98% use at least one digital solution (Table 18). This number is high because 56% of producers use social media and 51% of producers use weathercasting applications (Figure 33), but most of them not for marketing purposes. Thus, if looking at the real digital/IT usage for business purposes, the numbers are much smaller.

The frequent usage of digital solutions among agricultural producers of H&S is shown in Fig. 30. Most H&S producers use social media (56%) and weathercasting applications (51%), fewer use webpages (32%): institutional/governmental digital solutions and commercial electronic services (27%) and e-subsidies platform (20%), while just a few use online sales platforms and applications (7%). This data is in line with information gathered during field work for this study. Also, it is well known that each year, including in the time of the current COVID-19 situation, there are crowds in the regional units of MAFWE for physical submission of requests for subsidies due to unfamiliarity or unawareness of the electronic possibility for submitting subsidies through the e-subsidies platform. Lately, the problem with payments in post offices created other crowds in all the banks in the country, due to the illiteracy of the population regarding use of e-banking systems.

Additionally, about two quarters (73%) of H&S producers stated that digital support would be

Table 18 **Utilization of digital solutions/IT by H&S agricultural producers**

| | Herbs & Spices |
|---|---|
| Do not use any digital solution/IT for business | 2% |
| Use at least one digital solution/IT source of information | 98% |
| Total | 100,0% |

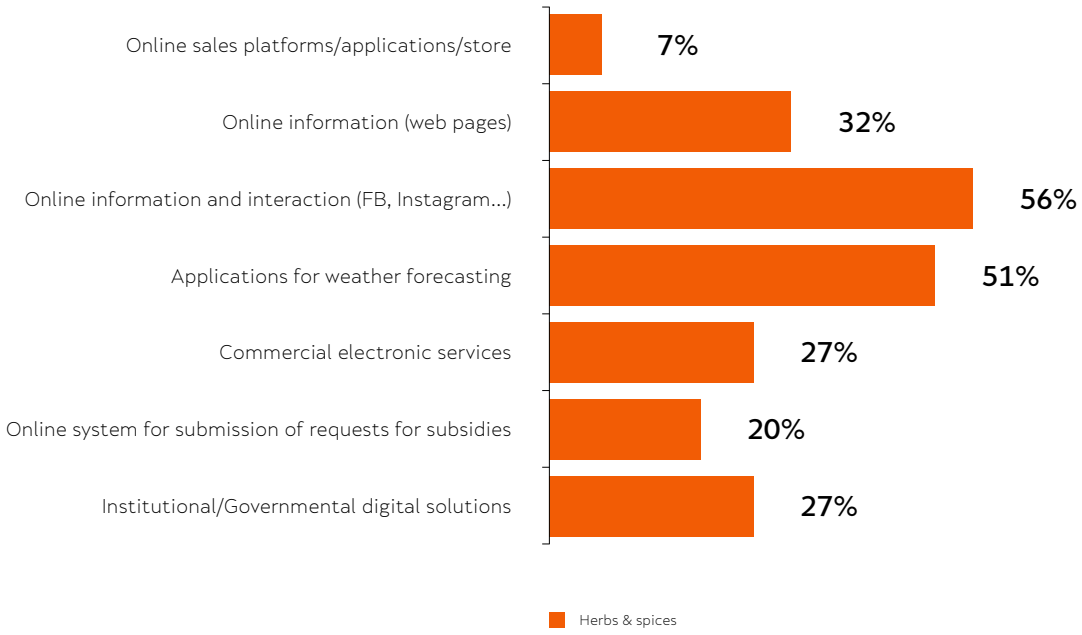
Source: UNDP survey, 2020

useful for their agriculture production (Table 19).

Most H&S producers (17%) consider digital support as not needed for their production. For 7% of them, it is not acceptable because they don't have knowledge in use of such tools, while 2% can't accept digital tools because of limited internet access. About half (44%) of the H&S producers would prefer digital tools to be explained by agronomists. Also, they prefer website information (41%) over mobile applications (37%). Only 7% of H&S producers are willing to accept digital support after appropriate training (Figure 34).

Additionally, the H&S producers answer about the most needed purpose of these digital supports. The most important utilization of digital tools for them is for climate/natural disasters (71%) and market demands for particular products (71%). Less than half of the producers consider digital tools about export/import/

Figure 33 **Frequent usage of digital solutions by agricultural producers of H&S**




Source: UNDP survey, 2020

Table 19 **Usefulness of digital support for H&S agricultural production**

| Dominant sub-sector | | Herbs & spices % |
|---|---|---|
| Would digital support be useful for your agricultural production? | No | 27 |
| | Yes | 73 |
| | **Total** | 100% |

Source: UNDP survey, 2020

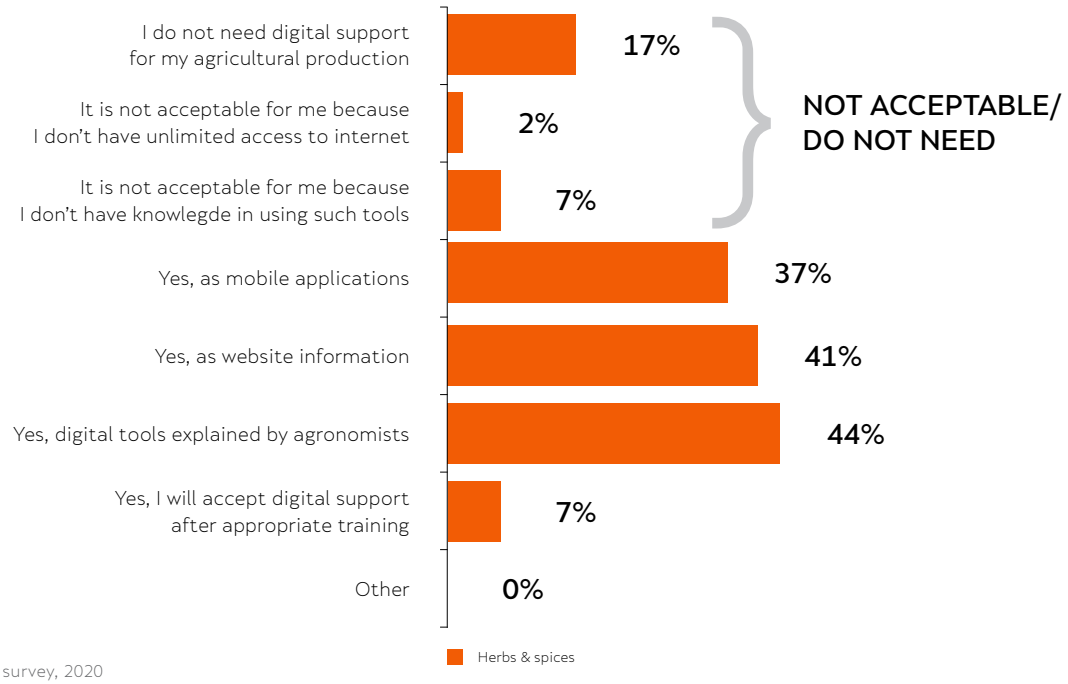
international markets (41%), online sales (32%) and access to finance (20%) important for their production (Figure 35).

According to these data, H&S producers mostly need introduction of IT tools in their production, as a climate and natural disaster warning system and a tool for market demand of a particular product.

## H&S companies and digitalization

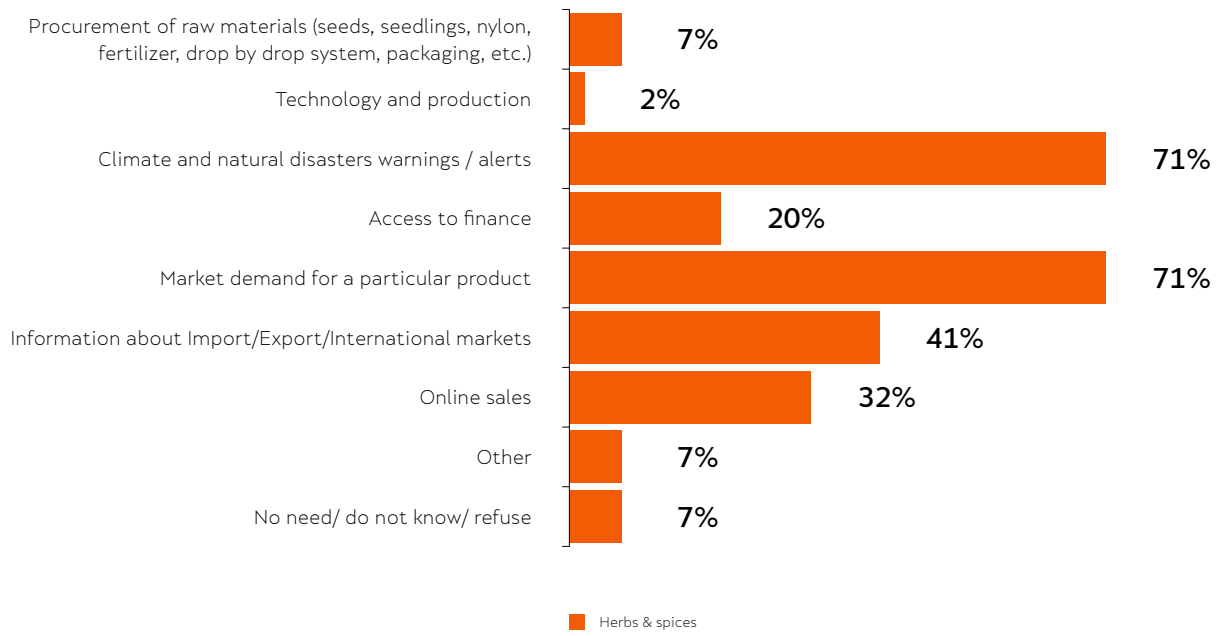
Priority needs for the H&S sub-sector companies in regards to digital technology and digitization in the near future (the next 1-3 years) are digital marketing including promotion on social networks (47%), development of their own e-shops (47%), e-commerce on current platforms/e-shops (27%). Only 7% of H&S companies need advanced computer tools

Figure 34 **Necessity and type of IT/digital support for H&S agricultural producers.**



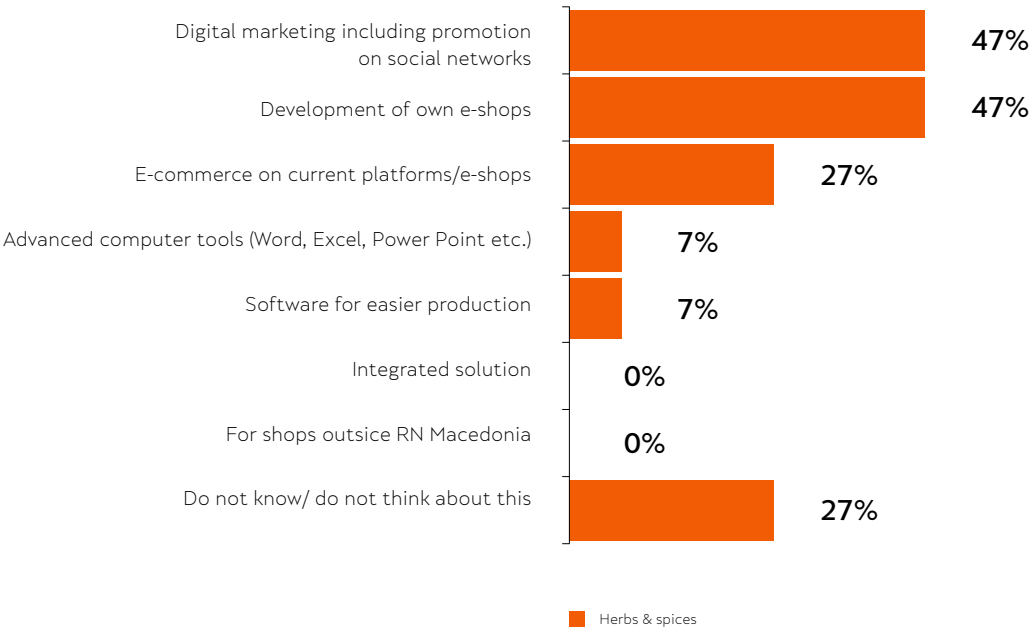

Source: UNDP survey, 2020

Figure 35 **Purpose of digital support for H&S agricultural production**



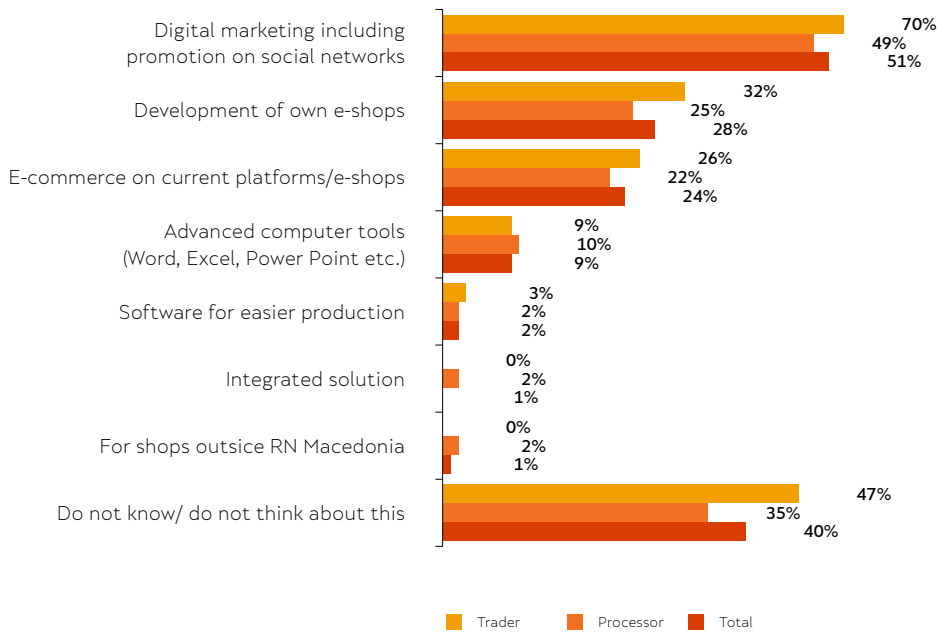

Source: UNDP survey, 2020

Figure 36 **Necessary type of digital support for improvement of H&S companies**




Source: UNDP survey, 2020

Figure 37 **Priorities of processors and traders or digital solution in their business**




Source: UNDP survey, 2020

and software for easier production as needed digitalization of their business. About 27% of H&S companies "do not know" what kind of IT/digital tools they need to improve business (Figure 36).

Overall for the three sub-sectors, when observing the companies by their main activity: traders or processors, their priorities in the next 1-3 years about the usage of digital solutions are similar: half of them (51%) mentioned digital marketing including promotion on social networks, development of their own e-shops, e-commerce on current platforms/e-shops, etc (Figure 37).

Companies dealing with H&S need staff training in digital marketing (27%), e-commerce (27%) and development of their own e-shops (20%). Surprisingly, 47% answered that there is no need of training in digital technologies (Figure 38).

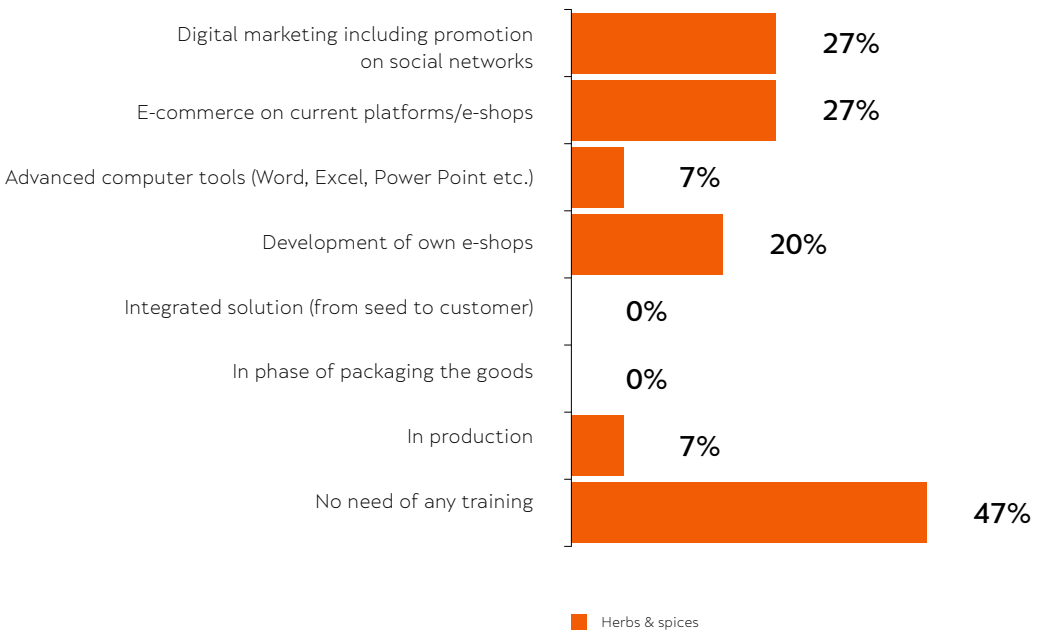
Overall, H&S product promotion can be digitally supported by the creation of different kinds of digital content such as promotional videos about H&S used on social media.

## 5.4 Innovation

Most H&S producers (41%) need trainings in improved productions methods and practices, but surprisingly 39% of them don't need any type of training. Training in opportunities to participate in IPARD programmes is important to 37% of H&S producers, i.e. almost the same importance as contract production (34%) and possibilities for processing in their household (29%) (Figure 39).

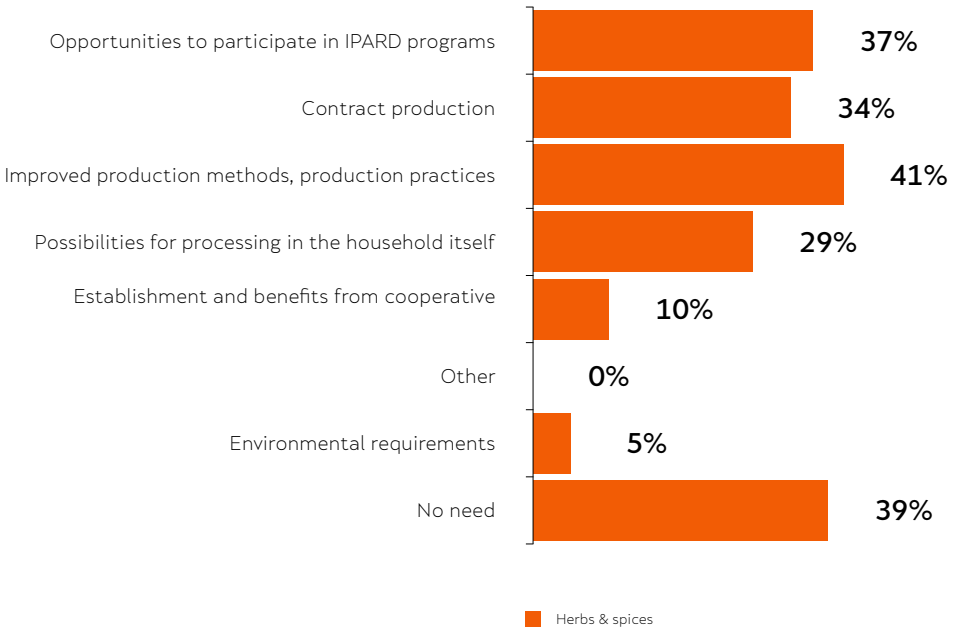
Introduction of flexible working patterns in processing and trading companies can be seen as an innovative practice for the owners, as well as for engaged workers. Job sharing together with is the most mentioned working pattern that observed agricultural companies would consider (Table 20). It is noticeable that all suggested working patterns would be considered in a range of 48%-71%. Companies dealing with H&S would in the highest percentage consider a flexible working time (73%), followed by job sharing (60%), reduced working hours (40%), and a compressed week (27%).

Figure 38 **Necessary staff training for knowledge and skills upgrade in digital technologies**




Source: UNDP survey, 2020

Figure 39 **Requirements of H&S agricultural producers for improvement of their business**




Source: UNDP survey, 2020

Table 20 **Flexible working patterns considered by agricultural companies**

| % of answers "YES" | | Dominant sub-sector | | | Main activity | | |
|---|---|---|---|---|---|---|---|
| | | Vegetables | Fruits | H&S | Trader | Processor | Total |
| | | % | % | % | % | % | |
| Model of working hours to be considered | Flexible working time | 53 | 68 | 73 | 71 | 59 | 64 |
| | Reduced hours | 31 | 76 | 40 | 59 | 49 | 53 |
| | Compressed week | 34 | 68 | 27 | 68 | 35 | 48 |
| | Job sharing | 69 | 76 | 60 | 62 | 76 | 71 |

Source: UNDP survey, 2020

There are positive examples of developed innovation business in the H&S sub-sector, which are explained in detail in Section 6.4 as in vitro production and production of herbs' seedlings as micro-salads. Additionally, small-scale production of cosmetics as soaps, herbal teas and lavender bags, herbal beverages and oil infusions shall be seen as home-based small business start-ups. Those kinds of businesses can be supported, especially since most of them are developed and worked by a female workforce in rural areas.

## 5.5 Environment and Gender

### Environment

The environment, natural disasters and climate change issues are one of the most important for agricultural production with high and good quality yields and sustainability of agriculture in general. The impact of modern agriculture on the environment and climate change is one of the biggest concerns in the world because of high synthetic inputs, intensive soil cultivation, monocropping systems and unsustainable agricultural practices.

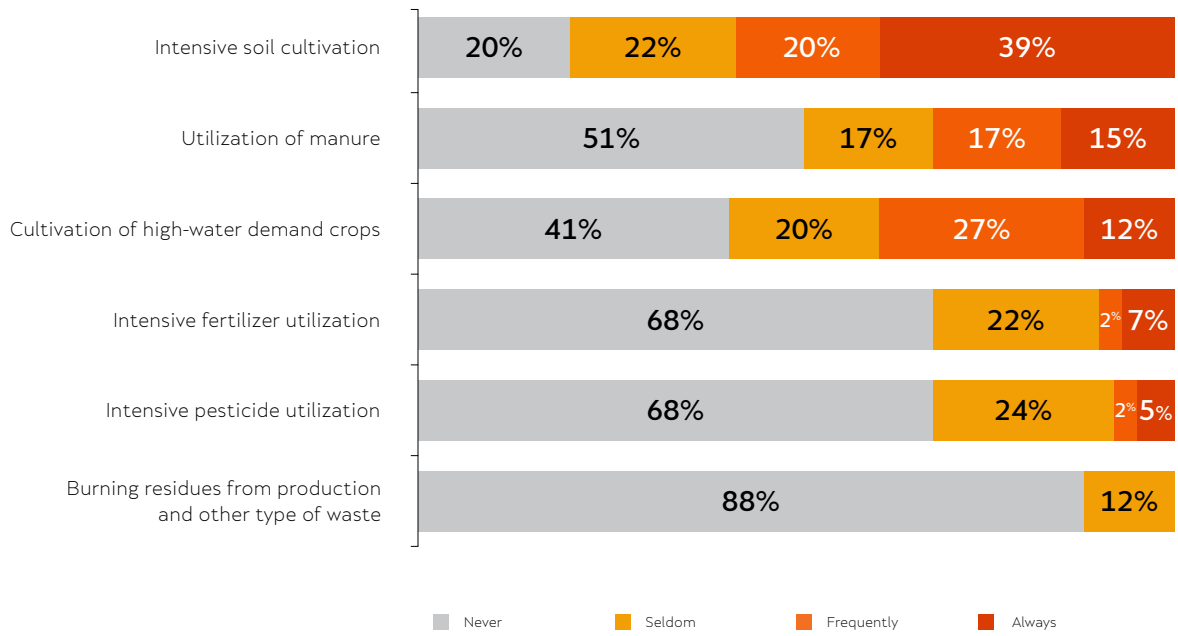
Concerning the climate change and environmental issues, the H&S agricultural producers were asked a set of questions related to their agricultural practices with the purpose of detecting the intensity of use of several practices in connection to environment and climate changes.

The most used practices of H&S producers (answer "Always") are (Figure 40):

- More than half of the H&S producers practice intensive soil cultivation ("always" 39% and "frequently "20%);
- Utilization of manure ("always" 15%) and together with "frequently" (17%) gives 32%. Surprisingly, 51% never use manure;
- Cultivation of high-water demand crops ("always" 12%) and together with "frequently" (27%) gives 39%;
- Intensive utilization of fertilizers and pesticides is highly avoided in H&S production (68% never use them);
- Burning residues from production and other waste is seldom practiced (12%).

When speaking about the needed support to manage climate change impact in the agriculture production, 51% of the H&S agricultural producers stated that financial support will mitigate climate change impact. On the other

Figure 40 **Frequency of agricultural practices concerning environment and climate changes**



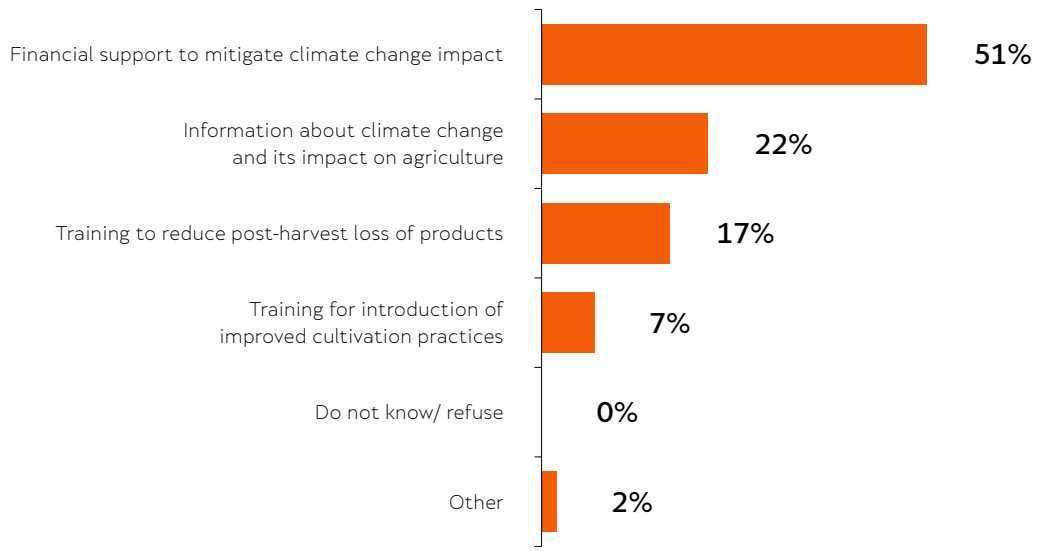

Source: UNDP survey, 2020

Table 21 **Environmental issues and H&S companies**

| % of companies | Herbs & spices % |
|---|---|
| Problems with organic production because of pollution | 13 |
| Forest fires | 13 |
| Air pollution | 7 |
| Hail destruction | 7 |
| Drought or too much rainfall | / |
| Bad infrastructure, no hygiene | / |
| Other | / |
| Have not experienced/do not know/refuse | 60 |
| **Total** | 100% |

Source: UNDP survey, 2020

Figure 41 **Climate change and needed support for H&S agricultural producers**




Source: UNDP survey, 2020

hand, only 22% of the H&S producers need more information about climate change and its impact on agriculture. The other type of support, such as training to reduce post-harvest loss of products (17%) or improvement of cultivation practices (7%), are mentioned in a much lower percentage. Such responses are indicators for urgent necessity for the rising agriculture producer's awareness about the agricultural practices and their impact on the environment (Figure 41).

A high percentage of H&S companies stated that they did not recently experience any environmentally-related aspect that affected the performance of their work (60%). A low percentage mentioned experiencing issues as: problems with organic production because of pollution (13%), forest fires (13%), air pollution (7%), and hail destruction (&%) (Table 21). The opinion of the companies about what is needed to handle and improve these experienced environmentally-related aspects regard the need for governmental measures, more information, adaptation and change of legal regulations and rulebooks, training and practical demonstrations, investments in new technology and equipment and expert support (Table 22).

## Climate change

The most mentioned effects of climate change for H&S companies are hail/rain destructions, affecting the quality of the products, damage by droughts, etc. Companies dealing with H&S in a higher percentage mentioned the impact of climate change on the quality of products as compared to other sub-sectors. Yet, 33% of companies dealing with H&S don't experience or don't know about climate change effects on their business (Table 23).

Compared to the other two sub-sectors, companies dealing with H&S need in a higher percentage expert support (53%) and more information to handle the climate change impact (40%). There is need for more information (40%), need for investments in new technology and equipment (33%), adaptation and change of regulations (20%), practical training (13%), and an irrigation system (7%) (Table 24).

Table 22 **Required measures for improvement of environmentally-related aspects**

| % of companies (multiple answer) | Herbs & spices % |
|---|---|
| Governmental measures | 20 |
| More information is needed | 20 |
| Adaptation and change of legal regulations and rulebooks | 20 |
| Training and practical demonstrations are required | 20 |
| Investments are needed (new technology, equipment) | 13 |
| Expert support is needed | 13 |
| Not asked | 60 |
| **Total** | **167%** |

Regardless of the data acquired during the telephone survey, the H&S sub-sector shall be seen as one of the most environmentally and climate change friendly out of all the agricultural sub-sectors. Most of the H&S production is done under organic certification, which is ecologically and environmentally-friendly by all means. Cultivation of wild autochthonous herbs shall highly contribute to expansion of their natural area and their protection. Cultivation of the old variety Bukovka for paprika spice is in line with recommendations for utilization of old varieties to combat climate changes. All these facts lead to development of future measures to support the H&S sub-sector as an advantageous one in terms of climate and environmental protection.

## Gender issue

It is well known that the position of women in traditional Macedonian agriculture is always neglected, although women participate equally in the agricultural business as men. Women work in the fields along with all the work they do as housewives. Although women are the main carriers of the work in rural areas, their position is underestimated because of the traditional understandings and views. Usually they don't own land, they don't have personal health insurance and a pension fund, and they are not involved in the decision-making process, even at a local level.

Rural Coalition is an NGO umbrella organization that integrates 40 local NGOs from all over the country acting in the agricultural sector. The organization's strategic priorities are economical strengthening of the youth and women in rural areas and participation in policy creation. During the COVID-19 crisis the organization conducted several surveys for assessment of the position of rural women during the crisis. Below are presented insights about the position of females in agriculture collected during the field interview and the findings apply to all the agricultural sub-sectors[21].

21 A documented interview with Mrs. Liljana Jonoski, CEO of Rural Coalition, 30.07.2020

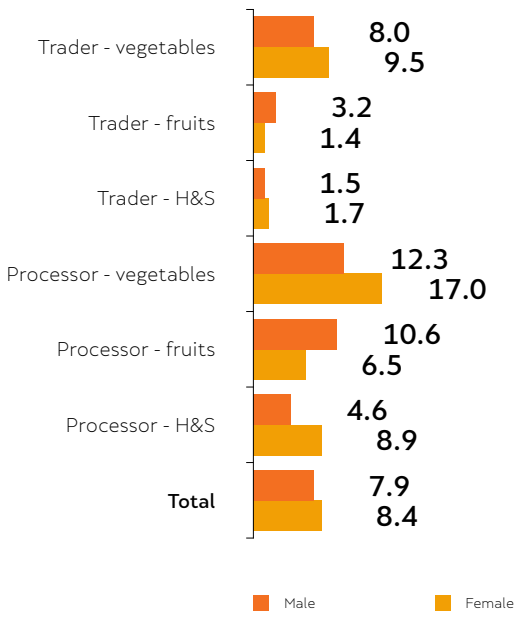
Table 23 **H&S companies and effect of climate change**

| % of companies | Herbs & spices % |
|---|---|
| Hail/rain destruction | 20 |
| Quality of the products | 27 |
| Drought | 20 |
| Spring frosts | / |
| Floods | / |
| Irrigation problems | / |
| Plants mature faster | / |
| Other | / |
| Have not experienced/do not know/refuse to answer | 33 |
| **Total** | 100 |

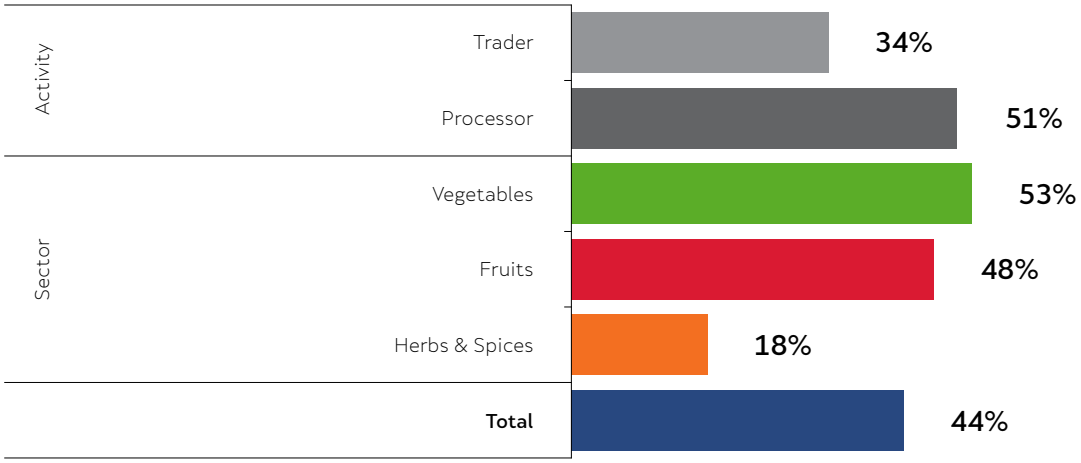
Table 24 **Required measures for improvement of climate change – related aspects**

| % of companies (multiple answers) | Herbs & spices % |
|---|---|
| Investments are needed (new technology, equipment) | 33 |
| Expert support is needed | 53 |
| More information is needed | 40 |
| Adaptation and change of legal regulations and rulebooks | 20 |
| Training and practical demonstrations are required | 13 |
| Irrigation system | 7 |
| Hail protection system | / |
| Anti-frost system | / |
| No need | / |
| Not asked | 33 |
| **Total** | 200 |

Figure 42 **Gender distribution in the sub-sectors of vegetables, fruits, and herbs & spices: a) Number of full-time employees by gender, b) Percentage of female seasonal labour force**




**a**. Average number of full-time employees by gender




**b**. Percentage of female seasonal labour force

Source: UNDP survey, 2020

There are examples when it is difficult to find women to participate in certain project activities. Many rural women don't want to be photographed and their photos placed in reports or FB pages, etc. The number of women who utilize financial support for agriculture and rural development is low. As an example, from 125 IPARD contracts just 15 are signed by women. There is a major problem with IPARD funds and their utilization by small farmers because the

application and documentation are difficult to fill in and collect. There are IPARD info sessions which are not announced in a proper way and thus attended only by men.

Lately, there is an increased number of applications for the Measure 115 "Support for Active Women as Members of Agricultural Families" from the Programme for Financial Support for Rural Development – 400 applications were submitted, while the programme supports 100.

There is a Group for gender equality in MAFWE, which works actively on strengthening the position of rural women and lobbying for higher financial support in activities of rural women. For example, when there are unutilized financial means from the Programme for Financial Support for Rural Development, the group sends requests for re-direction of those finances into Measure 115 "Support for Active Women as Members of Agricultural Families". The Women Farmers' Network is a group working within the National Federation of Farmers and it aims at economic empowerment of rural women, strengthening the leadership skills of women farmers, primarily helping the realization of their property rights and agricultural land, exercising the right to a pension, educational field training, study visits, and focus group work with vulnerable groups from rural areas. If properly engaged in different official bodies and working groups, they can highly contribute to strengthening of the sub-sector.

The full-time employment in three sub-sectors under the study is in favour of females – on average there are 7.4 males and 8.4 females employed by processors and traders. H&S traders on average employ 1.5 males and 1.7 females, while processors employ 4.6 males and 8.9 females. Thus, females are employed more full-time as labour force in companies dealing with H&S. The percentage of females hired as seasonal workers is the lowest (18%) in companies dealing with H&S as compared to vegetables and fruits (Figure 42). Nevertheless, based on field work and personal knowledge, most of the seasonal workers hired in H&S primary production are women.

# 6. SUSTAINABLE PRACTICES AND APPROPRIATE SOLUTIONS FOR SUPPORT OF THE MOST VULNERABLE

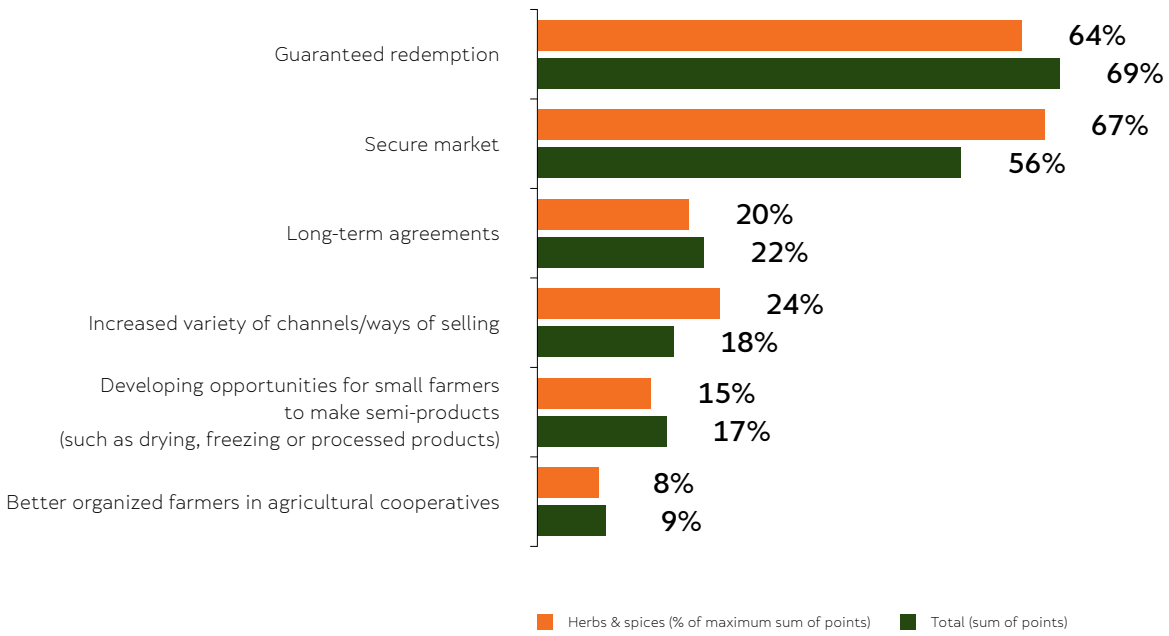
## 6.1 Socio-economic impact of the COVID-19 crisis in agriculture

The fact that 46% of the questioned agricultural producers and all the companies in the H&S sub-sector responded that the COVID-19 crisis had an impact to a certain extent on their business says enough about the seriousness of this crisis, which found all the stakeholders unprepared to deal with. On the other hand, agriculture is a sector that provides food and other essential products for human and animal beings, and it can't be done online. Taking into consideration all these facts, combating COVID-19 and similar crises in agricultural production is one of the most important 'musts' for the time being.

Among producers of H&S, the COVID-19 pandemic has the most severe negative impact on sales prices, sales volumes, labour availability and sales conditions in terms of selling contracts with companies. Due to the COVID 19 crisis, the companies dealing with H&S faced problems with the procurement of raw materials, procurement of other inputs, transport of the products and engagement of the workforce. It is interesting that the severe negative impact is lower on sales quantities and sales prices. No H&S company reported a positive impact of the COVID-19 crisis on their business.

Yet in the conducted telephone survey, H&S producers shared their opinion about necessary measures to combat COVID-19 and similar crises, and they refer to: guaranteed redemption, secure market, increased channels for selling, long-term agreements, development of opportunities for small farmers to make semi-products and better organization of farmers in agri-coops (Figure 43). The provided answers are proof that agricultural producers, regardless of the sub-sector, face the same obstacles in their business with and without the COVID-19 crisis. The crisis just makes them feel more insecure and vulnerable.

Figure 43 **Necessary measures to combat COVID-19 and similar crises in H&S primary production**




Source: UNDP survey, 2020

During the COVID-19 crisis and the state of emergency on the territory of the Republic of North Macedonia, the Macedonian government put into force of law several governmental decrees to support individuals and the economy, including agricultural businesses[22]. Unfortunately, all the interviewed agricultural producers in the H&S sub-sector declared that they were not beneficiaries of any governmental measures, including a 3,000 MKD card 'Buy domestic products' and a 6.000 MKD tourism voucher, introduced to support the most vulnerable population during the COVID-19 crisis. Most of the interviewed producers stated that movement restrictions and closure and restricted operating hours of open markets and the wholesale green market highly impacted the availability of seasonal workers and selling of their products. The general feeling among the interviewed producers about combating the COVID-19 crisis is that they are not powerful to change anything in the business, except to carry on their work.

Although the COVID-19 governmental support measures were mostly directed to companies, they are just temporary measures to abate the situation, but without a long-term solution. The fact that H&S companies face a high severe impact in the procurement of raw and input materials says that there is need for serious analysis of the sub-sector and creation of a better support system to it, such as increased domestic production of raw materials, introduction of fair contract farming and development of the industry for domestic input supplies, which can provide necessary inputs for smooth running of the business.

Another measure for rapid adjustment of domestic companies to the COVID-19 crisis was launched by FITR – Instrument for financial support "Co-financed grants for technological development to overcome the consequences of COVID-19"[23]. This instrument was published

22 Annex 8. List of laws and governmental decrees with the force of law in relation to agriculture, financial support measures for individuals and companies in the COVID-19 crisis as given at https://vlada.mk/uredbi-covid19 and published in the Official Gazette.

23 A documented interview with a representative from the Fund for Innovation and Technology Development, 29.07.2020. As part of the interview, the FITR representative sent by e-mail their official data, which can be found on their website.

on 29.05.2020, with a deadline for submission of project proposals until 03.07.2020. The purpose of this instrument was to provide financial support for technological development of enterprises and private health institutions to overcome the consequences of COVID-19, i.e. to provide support for the following types of investment activities:

- Acceptance and introduction of guidelines for protection of employees and clients related to COVID-19;
- Improvement of the organizational structure and reorganization of the work process (procurement of raw materials, production process, sales, etc.);
- Introduction of digital solutions in order to adapt to the new operating conditions;
- Training for medium-term business planning (three-year business plan);
- Procurement or development of specific software related to improvement of the organizational structure and performance or for improvement of the operational processes that will increase the productivity and/or the planning process, or introduction of new sales channels (e-commerce, etc.);
- Introduction of new products and/or services for which there is increased demand during the crisis and the recovery period;
- Staff training related to these adjustments.

From all applied project proposals, 2.43% were in agriculture sector, 0.61% in food production, 14.72% in IT and 16.56 in sale, marketing and distribution.

## 6.2 Sub-sector and value chain insight and interventions

### Policy and institutional strengthening of the H&S sub-sector

H&S production is performed under existing agricultural legislation in power for production of all plant crops that mainly are harmonized with the EU legislation and/or adapted to specific conditions of the country.

There is no data about H&S cultivation, except organic production of H&S, thus there is lack of reliable information about the potentials, opportunities and constraints in the H&S sub-sector. Accurate sub-sectorial analysis and dimension of appropriate measures for policy and institutional strengthening can be performed only with official data. Hence, there is urgent necessity for official statistical data as areas cultivated, yields, quantities, prices, markets etc. that shall be publicly available. Also, there is necessity for identification of suitable agro-climatic regions for H&S cultivation, profitable minimal cultivation size, investment costs, demand and supply, selling and available markets and generated income from H&S production and products.

There is urgent need for establishment of an H&S multidisciplinary working group (policy makers, agronomists, biologists, pharmaceutics, representatives of H&S companies and pharmaceutical companies) within MAFWE, which will contribute to improvement of production and development of H&S in the real sub-sector. Also, there is need for better inclusion of H&S in the new National Strategy for Agriculture and Rural Development, with detailed SWOT analysis and real measures to support it.

The direct payments for primary production of H&S are good enough to support it. Higher subsidies for primary production can lead to malpractice of H&S as it was the case with anise production, thus it was transferred from MASPs to field crops in the Programme for direct payments in 2019. The fact that H&S are subsidized in the same group as vegetables and still they are produced on a small scale says that the problem is not in the subsidy programme and amount of financial support. However, it is highly recommended that the list of H&S subsidized is to be refined to crops that are cultivated in reality, so misuse of H&S subsidies will be avoided in the future.

IPARD support for H&S is available under Measure 7 – Farm diversification and business development, but no utilization of funds by H&S agricultural producers. Producers find the IAPRD application process difficult and they are not financially strong to pre-finance bigger investments. Nevertheless, the IPARD Agency together with NES officers shall make an ap-

propriate way to disseminate information to producers and to encourage them to apply because information about opportunities to participate in IPARD programmes is one of most needed for improvement of H&S production.

In the National Strategy for Agriculture and Rural Development 2014-2020, MAFWE set the national strategic goal to increase the competitiveness of organic production in the country for successful placement on the domestic and foreign markets, including collection and production of organic H&S. Since the only official data about H&S cultivation are from reports for organic production and the registry for organic producers, the situation in organic H&S cultivation and collection of wild herbs shall be analyzed in depth as a positive example for sub-sector policy improvement and business strengthening. The analysis, based on the documented interview with an expert in organic agriculture and improvement of organic production, shall be achieved with[24]:

1. Introduction of areas for collection of wild herbs/species in the cadastral records.

2. Collection and cultivation of H&S need to be elaborated in detail in the legislation on organic production, in the form of amendments to the Law on Organic Production and preparation of a by-law, i.e. Rulebook, where the competencies of state bodies will be clearly defined, the definition of procedures for cultivation and collection of H&S, the methods for organic certification controls, etc. The lack of a legal basis is the main reason why collection of wild herbs/species is not part of the Programme for financial support in agriculture.

3. There is need for preparation of a new model for the distribution of subsidies in the H&S sub-sector. There are no subsidies in the Programme for financial support in agriculture for the companies that operate the purchase, processing and export of organically certified wild and cultivated H&S. Those companies make investments for registration and adjustment of the congregation points for receipt and storage of organic certified products, investments in training of collectors/producers, costs for processing facilities, etc. This policy improvement will contribute to transparent declaration of collected wild herb quantities.

4. In addition to the legal framework and subsidy introduction, a strategy for development of the H&S sub-sector shall be prepared because the part for H&S is insufficiently developed and insufficiently clear in the current National Plan for Organic Production 2013-2020 and the National Strategy for Agriculture and Rural Development 2014-2020. Thus, it will bring a clearly defined plan and goals as to what the state wants to achieve in the next period, and clear directions on how to achieve greater development in this sub-sector.

5. Companies have individually established export links with EU countries, but there is still no organized export of organic products. Therefore, it is necessary that the establishment of an association of collectors and producers of H&S be supported. The association, on the one hand, will represent the interests of the companies and individuals in front of the competent institutions, and on the other hand, it will establish export links and provide sufficient quantities for the export of these products.

6. Public campaigns through various media tools are also in favour of the development of the area. These campaigns should have at least two target groups:

   - collectors of wild herbs and fruits and H&S producers – promotion of sustainable collection practices and a long-term survival of the collected species, benefits of cultivating such plants, opportunities to achieve a constant income by selling products in the country and abroad;
   - processors of H&S – to increase market supply and appropriate labelling of the products (branding);
   - general population/consumers – to raise consumers' awareness to buy these products and their benefits to humans.

**Organic production of H&S has a good potential** because there is legislation, two certification bodies and accredited laboratories which provide necessary analyses. However, organic production and Global G.A.P. are voluntary standards in primary production. Farmers usually

24 A documented interview with an organic agriculture expert and technical evaluator of IARNM.

find them difficult and expensive to implement, nevertheless the certification process of organic production is subsidized with 50% of the amount paid for certification.

GAP is given as an obligatory production practice in the Code for good agriculture and hygiene practice issued by MAFWE, which must be complied to by agricultural companies and individual producers. Yet, there is no clear inspection process and no certificate to companies and producers that follow the Code.

Food production in the country is regulated in the Law for Food Safety and its by-laws, which are harmonized with the EU legislation[25]. The environmentally-related practices and certificates are relegated under the Code for good agricultural and hygienic practice and the Law for Environment, respectively. Implementation of ISO 9000 family (Quality Management) and ISO 14000 (Environmental Management) standards is voluntary and they are implemented by companies depending on their business operation.

Although legislative and connected documents in North Macedonia are mostly harmonized with the EU legislation, the main issue is their implementation and control of their complete and proper implementation.

## H&S agricultural producers and possible sustainable practices

Based on all the data collected during this analysis, the most challenging obstacles for H&S agricultural producers and their business are unavailability of markets and demand for their product, low selling prices and unavailability of labour force. Unavailability of markets and low selling prices is a common problem in all agricultural sub-sectors. These are the main reasons for lack of willingness among agricultural producers to increase their production. The H&S producers are willing to increase their production only if they have secure selling and better prices. Subsidies, machinery and input supply are factors that have an influence on the production size, but those factors are minor and can be easily exceeded if the producers earn enough. However, one of the main limitations in production of herbs for medicinal and pharmaceutical purposes is unfamiliarity with production practices, no know-how experience exchange, unavailability of seed and seedling material, and high pre-investment in post-harvest technology (seed cleaners, driers, distillation equipment, and cold storage infrastructures). Although NES shall be the key institution in advising and training of farmers in production practices and introduction of new crops, their role in this field of work has been insignificant and marginalized in the past years. Farmers mostly contacted NES officers if they needed administrative help with documentation for IPARD application – Measure 1. Generally, farmers are interested in trainings if they see immediate financial benefit because their attitude is that they have good knowledge, but they are missing financial means for improvement of their business[26].

Although contract farming has been promoted and seen for many years as a win-win situation for producers, processors and traders, it is mostly not functioning. Most H&S producers sell their products without a contract or the contract is made at the selling point. Both sides have their own stories as to why the contract farming is not working. Agricultural producers always say they are in a subordinate position, processors and traders offer low and unfair prices. On the other hand, processors and traders are not satisfied with the quality of commodities. There are positive examples of long-term collaboration between producers and processors/traders, but those are mostly oral agreements and usually based on personal trust. H&S producers, especially producers of medicinal and aromatic plants, have severe problems with markets and selling prices because they are dependent on few companies who operate in the sub-sector. Hence, there are several unsuccessful stories for cultivation of medicinal and aromatic by individual producers, although they are subsidized as equally to vegetable crops. On the other hand, fresh herbs and paprika producers are less dependent on processors and traders because they produce small quantities and sell their products to known and long-term business collaborators (small open market retailers and traders).

25 A detailed analysis of 'Analysis of the legal framework for processed products of plant origin in support of small food businesses' is available at https://slowfood.mk/analiza-za-za-konskata-ramka-za-rastitelni-pr-di/

26 A documented interview with a NES representative, 22.07.2020.

One of the best solutions for improvement of H&S producers' position and development of primary production is the establishment of strong association and functional cooperatives which can offer many opportunities for development of their business and better market availability. Unfortunately, there is no H&S cooperative in the country, nor any serious association which can lobby for their interests.

Strengthening of current H&S producers and increasing their production can be done with training in improved production methods and practices, information and guidance in application for IPARD measures and assistance in connection and networking with regional countries with advanced production of H&S for know-how experience exchange.

### H&S companies and possible sustainable practices

Most of the processing and trading companies deal with raw materials coming from diverse agricultural production. The fact that it was difficult to find enough companies that work with H&S for the purpose of this study says much about the size. Most of the companies in the MAPS sub-sector process and trade either their own raw material or raw material mostly from individual plant collectors, while paprika processors and traders regularly work with imported raw material. All these facts are an additional argument for the necessity for intensive development of the primary production of H&S.

H&S processors and traders had the highest utilization of their own capacities in 2019 as compared to the other two sub-sectors and 2/3 of them can increase their capacities in the near future. When we compare these data with H&S agricultural producers (only 15% plan to increase their production), we find an unbalanced development of the sub-sector. Even more interestingly, availability of raw material is ranked as the least important for increasing companies' capacities.

Factors important for increasing H&S companies' capacities overlap with the factors that impede the value chain functioning in terms of technology, workforce, infrastructure and the business environment: availability of seasonal workforce; qualified labour; new equipment vs. production equipment obsolescences; new markets vs. lack of buyers; access to availability to finance vs. access to capital; availability of labour force. Most H&S companies sell their products domestically, mostly via traders and wholesalers under their brand, which is a very positive example to be followed by processors and traders in other sub-sectors. Actually, individual producers and companies face mostly the same problems in their business segments (lack of labour, finance, equipment). Yet, there is unequal distribution of power. Even though processors and traders shall be dependent on producers as providers of raw material, in reality it is the opposite. The fact that there are less agricultural producers and stronger companies says a lot about power distribution in agricultural value chains.

There is no 'one size fits all' solution for issues that have been present for many years in the agricultural companies' business. Seasonal and qualified labour is becoming a concern in most of the industries in the country and it can be solved with increased payment of workers and strong strategic planning by all governmental institutions. A possible solution is intra-governmental collaboration among MAFWE, the Employment Agency, and the Ministry of Labour and Social Policy for redirection of unemployed working power, which is beneficiaries of social, health and other state services. Such a measure should be directed especially to persons who were laid off as a result of the COVID-19 crisis. Yet agricultural companies shall be more pro-active in collaboration with agricultural high schools and faculties to recruit and train their future employees. Improvement of infrastructure can be achieved with creation of a better business environment – loans with a favorable interest rate, assistance in the IPARD application process for micro-companies, support for the promotion of Macedonian products on international markets, etc.

## 6.3 Digital and ICT

Digitalization and utilization of IT in agriculture has been a practice in developed countries for along time. Unfortunately, Macedonian agriculture is far from digitalization and usage of smart technologies, which can contribute for

the development of agriculture as a sector. The COVID-19 crisis brought to the surface the importance of digitalization in every segment of business and life including agriculture. Consequently, there is an urgent need of implementation of digital tools in agriculture – from governmental institutions to primary production and business. There are available IT/digital resources available to support agricultural business in general (Annex 9), but the available content is not updated regularly, relevant information is scattered on different platforms, some of the resources are in function for the time being of the projects, etc.

It is widely known that digital tools in agriculture are used by younger and IT-literate producers and the most appealing digital tools for producers are social media and weathercasting applications. Yet, there is certain number of H&S producers who find that there is no need for digital tools in their production and those are usually elderly producers. Interestingly, the least used digital tools among H&S producers are commercial electronic services, and even less the e-subsidies electronic system, although these two tools are very important for producers who usually live outside the towns. Low utilization of these tools is most probably due to IT illiteracy and no proper user-friendly guidance for their usage.

IT literacy can be increased with practical trainings for farmers conducted by local NGOs, IT teachers in village schools, municipalities, NES, private advisory consultants (agronomists who support their production). The most urgent training for producers should be done in usage of commercial electronic services as e-banking and e-subsidies. Utilization of available IT tools for agriculture can be strengthened with their promotion via different communication channels as FB and Viber groups which are the digital resources most used. The best IT solution for H&S producers is introduction of a mobile application for a climate and natural disasters alert system, which will be locally specific and connected to a warning system for emergence of diseases and pests and their suitable treatment.

On the other hand, H&S companies need digital tools mostly for business promotion and development of their own e-shops. Interestingly, there is a considerable number of companies who don't see and/or don't the benefits of IT tools for their work. Development of IT tools for business promotion should be the personal response of the companies, but there is need for promotion of e-commerce/e-shop benefits with positive examples from other sub-sectors and adaptation of these possibilities to the needs of H&S companies.

Still, the creation of digital content might highly contribute to reinforcement and promotion of H&S products and companies. Possible digital content that can be created is:

- video materials for cultivation and processing of H&S (concept 'from farm to fork');
- videos of the production process of herbal cosmetics;
- videos of the production of different H&S food products and beverage infusions.

All these materials can be used on social media for promotion of herb biodiversity and organic production and can contribute to higher consumption of H&S products.

## 6.4 Innovation

Innovations in each economic sector shall be developed and introduced by academia and innovative entrepreneurs supported by a good business environment. The Republic of North Macedonia has several educational and research institutions that conduct education, research and other application work in the field of agriculture, but no real innovation and academia research – technology – business transfer.

One of the academia research which is suitable for business transfer in the H&S sub-sector is micropropagation and *in vitro* culture. This methodology is used in two laboratories in the country with many possibilities for implementation of *in vitro* research results into practice for production of plantlets (medicinal and aromatic herbs, decorative plants, woody plants blueberries, raspberries, blackberries, etc.). Also, the *in vitro* technology provides a lot of possibilities for production of important secondary metabolites medicinal and other plants in bioreactors that can be used as raw material

in the pharmaceutical and cosmetics industry. There are many advantages of raw materials produced *in vitro* as a shorter time, bigger quantities, microbiologically sterile material, etc. The biggest obstacle in *in vitro* commercial production of plantlets is the high cost of production technology, the necessity of skilled workers, and high loss of plantlets due to the low adaptation rate. In vitro commercial production of plantlets is possible for species with high market prices which can justify *in vitro* production costs. Currently, the in vitro laboratory of Prof. Sonja Gadzovska Simic is collaborating with the Faculty of Pharmacy in research of *in vitro* production of natural products for pharmaceutical purposes, and Prof. Gadzovska Simic is one of the first Professors who succeeded in transfering her research into business[27].

Entering the H&S production and business is an innovation by itself. For most of the crops, especially medicinal and aromatic herbs, there are no established cultivation practices and no know-how transfer of knowledge in the country. Most producers who entered production of medicinal and aromatic herbs are progressive and bold producers who wanted to start something new and challenging. Consequently, it is not a surprise that most producers questioned need training for production methods and practices together with possibilities for processing of commodities in the households.

There are a few positive examples of innovation business in the H&S sub-sector, which can serve as positive cases for development of innovative businesses.

## Case of 'Plant Engineering' – spin-off company for development of novel food and natural products[28]

The spin-off company 'Plant Engineering' is a positive example of innovative technology transfer from academia research to business start-up. The biggest challenge to start the business was Prof. Gadzovska Simic to take the first step, courage, audacity and investment of personal financial assets. The second challenge

27 Based on a documented interview with two University Professors in Plant Biotechnology, conducted on 23.07.2020 and 30.07.2020.

28 A documented interview with Prof. Sonja Gadzovska Simic, PhD, 23.07.2020, Professor and founder 'Plant Engineering' – a spin-off company for development of novel food and natural products.

was development of a business application form for FITD funds. The lack of knowledge in business development made it a difficult and long-lasting process. The next obstacle was seen in defending it in front of the FITD fund board, including international members from the World Bank, and it was rejected the first time due to lack of a sustainable business component. After revision and re-submission of the application form, it was approved with 100.000 EUR support from FITD funds and 50.000 EUR personal financial assets. Prof. Gadzovska Simic rates the cooperation with FITD as excellent, although it took 1.5 years from development to approval of the business plan. Additional support for establishment of the spin-off company was provided by personal resources and the Faculty of Mathematics and Natural Sciences, the Institute of Biology in terms of utilization of faculty premises free of charge, available equipment, and overheads exemption. Two years after the establishment of the company, 10% of its turnover will be delegated to the Faculty account.

At the moment the company has four products that will be organically certified, and the company is in the process of signing a contract with the Tinex market chain for:

- microbabymix – broccoli, peas and sunflower micro-plants;
- microantiox – amaranth, broccoli, red cabbage and corn micro-plants;
- microaromatic – rucola, basil, broccoli and radish micro-plants;
- micropicante – broccoli, rucola, radish and mustard micro-plants.

At the moment of the interview, Prof. Gadzovska Simic doesn't see e-stores as a possibility for selling the products, but only contract selling with the company "Food Bar" and the Tinex market chains.

## Case of 'Food Bar' – company for ready-to-eat fresh herbs and salad mixes[29]

Food Bar is a newly established company which currently employs 13 people. They work with packaged ready-to-eat fresh herbs and salad mixes, such as rucola and baby-rucola, corn salad (*Valerianella locusta*), baby spinach and other fresh vegetables and fruits. The company doesn't have their own production. Most products are domestic, and they obtain them either from traders at the wholesaler green market in Skopje or directly from producers. Some commodities, such as corn salad, are imported from Italy or Greece because they are not available at all in the country.

Establishment of contract farming is a difficult process because of small non-unified production scattered all over the country. Yet, there are some 20 producers who are willing to make contract farming with 'Food Bar' and sell the product directly to them. The start-up company 'Plant Engineering' is seen as a potential partner for collaboration and there are serious plans: selling micro-green salads via Food Bar.

The innovative approach in the company's business is a special type of packaging – anti-fog packages with micropores, which contributes to an appropriate ratio of $CO_2/O_2$ in the package, extending the product shelf-life. The business is mostly limited by the availability of raw materials, machines and cold-storage facilities, which are high-cost investments. An additional limitation is unavailability of labour.

The products are sold via different market chains in Skopje, Strumica and Prilep, small exports to Kosovo, and a plan for selling all over the country. The best selling channels are Tinex markets and the e-shop Paketi.mk.

The business was supported by state subsidies for employment and packaging machine by the IME programme. Regarding bank loans the company faced difficulties in the beginning because the turnover was low and there was no loan portfolio. A loan asset from Tutunska banka contributed to the increase of the company's turnover. However, the loan interests from commercial banks are high and it contributes to low investment rates of SMEs.

The company has had a high rate of growth in the first three months of 2020. It has shown liquidity, and there were investments during the COVID-19 crisis. Yet, the COVID-19 situation contributed to business limitations because there was a 20-30% selling decrease during lockdown periods and the company could not enter the HORECA sector as was previously

29 A documented interview with a representative of the company Food Bar, 07.08.2020.

planned because all restaurants/hotels were either closed or limited in their operation. The company is not a beneficiary of governmental COVID-19 measures for economy support, but they applied to a call for support of companies which invest during the COVID-19 crisis issued by the Ministry of Economy.

Future investments of the company are directed to the packaging technology, which guarantees sterile fruits and vegetables as a response to increased food safety requirements initiated by the COVID-19 crisis. The financial assets for this production line are requested with an application to the latest FITD call for innovations for combating the COVID-19 crisis. Yet, there is uncertainty connected to the business and COVID-19. There will be a decrease of selling if the purchasing power of consumers is low because Food Bar products are not in the group of essential foods.

### Case of micro - greens production 'Microzeleno'[30]

The producer is an agronomist who got the business idea for micro-greens growing from the internet. The production has been ongoing in the past 2,5 years, where the first year was more experimental in terms of cultivation conditions. The whole operation of the production, including selling, is done by the producer. He produces seedlings of 9 horticultural species (coriander, rucola, broccoli, corn, peas, white and red radishes, green and red cabbage, daikon). The production is done in a closed and controlled environment (30 $m^2$, in the process of extension but has been stopped due to the COVID-19 crisis), in trays placed on shelves. The seeds are untreated with chemicals and usually supplied by the company 'Semenarna'. The average monthly production is 900-1.000 pieces (small plastic boxes) of fresh green seedlings. At the moment the production infrastructure is limited by LED illumination.

The general business limitation is market availability because "it is not difficult to produce; it is difficult to sell". The production is sold via the trading company 'Miks frut' but the price of the product is arranged by the producer. The producer has written contracts with some of the clients, while with others there are only oral agreements. The majority of the production (80-80%) is sold in Skopje, while the rest is all over the country.

The COVID-19 crisis has had a major effect on the business because the major clients of 'Mikrozeleno' are exclusive hotels, restaurants and casinos, which were closed and now they are working with limitations (no celebrations, congresses, fewer guests and tourists). In the past 5 months the production has been limited to 3-4% of the previous production.

The business is not supported by any fund, including FITD, because the owner finds it difficult to collect all the documentation and development of application for FITD. The current crisis opened views for online selling of products. A possible limitation to online selling is that domestic consumers are not aware of the benefits that micro-greens have and they are not used to buying and consuming such food. According to the owner, Facebook and Instagram are the best and cheapest models for marketing and selling of his products.

Production of H&S provides different opportunities for development of small businesses, involving women as business developers and carriers: production of ready-to-eat fresh herbs in pots, production of local herbal tea packages, production of homemade oil and spirit infusions with local herbs, production of artisan soaps, production of lavender bags, etc. The new 'Rulebook for deviations from special measures of hygiene for small businesses, methods and requirements to be met when direct supply of food by the manufacturer to the final consumer, terms of premises, materials, tools and equipment in facilities that produce and the manner of food production with traditional characteristics' gives numerous options for starting a home-based business.

## 6.5 Environment and Gender issues

### Environmental issues

Environmental issues and climate change are one of the hottest topics in the past years.

30 A documented interview: individual producer who produces seedlings from horticultural crops as micro-salads under the name Mikrozeleno, 18.08.2020.

Agricultural producers are obliged by the Law for Agriculture and Rural Development to follow recommendations given in the Code for good agricultural and hygienic practices. Principles of good agricultural and hygienic practices are environmentally-friendly, contributing to low chemical inputs and less environmental pollution from agricultural resources. Nevertheless, hardly any agricultural producers follow those principles because hardly they change cultivation practices.

Taking into consideration that most medicinal and aromatic herbs are produced organically, it is certain that producers follow organic production strict rules and only use approved chemical inputs for organic production, which might not be the case with conventional producers of fresh herbs and pepper for paprika spice. Yet, intensive soil cultivation, low utilization of manure and cultivation of high-water demand crops are indicators that there is a need for education and training of farmers regarding environmental issues and climate change effects on their production. A considerable number of H&S producers believe that there is no impact of climate change on their production, or they are aware that climate conditions have changed as a momentarily phenomenon.

Most of the H&S companies have not experienced any environmentally-related aspects that affected the performance of their work, while they are aware of existing climate change processes, thus they are asking for more information, expert support and investments in new technologies to mitigate the effect of climate change on their business.

Environmental and climate change solutions in agriculture should be part of the strategy and devoted work of MAFWE, MEoPP and all the academic and professional institutions in the country. Issues can be solved with joint efforts, implementation of recommendations by organizations such as FAO, UNEP and UNDP for mitigation of environmental and climate change impact.

At the local level, there is a need for trainings in the Code for good agricultural and hygienic practices for farmers and agricultural companies with primary production, trainings for importance of regular soil analysis, trainings in quantities and application methods of pesticides and raising awareness for the agricultural impact on environmental and climate change.

## Gender issues

Even though it is changing, the rural milieu is still a very traditional environment and women are still in an unequal position to men. Therefore, emancipated women can be used as a positive example for "women as local heroes" and taken as leaders in their rural environments. Such an example is a woman from the village of Tomchevishte (Gostivar), who did not own land, but she had persuaded her father to legally transfer part of his land to her for establishing a hazelnut plantation, which continued with diversification of production. She was seen as a positive example in her area, followed by other women. There is a need for campaigns "Women as Leaders", "Women as Positive Examples", which will break down stereotypes on the position and role of women in agriculture and rural areas. There is a need for strengthening the local community (MK: mesna zaednica) and returning its status of a legal body acting as the first and most important stakeholder for local decisions. The proper functioning of local communities will contribute to better involvement of women in decision-making processes. At the moment, the majority of rural women are excluded from the decision-making process and they are hardly asked about their opinions[31].

The new 'Rulebook for deviations from special measures of hygiene for small businesses, methods and requirements to be met when direct supply of food by the manufacturer to the final consumer, terms of premises, materials, tools and equipment in facilities that produce and the manner of food production with traditional characteristics' will greatly contribute to higher involvement of women in the rural economy and their active participation as legal carriers of economic activities.

31 A documented interview with a representative of the NGO Rural Coalition, 30.07.2020.

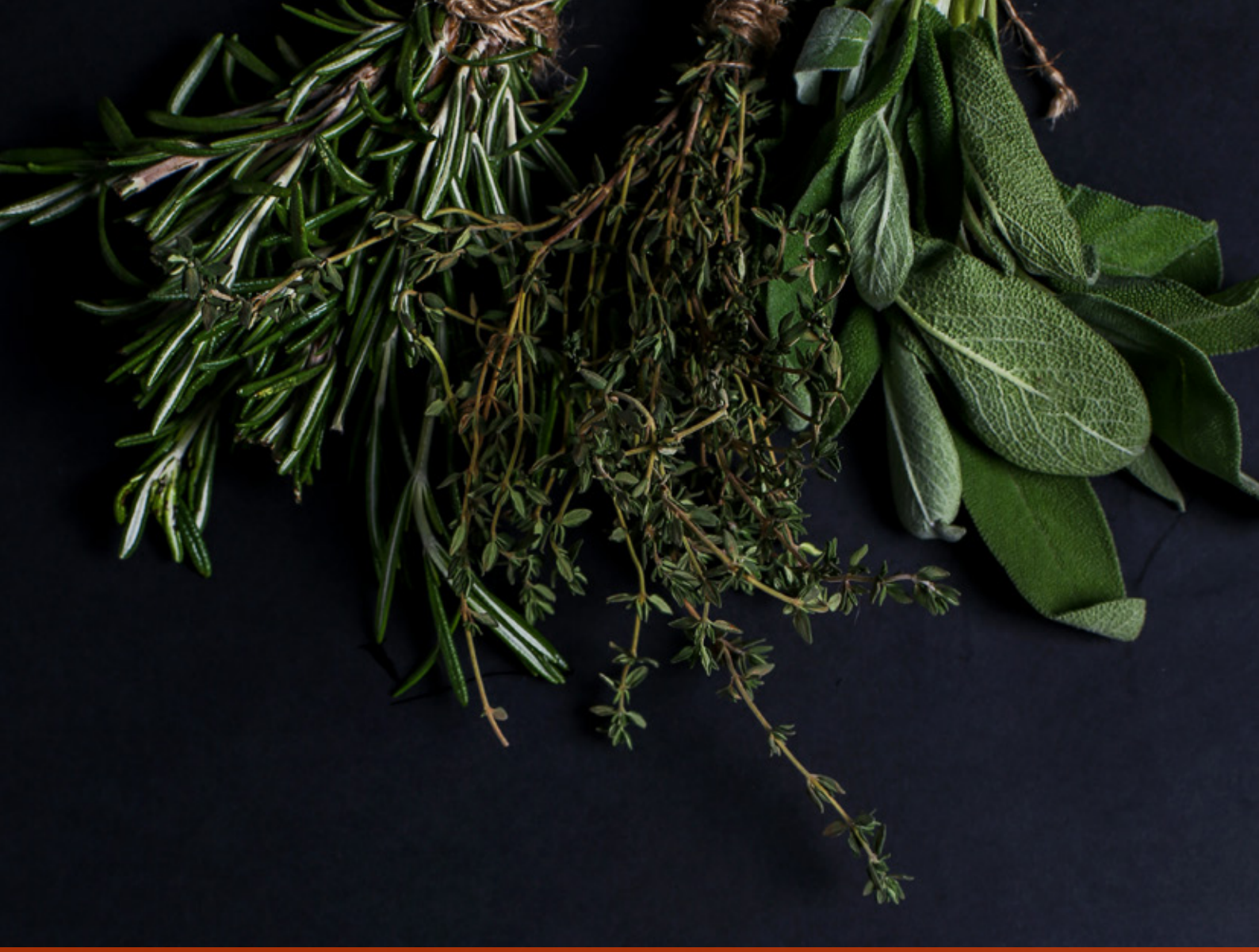
## Overview of identified problems, possible interventions and specific activities and potential results in the H&S sub-sector

| Problem identified | Possible intervention and specific activity/-ies | Potential result and impact |
|---|---|---|
| Absence of H&S data about cultivation areas and quantities | Collection of data from the field (submitted subsidies for H&S production, trader and processed data from companies) | Publicly available data to be used for good SWOT analysis and creation of a better strategy and policy for the H&S sub-sector |
| No existing H&S working group in MAFWE | Establishment of an H&S working group in MAFWE, which will include policy makers, agronomists, biologists, pharmaceutics, representatives of H&S companies and pharmaceutical companies | ▪ Contribution to increased cultivation of needed H&S<br>▪ Lobby group that will base their requirements for MAFWE based on data and real needs of the sub-sector |
| Need for clarification of MASPs H&S lists for subsidies | H&S list to be clarified according to crops that are cultivated and there are real needs for cultivation | No misuse and malpractice of subsidies by producers |
| Necessity for identification of areas suitable for wild herb collection | Introduction of areas for wild herb collection in cadastral records | Higher transparency of wild herb collection and better protection of endangered wild species |
| No subsidies for collection and processing of wild herbs | ▪ Introduction of subsidies for collection of wild plants<br>▪ If introduced, this measure must be done very carefully in close collaboration with MoEPP concerning endangered and rare wild herbs | ▪ Stimulation for wild herb collection<br>▪ Support for the most vulnerable and poor rural population<br>▪ Increased transparency and control in wild herb collection |
| Almost no utilization of IPARD support for H&S is available under Measure 7 – Farm diversification and business development in the H&S sub-sector | ▪ Better and appropriate dissemination of information about IAPRD funds to producers by the IPARD Agency and NES<br>▪ Support and assistance in the administration procedure for the IPARD application process, free of charge | Higher utilization of IPARD funds and improved agriculture production and business |
| Unavailability of markets and low selling prices for primary production | ▪ Joint activities among all stakeholders for increasing H&S production (bigger quantities, better market availability)<br>▪ Training in H&S production practices<br>▪ Transfer of know-how experience from farmer to farmer<br>▪ Household processing, especially of medicinal and aromatic herbs | Producers resilient to poverty and dependence on governmental support |
| Absence/shortage of machinery including post-harvest equipment | ▪ Utilization of IPARD funds<br>▪ Non-formal and formal associations (cooperatives) of producers for purchase of machinery and post-harvest equipment | Increased production, higher yields and quality of commodities |

| Problem identified | Possible intervention and specific activity/-ies | Potential result and impact |
|---|---|---|
| Shortage of seeds and seedlings | ▪ Stimulation of domestic production of H&S seeds and seedlings by governmental measures<br>▪ Establishment of cooperatives for their own import of seeds and seedlings | Increased production of H&S and less dependent farmers on VCs supporters |
| Shortage of raw materials in the processing industry | ▪ Introduction of 'contract farming' business model:<br>▪ Establishment of collaboration between farmers and companies in areas suitable for needed H&S production<br>▪ Establishment of strong, fair and beneficial contracts for farmers and companies<br>▪ Provision of seeds/seedlings for farmers by the companies<br>▪ Partly pre-payment of inputs costs by the companies | Increased production of H&S and less dependent companies on import of raw materials |
| Absence of 'contract farming' as a business model | ▪ Governmental measures and support for introduction of the 'contract farming' business model<br>▪ Support for pilot 'contract farming in the H&S sub-sector' business model | ▪ General consolidation of the H&S sub-sector<br>▪ It can be used as a positive example for other agri-sub-sectors |
| Absence/shortage of processing infrastructure | ▪ Assistance of utilization of IPARD funds for micro and small companies<br>▪ Financial loans with low/favorable interest rates | Improved and more competitive processing companies |
| Shortage of labour force in primary production and processing | ▪ Increased payment of labour force<br>▪ Intra-governmental bodies' collaboration (MAFWE, Employment Agency of the Republic of North Macedonia, Ministry of Labour and Social Policy) for solutions in engagement of unemployed work force in agriculture<br>▪ Support of collaboration between companies and with agricultural high schools and faculties<br>▪ Support of paid practical work for agricultural high-school pupils and students | Increased availability of labour |
| Absence of associations/ cooperatives/networks in the H&S business | ▪ Support for establishment of functional associations/networks of H&S stakeholders<br>▪ Promotion of benefits from H&S cooperatives | ▪ Strengthened standpoints in front of governmental bodies<br>▪ Strengthened position of primary producers |

| Problem identified | Possible intervention and specific activity/-ies | Potential result and impact |
|---|---|---|
| IT illiteracy and no user-friendly guidance for available digital platforms | ▪ Training for farmers in e-subsidies electronic system by NES officers<br>▪ Trainings for farmers for other existing digital tools (e-banking, weathercasting stations, pesticides database, AMIS...)<br>▪ Improvement and simplification of available digital tools as the e-subsidies electronic system | Improved IT skills of farmers |
| Requirement of a mobile application for a climate and natural disaster alert system, which will be locally specific and connected to a warning system for emergence of diseases and pests and their suitable treatment | ▪ Development of a needed mobile application<br>▪ If developed, promotion is needed to be utilized | Improved production practices, higher yields with lower pesticide utilization |
| Necessity of digital tools for H&S business promotion via social media | Development of digital content as:<br>▪ videos for cultivation and processing of H&S (concept 'from farm to fork'),<br>▪ videos of the production process of herbal cosmetics,<br>▪ videos of the production of different H&S food products and beverage infusions,<br>▪ videos about the health benefit of H&S consumption. | ▪ Contribution to H&S network development<br>▪ Increased sale of H&S products<br>▪ Initiation of business start-ups by other producers and companies |
| Lack of innovative H&S businesses | Support for different small businesses by training and promotion:<br>▪ production of ready-to-eat fresh herbs in pots,<br>▪ production of local herbal tea packages,<br>▪ production of lavender bags,<br>▪ production of homemade oil and spirit infusions with local herbs,<br>▪ production of artisan soaps with herbs and essential oils,<br>▪ production of traditional herbal salves and ointments. | Improved agri-business and economy, especially in rural areas |
| No or low awareness of existing climate changes | ▪ Strong promotion of existing climate changes and their impact on agriculture<br>▪ Encouragement for cultivation of local heirloom varieties and indigenous herbs<br>▪ Support for introduction of varieties and production practices suitable to climate changes | H&S production resilient to climate changes |

| Problem identified | Possible intervention and specific activity/-ies | Potential result and impact |
|---|---|---|
| Environmental issues | ▪ Trainings in the Code for good agricultural and hygienic practices for farmers and agricultural companies with primary production<br>▪ Trainings about the importance of regular soil analysis<br>▪ Trainings about the quantities and application methods of pesticides<br>▪ Support of new technologies with lower environmental impact<br>▪ Rising awareness for the agricultural impact on the environment | H&S production with low impact on the environment |
| Gender issues | ▪ Campaigns “Women as Leaders”, “Women as Positive Examples” to break down stereotypes for the position and role of rural women in agriculture and rural areas<br>▪ Higher state support of registered female farmers | Improved position of women in agriculture |



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## Annex 1. Value Chain Evaluation and Scoring Matrix for the Herbs & Spices sub-sector

| Identified VC Evaluation matrix | Sub-sector Herbs & Spices | | | | |
|---|---|---|---|---|---|
| **Evaluation and scoring criteria** | **Anise/Fennel for the beverage industry** | **Herbal teas** | **Lavender essential oil** | **Herbs for fresh consumption** | **Paprika spice** |
| Growth Potential | 3 | 3 | 3 | 5 | 5 |
| Importance of the selected VC for the region (country) | 3 | 5 | 3 | 5 | 5 |
| Scale (size) of the VC | 3 | 3 | 1 | 5 | 5 |
| Availability of the VC development local expertise | 1 | 5 | 5 | 3 | 3 |
| Availability of raw materials, work force, infrastructure | 5 | 5 | 5 | 5 | 5 |
| Inclusion of small farmers in the VC | 5 | 5 | 5 | 5 | 5 |
| Reduction of unemployment/poverty reduction | 3 | 5 | 3 | 5 | 5 |
| Importance of the VC for rural economy | 5 | 5 | 5 | 5 | 5 |
| Absences of potential gender discrimination | 1 | 5 | 5 | 3 | 5 |
| Involvement of the advisory services in the VC Develop. | 1 | 5 | 5 | 3 | 3 |
| Possibility for cooperation with other institutions | 3 | 5 | 5 | 3 | 5 |
| Product diversification | 1 | 5 | 5 | 3 | 1 |
| Possible effect on VC from COVID-19 similar crises | 3 | 5 | 5 | 5 | 3 |
| Possible environmental impact | 3 | 3 | 3 | 5 | 5 |
| **Total points:** | 40 | 64 | 58 | 60 | 60 |

# Annex 2.
# List of pre-set questions for actors and sub-actors in the H&S sub-sector for conducting interviews during the field work

| **ACTORS: Individual producers in selected VCs** |
|---|
| **The number of interviewed individual producers in specific VCs will depend on needs for gathering in-depth and quality information regarding the below stated topics/ questions, as well as taking into account the questions foreseen but not covered by the phone survey.** |

1. What are producers' problems and needs for improvement of production, market availability and income, generally and in view of the COVID-19 crisis?
2. Which improved agricultural practices can be introduced with appropriate financial and technical support, generally and in view of the COVID-19 crisis?
3. What is the position of individual producers in terms of power and their linkages in each of the analyzed value chains?
   - Which business partner do you depend on the most and why?
   - Is that dependence risky for your business and why? Is there an alternative? If yes, what is the alternative?
   - Is there any business partner heavily dependent on your business? In what terms and why?
4. What is the producers' vision and how do they see possibilities for improvement and strengthening of the producers' position in selected VCs?
   - Which sales channel is the preferred one and why?
   - What is the easiest way and support to increase sales through that channel?
   - Which is the least preferred sales channel and why is it used?
5. Which production phases/products in selected VCs have been most affected by the COVID-19 crisis?
   - How did you adjust to the current COVID-19 crisis?
   - What is a needed quick and long-term response to the COVID-19 crisis and similar crises?
   - How can you become stronger in the next period and build your resilience to respond to crises of a similar kind?
   - What is your general feeling about your business in terms of the COVID-19 crisis?
6. What are the most appropriate and needed digital/IT tools to make producers' work easer, more efficient and to increase their market availability and income?
   - Do you use internet information for agriculture activities?
   - Would you appreciate Digital/IT solutions for your business? Why yes/no?
7. Are individual producers aware of environmental issues and the climate change impact on agriculture? Is there any awareness and concern as to how climate change affects/will affect their production?

| **Actors in VC** | |
|---|---|
| 1. | Cultivated herbs for herbal tea and lavender |
| 2. | Producer of cultivated lavender |
| 3. | Producer of cultivated mountain tea (*Sidertis scardica*) |

| | |
|---|---|
| 4. | Producer of cultivated sage |
| 5. | Producer of herbs for fresh consumption from the Strumica area |
| 6. | Producer of herbs for fresh consumption from the Gevgelija area |
| 7. | Paprika producer and seller of her own production at open markets |
| 8. | Paprika producer and coordinator of Slowfood Bitola for paprika Bukovo |
| 9. | Paprika producers from the Negotino area |
| 10. | Wild herb collector selling dry herbs at the local market in Ohrid |
| 11. | Wild herb collector selling at the local market in Bitola |

**ACTORS: Processors & traders in selected VCs**

**Questions below apply for interviews of selected processors and traders, taking into account the questions foreseen but not covered or partially covered by the phone survey**

1. What are the existing constraints and barriers in your SME/business and market availability?
   - Which business partner do you depend on the most and why?
   - Is that dependence risky for your business and why?
   - What is the alternative or solution for risky dependence?
   - Is there any business partner heavily dependent on your business? In what terms and why?
2. What are the needed financial and human resources for development of more efficient technologies and new products?
3. What is the availability of financial support for development of business and new products?
4. How is your SME/business affected by the COVID-19 crisis?
   - Which production phases/products in selected VCs have been most affected by the COVID-19 crisis?
   - How did you adjust to the current COVID-19 crisis?
   - How did (international) price fluctuations affect your business during the COVID-19 outbreak?
   - Have you experienced liquidity shortfalls to pay workers, suppliers, debt or taxes?
   - Have the consumer demand and behavior changed due to COVID-19 disruption? How did they affect the value chain?
   - How many employees have been laid off, working reduced hours or temporary suspended from work?
   - What are the impacts of COVID-19 on the safety of workers?
   - Do the safety measures and protocols increase your costs for operating your business?

- Are offered governmental measures appropriate for overcoming COVID-19 and similar crises? If no, why not?
- What is your prediction about any type of positive impact from the COVID-19 crisis in the next year?
- What is needed for a quick and long-term response to the COVID-19 crisis and similar crises?
- How can you become stronger in the next period and build your resilience to respond to crises of a similar kind?
- What is your general feeling about your business in terms of the COVID-19 crisis?

5.What are the most appropriate and needed digital/IT tools to make SMEs work more efficiently and to increase market availability and turnover?

- What IT/digital solutions might help you and how?
- Do you have information on the ways the digital technology will transform your industry in the short term and the long term?
- What is your main problem with adopting digital/IT solutions for your business?

6.Have you recetly experienced any environmentally/climate change related aspect that affected performances of your company?

| **Actors in VC** |
|---|
| Flores, Skopje/Radovish, primary producer of cultivated herbs and exporter |
| Mikro zeleno, innovative business for production of microgreens, including fresh aromatic herbs |
| Akvaponika – Skopje, SME producer of herbs for fresh consumption |
| Rajska gradina – Skopje, company for import, trade and packaging of a variety of dry herbs & spices |
| Seller of different commodities including fresh herbs and dried spices at the local market in Strumica |
| Seller of different commodities including fresh herbs at the local market in Strumica |
| Hotel & Casino Apolonija – Gevgelija, HORECA business |

| Sub-actors/supporters in VC | | Specific questions for each sub-actor |
|---|---|---|
| **Input suppliers** | | |
| 1. | Rima Komerc – Strumica, importer and distributor for horticultural seeds | • What was the size and dynamic of your business in 2020 compared to the same period (the) previous year/s?<br>• Are there any business interruptions and increased operation costs due to COVID-19?<br>• How do you see adaptation of your business in similar crises in the future?<br>• In your opinion, are digital/ IT tools important for better operation of your company? Why and which IT tools? |
| 2. | Pronex – Strumica, importer and distributor mainly of fertilizers and other agri-equipment | |
| **Education & NGO sector & other relevant information sources** | | |
| 1. | Federation of organic producers and Association Organo-logistic | • What is the role of FOP in organic H&S production?<br>• What are needs of H&S organic farmers in terms of policy and improved business environment?<br>• What are the needs for improved production practices and trainings?<br>• Are there possibilities for new value-added products and diversification of products? What financial support is needed for such products?<br>• How can members of FOP benefit from their organization membership?<br>• Did FOP communicate with relevant governmental bodies to ask for specific support for organic farmers in COVID-19 crisis? |
| 2. | Project "Managing Plant Genetic Diversity for Food and Agriculture in Macedonia" supported by Swiss ProSpeciesRara, Switzerland | • What is the importance of local plant resources for better agricultural production in view of climate changes, environmental pollution and the COVID-19 crisis?<br>• How do local plant resources contribute to implementation of low-input agricultural practices?<br>• How can we use community seed banks practice for development of small local businesses? |
| 3. | NGO Rural Coalition | • What measures are needed to strengthen women's position in agriculture and society in general?<br>• Is there willingness among women to be carriers of small agricultural businesses, such as production of homemade food and traditional products for the market?<br>• How was the position of rural women affected by the COVID-19 crisis?<br>• How did school closures affect women's workload in the COVID-19 crisis? |
| 4. | Organic agriculture expert<br>Technical evaluator of IARNM in organic production and former head of Organic agriculture production in the Ministry of Agriculture | • What are the main strengths and weaknesses in H&S organic production?<br>• What are the main opportunities and threats in H&S organic production?<br>• How can it contribute to increased organic H&S production and development of market competitive products? |

| | | |
|---|---|---|
| **Governmental bodies & public institutions** | | |
| 1. | Representative from MAFWE | ▪ MAFWE view on our key aspects – maybe to prioritize the key aspects or what the main problems are in the selected sub-sectors in line of the focus and key aspects, to suggest/prioritize/share some ideas (or plans) for MAFWE interventions or where to place efforts and focus performing the analyses in order to generate greater impact and contribution to MAFWE general plans and strategy;<br>▪ Latest developments, activities and future policy/plans within the sub-sector & H&S;<br>▪ Present and familiarize MAFWE with the sub-sectors' study, key aspects, value chain selected and future logic of intervention as a result of the study;<br>▪ Gain general feedback from MAFWE for the study and UNDP logic of intervention;<br>▪ Role of MAFWE in creating a better business environment and development services in view of the COVID-19 crisis for the H&S sub-sector;<br>▪ Information about MAFWE measures for recovery from the COVID-19 crisis for the 3 sub-sectors/H&S. |
| 2. | Representative from the National Extension Agency – Bitola | ▪ What are the most common issues/questions that farmers are contacting NES about?<br>▪ What are the most common issues for farmers working in the 3 sub-sectors?<br>▪ What are the needs for new practices and trainings to be introduced for individual producers in the 3 sub-sectors?<br>▪ What are the needs of NES and farmers for possible digitalization and IT tools for improvement of agricultural production and accession to relevant administration for farmers? |
| 3. | Regional Center for the Southeastern Plan Region | ▪ What is the specific role of RCS in the agricultural development of regions?<br>▪ What is the role of RCS as a regional governmental body in proposing measures/activities for recovery from the COVID-19 crisis?<br>▪ How can RCS increase development and contribute to potentials and the 3 sub-sectors? |
| 4. | Fund for Innovation and Technology Development | ▪ Whichinnovative solutions in agriculture are financed by the fund?<br>▪ What are the main constraints and problems for utilization of FITD funds in agriculture and agricultural SMEs?<br>▪ Are there current call/s for financing proposals to combat the COVID-19 issue in agriculture? |
| **Financial institutions** | | |
| 1. | Savings bank FLUM | ▪ What type of loans for farmers and SMEs does FI provide?<br>▪ What is the availability of VC finance for processing businesses?<br>▪ What is the availability of any specific products or loans considering the COVID-19 crisis? |
| **Quality control and assurance bodies** | | |

| | | |
|---|---|---|
| 1. | State Phytosanitary Laboratory | ▪ What is the frequency of farmers performing tests for analysis-based agriculture?<br>▪ What are trends and demands of lab services purpose of the tests and most common problems regarding the quality of the products?<br>▪ Are there any issues regarding the legislative for quality control?<br>▪ What is the potential for digitalization of the lab services?<br>▪ Is there an additional demand for tests and increase of lab workload as a result of the COVID-19 crisis?<br>▪ Is there any need for conducting trainings for farmers to increase awareness for product quality and pollution from agricultural practices? |
| 2. | Veterinary Faculty (laboratory) | |
| 3. | UNILAB, Faculty of Agriculture, UGD – Shtip | |
| 4. | PROCERT – Certification Body for Organic Production | ▪ What are the constraints and issues in organic production of the 3 selected sub-sectors?<br>▪ What are the needs of the domestic market for organic products?<br>▪ What is the quality assurance system in organic production and its importance for export of commodities?<br>▪ What is the effect of the COVID-19 crisis on organic production in N. Macedonia?<br>▪ Are there any innovative technologies for organic production that can strengthen the sector? |
| **Education / Academia** | | |
| 1. | Faculty of Agriculture, GDU – Shtip | ▪ What are the possibilities for involvement of research results in production practices in H&S sub-sectors?<br>▪ What are the possibilities for novel & innovation technologies for F/V/H&S cultivation and development of new final products?<br>▪ What were the challenges and difficulties to develop novel food businesses?<br>▪ Are your novel food products generally accepted by the consumers or do you need to put in extra effort and resources for their promotion? |
| 2. | Institute of Biology, PMF, UKIM – Skopje<br>Plant Engineering CEO, founder and developer of novel food technologies | |

# Annex 3. Profile of companies in the herbal tea value chain

Koro DOO/Konimeks Holding have been operating in the MAPs business for over 20 years. The companies have their own organic production of chamomile on 14 ha. The companies buy herbs for herb collectors in at least 5 collecting centers for wild herbs all over the country, which yielded organic certification of 105.3 tons of different herbs in 2019. The raw material is processed and packaged in tea bags and small tea packages, sold under the brand KORO TEA (1,700,000 units of tea packages organically certified in 2019). The companies have had several unsuccessful attempts for contract farming in the past[32].

Flores DOO has been operating in the business of medicinal plants since 1992. Mainly, the company buys wild gathered plants, organic production of medicinal plants, their processing and trading. Flores is an export-oriented company which exports dried medicinal herbs and essential oils from wild gathered and cultivated plants. They organically cultivate lemon balm (*Melissa officinalis*), mint (*Mentha*), dog-rose (*Rosa canina*), marshmallow (*Althaea officinalis*), and chamomile (*Matricaria chamomile*) for foreign long-term partners in EU countries, mostly Germany. There is an excellent cooperating relationship with EU business partners, which is more of a partnership relationship rather than dependence. In the past, the company had several unsuccessful attempts for contract production of medicinal herbs. Even more, there is experience for partnership with local growers for herb cultivation without success because of untruthful relations with the growers. On the other hand, the company has permanent collaboration with wild herb and fruit collectors, who sell herbs/fruits at 27 collecting centers in the country. Unfortunately, each year the number of wild herb and fruit collectors is decreasing[33].

Roza Kanina DOOEL is a small company that makes a variety of herbal tea mixes, mainly as phytotherapy support to different health issues. The company operates with different quantities of a variety of herbs under organic certification – 8.25 tons of herbs and 1,400 of 200 g packages in 2019. There is no data as to whether the herbs are from their own production or they are wild collected herbs[34].

Alkaloid AD is the oldest company which together with many pharmaceutical, chemical and cosmetic products, produces and trades herbal teas. They have a special department ('Bilka'), which operates products based on herbs. Based on personal knowledge, the company buys certain quantities of anise and fennel from individual producers and wild herbs from collectors.

32 Source: Registry for Organic Producers, 2019

33 A documented interview with a representative of Flores DOO, 05.08.2020. The phone interview was conducted during field information collection for the analysis of the Herbs & Spices sub-sector.

34 Source: Registry for Organic Producers, 2019

# Annex 4. Producers of lavender

## Case study 1 – Lavender cultivation in Vitachevo, Kavadarci[35]

The lavender field (2 decares) is placed in the family household land (10 ha), 13 km from Kavadarci, Vitachevo plateau. The lavender field is organically certified, and it is 4 years old. The owners have been in the business of organic production for a long time and all their land has been certified for organic production. The land is cultivated with cereals. Additionally, they have goats and bees. The motivation for a lavender field was its landscape attractiveness and bio-diversification as part of a family household and as support to the bees and honey production. For the family, it is more for personal enjoyment than for business.

The field started production of plantlets from cuttings after two unsuccessful attempts. There was lack of knowledge and practice to start lavender cultivation. Since the lavender field is next to the beehives, it is used as a field for bees' forage. Lavender is one of the best melliferous herbs that highly contributes to the yield and quality of the honey. Lavender is harvested sometime until mid-July. This year the harvest is planned for 15th July. However, it is obvious that each year the harvest is one week later than the previous year according to the owners as this is due to climate changes.

The owners don't own distillation equipment for essential oils but they distill fresh lavender biomass in a common distiller for homemade rakija. The result of distillation is approximately 30 l hydrolat - plant water essence (lavender water) and around 700 ml harvested essential oil.

In the last two years, the lavender water and oil has been used for preparation of homemade hand soaps which are given to artists for making sculptures. The female owner is a very active member of the local NGO in Kavadarci and she includes her agricultural activities in different projects with social and vulnerable groups as well as artistic performances. The household land is used for open-field poetry slams and gathering artists from all over the country. There is no plan for extension of lavender production any time soon or entering in serious lavender business.

## Case study 2 – Lavender cultivation in Varosh, Prilep[36]

The 1,5-decar lavender field is part of the female Monastery complex in Varosh, Prilep. The cultivation started as part of the agricultural activities in the Monastery. Lavender seeds are purchased online from UK. It is a new field, and the nuns have faced many practical problems to establish the field because of lack of experience and unavailability of professional advisory service. The Monastery has a distillation unit purchased from Slovenia. The small amount of distilled lavender essential oil is used for preparation of homemade soaps, which are sold in the Monastery.

35 A documented interview with lavender field owners, 02.07.2020. The interview was done in person at the family household in Vitachevo, Kavadarci.

36 Based on a short telephone interview with a representative from the Varosh Monastery during preliminary information collection for the analysis of the Herbs & Spices sub-sector.

# Annex 5. Producers of fresh herbs

## Case study 1 – Production of parsley and rucola in the village of Gradashorci, Stumica[37]

It is a family household without any additional income other than that from agriculture. The man is the landowner; he is the official holder of all agricultural activities, a subsidy receiver, and he pays for insurance health and pension contributions, while his wife is the beneficiary of his health insurance (she does not pay for pension contributions and does not have any personal income). Traditionally the family grew vegetables (tomatos, cucumbers and cornichons, eggplants, leek), but growing old, they replaced the tomatos, cucumbers and cornichons with parsley and rucola as crops. Partially, the replacement was done because they have an oral agreement with a trader operating at the wholesale green market in Strumica for buying the whole of their fresh parsley and rucola production on an area of 2 decares. The fresh herb production earns less, but also there are less labour force and costs in the production as compared to vegetables.

They do not intend to enlarge the production nor improve the production with new technologies and machinery because they don't see any of their children as potential farmers in the future. Sometimes when they face problems in the production, which they don't know the solution to (diseases, pests, loss of crop to unknown reasons), they ask for help from the local agricultural pharmacy shop but not always do they receive a solution for their problem.

Their standard selling channel is the wholesale green market in Strumica and they don't intend to change it because they are satisfied in most of the cases with the relation producer-trader. Usually, the market supply and demand dictate the prices of commodities. When asked about the power distribution in the value chain they say that the producer is the least powerful and with the smallest profit from all the stakeholders in the value chain. They see the highest power concentrated in traders and suppliers of agricultural inputs.

## Case study 2 – Production of a variety of fresh herbs in Gevgelija[38]

The producer cultivates a variety of fresh herbs (fennel, parsley, French parsley, sage, rosemary, 3 types of mint, thyme, lemon grass, rucola, estragon, marjoram) in Gevegelija. The cultivation is done in plastic tunnels on a 2-decare field all year round. He is an agricultural producer, as additional work to his regular job. He started the cultivation of fresh herbs when new high-class hotels and casinos were opened because the new market was opened for such commodities and there was need for new products. He doesn't have any problems with the production. On the contrary, the climate is very good for year-round production of fresh herbs, the herbs have a short vegetation period and less chances for development of diseases and pest infection. The production is mainly sold to high-class hotels and casinos all over the country. He also uses two traders with horticultural crops based in Skopje as a good selling channel. According to the interviews conducted in July and August with other stakeholders in the fresh herb business (organic groceries, other fresh herb producers and traders), the producer is a well known and respected producer in the business, with good established connections in the fresh herb business.

37 A documented interview with fresh herb producers, 27.07.2020. The interview was done in person at the family household in Gradashorci, Strumica.

38 A documented interview with a fresh herb producer, 27.06.2020. The phone interview was conducted as part of preliminary information collection for the analysis of the Herb & Spices sub-sector.

## Case study 3 – Large-scale production of fresh herbs for export[39]

There is a positive example of a large-scale producer of fresh herbs: rucola and mint. The company 'Agro 9-ti km' from Shtip, known for production of vine grafts and vineyard installations, introduced greenhouse production of fresh herbs in Valandovo with support of their strategic partner 'La linea verde' for Italy. The production started in 2017 on 1,5 ha and in 2019 it reached 24 ha. All the production is exported in bulk packages to Russia. 'Agro 9-ti km' is interested in contract farming with agricultural producers.

39 Source: https://zelenaberza.com.mk/inovativna-kreativna-profitabilna-stipskata-firma-agro-9-ti-kilometar-broi-uspesi-vo-oranzeriskoto-proizvodstvo/

# Annex 6. Producers of paprika spice

## Case study 1 – Production of paprika spice in the Negotino area[40,41]

Paprika spice production is done by farmers with a long family tradition in pepper cultivation and processing of paprika. In the past, the cultivation was done on larger areas, but lately producers plant the paprika pepper variety on smaller fields (1 to 6 decares). For example, paprika production in the village of Pepelishte has significantly decreased – in the past, 400 households produced paprika, but now there are just 5 producers. Usually, growers use their own seed material from the variety Horgos. Field production and processing are done by the agricultural producers. The only service they use in processing is milling, which they either pay or compensate with part of their paprika spice.

The production of paprika spice is mostly limited with a high cost of modern machinery for primary production and postharvest. IPARD is a good opportunity for purchase of machinery and equipment, but producers are limited for application because they must have money in advance to buy it and then wait for reimbursement by IPARD, which is not always the case. For example, a good dryer costs 20.000 Euro, a paprika mill costs 6-7.000 Euro, which is a lot of money to invest and wait for possible IPARD reimbursement.

There are attempts at contract farming with paprika processors. In the past, they cooperated with Sika (buying point in Przhdevo, Demir Kapija), but the collaboration was cancelled due to low price per kilo of pepper. Lately, there has been a better offer by the company 'Agrova ' (processing facilities in the village of Coloshevo, Veles), which offers a better price. Experience says that the companies do not abide by agreements or although there is an agreement there is not a guarantee of the price and purchase. It is difficult to establish cooperatives because paprika production is decreasing and there is no trust among farmers.

Producers use three selling channels for paprika: processors, traders and personal selling. However, the selling channel is a matter of agricultural producer personal choice. Selling to processors is the less preferable channel because of the above stated reasons. Producers see "selling-from-door" to known traders and clients or selling on local markets as the best option for their business and less dependent on other stakeholders in the value chain.

## Case study 2 – Production of paprika spice in the village of Bukovo, Bitola[42]

The village of Bukovo is situated in the hilly part of the Pelagonija valley and it is characterized by small fields where extensive agricultural practices are applied (no drip irrigation, low utilization of machinery...). There is no official data for the total area of Bukovka pepper production, but the estimate is about 2 ha. It is mostly cultivated as an additional family activity for additional income. The post-harvest technology is still old-fashioned. The peppers are strung on yarn and hung outside to dry. Only the milling is done by electrical mill in the neighbourhood village of Bistrica. The post-harvest work is done only by women although their position in the agricultural household is a traditional one (men own the land and they are the head of the family).

Producers of Bukovka do not sell it at the open market in Bitola nor via traders. The producers have their own network of clients who come or order via phone for their products. Since producers

40 Based on: A documented interview with a paprika producer from Pepelishte, conducted by telephone, 07.08.2020.

41 A documented interview with a paprika producer from Negotino, conducted in person, 25.07.2020.

42 A documented interview with a paprika producer and an NGO activist from Bukovo, conducted by telephone, 31.07.2020.

process small quantities, they do not face market problems and they don't depend on another stakeholder in the value chain. The producers are not willing to change the selling channel for the quantities that they are producing now. On the one hand, there is a need for bigger quantities with a unified quality in order for serious business and export to be foreseen. However, market uncertainty and unavailability are the most common reasons that farmers cultivate a small area of several crops.

The organization Slow Food has done a lot of field work and support for Bukovka producers. The NGO Perzidium Bukovo was established as a local organization for Bukovka production, protection and promotion. There are ten women and only one man members of Prezidium Bukovo, aging from 40 to 70 years. In the beginning of the Slow Food field work it was difficult to distinguish the Bukovka local variety from other paprika varieties as Horgos and Segedinka, which have been cultivated in Bukovo, Kravari and Bistirica (neighborhood villages) for a long time. Once Bukovka was distinguished, it was officially characterized according to the IPGRI pepper descriptor, including capsaicin, vitamin A and vitamin C content and content of molds. The characterization and laboratory analyses were supported by Slow Food.

The Bukovo paprika spice is promoted at Terra Madre and Terra Madre Balkan events, nationally and internationally. Although there was an initiative for establishment of a cooperative, the producers were not interested because they were sceptical and distrustful as to how it will operate and who will benefit from it. There is a need for devotion and a lot of work for a functional and operational cooperative. One of the aims of the NGO Prezidium Bukovo and Slow Food Bitola is for the Bukovka spice to receive the sign of a "protected geographical indication" product and to brand it.

# Annex 7. List of legislation in agriculture relevant to the vegetable, fruit, and herbs & spices sub-sectors

Relevant laws listed below are selected according to information available from the Ministry of Agriculture, Forestry and Water Management.

1. Law on Organic Agricultural Production (State Official Gazette 146/2009, 53/2011, 149/2015, 39/2016 and 132/2016)
2. Law on the State Inspectorate for Agriculture (State Official Gazette 20/2009)
3. Law on Agricultural Land (State Official Gazette 135/2007, 17/2008, 18/2011, 42/2011, 148/2011, 95/2012, 79/2013, 87/2013, 106/2013, 164/2013 и 39/2014)
4. Law on the Quality of Agricultural Products (State Official Gazette 140/2010; 53/2011 и 55/2012)
5. Law on Establishing a Network of Accounting Data from Agricultural Holdings (State Official Gazette 110/2007, 53/2011)
6. Law on Fertilizers (State Official Gazette 110/2007; 20/2009; 17/2011 and 148/2011)
7. Law on Plant Health (State Official Gazette 29/05, 81/08, 20/09, 57/10, 17/11, 148/11, 69/13, 43/14, 158/14 and 149/15)
8. Law on Plant Protection Products (State Official Gazette 110/2007, 20/2009, 17/2011, 53/2011, 91/2013, 10/2015, 129/2015 and 39/2016)
9. Law on Agriculture and Rural Development (State Official Gazette 49/2010; 53/2011, 126/2012, 15/2013, 69/2013, 106/2013, 177/2014, 25/2015....27/2019, 152/2019, 244/2019, 275/2019)
10. Law on Water Communities (State Official Gazette 51/03, 95/05, 113/07 and 136/11) – in power until 28.04.2015; null and void in State Official Gazette 72/2015)
11. Law on Water Economy Companies (State Official Gazette 85/03, 95/05, 103/08, 1/12, 95/12) – null and void?
12. Law on Seed and Seedling Material for Agricultural Plants (State Official Gazette 39/06, 89/08, 171/10, 53/11, 69/13, 187/13, 43/14, 129/15, 39/16, 71/2016)
13. Law on Breeding Rights (State Official Gazette 52/2009)

Delegated legislation documents and by-laws are available at:

http://mzsv.gov.mk/%D0%9F%D0%BE%D1%87%D0%B5%D1%82%D0%BD%D0%B0/%D0%94%D0%BE%D0%BA%D1%83%D0%BC%D0%B5%D0%BD%D1%82%D0%B8/%D0%9F%D0%BE%D0%B4%D0%B7%D0%B0%D0%BA%D0%BE%D0%BD%D1%81%D0%BA%D0%B8_%D0%B0%D0%BA%D1%82%D0%B8.aspx

# Annex 8. List of laws and governmental decrees with the force of law in relation to agriculture, financial support measures for individuals and companies in the COVID-19 crisis as given at https://vlada.mk/uredbi-covid19 and published in the Official Gazette.

All decrees are in Macedonian language, with a brief translation in English of the most important parts to assist the international consultant's understanding of Macedonian governmental measurements regarding COVID-19.

## Official Gazette 68/2020, 18.03.2020

DECLARATION FOR ESTABLISHMENT OF EXISTENCE OF A STATE OF EMERGENCY

**It is determined that there is a state of emergency on the territory of the Republic of North Macedonia for a period of 30 days in order to protect and deal with the consequences of the spread of COVID-19.**

**After the first State of Emergency, there followed a second one with a 30-day duration and two more with a 15-day duration in continuation. The last State of Emergency was announced on 20.05.2020 and it shall be ended on 13.06.2020.**

## Official Gazette 75/2020, 24.03.2020

MINISTRY OF LABOR AND SOCIAL POLICY

Pursuant to Article 4, paragraph (2) of the Law on Minimum Wage in the Republic of North Macedonia (Official Gazette of the Republic of Macedonia No. 11/12, 30/14, 180/14, 81/15, 129/15, 132/17 and 140/18 and Official Gazette of the Republic of North Macedonia 124/19 and 239/19), Ministry of Labor and Social Policy

ANNOUNCES

**The amount of the minimum wage in gross amount in the Republic of Northe Macedonia starting from April 2020 amounts to 21,776 denars.**

## Official Gazette 80/2020, 27.03.2020

DECREES WITH THE FORCE OF LAW FOR APPLICATION OF THE LAW ON THE AGRICULTURAL LAND FOR THE TIME OF A STATE OF EMERGENCY

**To determine and extend the deadlines in procedures for leasing agricultural land in state ownership and deciding on the submitted offers after the announced public calls, the provisions of this decree are applied with legal force.**

## Official Gazette 92/2020, 06.04.2020

DECREE WITH THE FORCE OF LAW FOR FINANCIAL SUPPORT FOR NATURAL PERSONS WHO PERFORM A SOLE ACTIVITY AFFECTED BY THE HEALTH AND ECONOMIC CRISIS CAUSED BY COVID-19 DURING A STATE OF EMERGENCY

**"Natural person who performs sole activity" is a sole proprietor, a natural person who performs an agricultural activity, a person who performs crafts and a person who performs services, which generates income from performing activities and is registered in an appropriate register.**

**Subject to financial support is the payment of funds for the months of April and May 2020, in the amount of 14,500 denars per month for the natural person who performs the sole activity – applicant for financial support.**

## Official Gazette 102/2020, 14.04.2020

DECREE WITH THE FORCE OF LAW FOR AMENDMENT OF THE DECREE WITH THE FORCE OF LAW FOR THE LAW ON THE AGRICULTURAL LAND DURING A STATE OF EMERGENCY

**Deadline for payment of the annual rent for state-owned agricultural land for 2019 is postponed for the duration of the state of emergency for 180 days after the termination of the state of emergency.**

**Unilateral termination of lease agreements for state-owned agricultural land for unpaid annual rent is delayed for the duration of the state of emergency and it is extended to 180 days after the state of emergency ceases.**

## Official Gazette 111/2020, 28.04.2020

PROGRAMME FOR AMENDING OF THE PROGRAMME FOR FINANCIAL SUPPORT IN AGRICULTURE FOR 2020

- **The change is applied to support cabbage production with 3 MKD/kg for producers who sold their production to registered traders from 05.04 to 05.05.2020.**

## Official Gazette 112/2020, 30.04.2020

PROGRAMME FOR AMENDING THE PROGRAMME FOR FINANCIAL SUPPORT OF THE RURAL DEVELOPMENT FOR 2020

**There is decrease of the previously allocated financial means for support of:**

- **Assistance in performing agricultural activities for protection and promotion the environment: from 15.000.000 MKD to 12.000.000 MKD;**
- **Activities to establish, monitor and analyze the situation with indigenous agricultural plants and provide mandatory genetic reserves is erased (not supported at all);**
- **Total for financial support measures in rural development – the amount of "842.000.000" is changed to "839.000.000" (MKD);**
- **The financial means for technical support of agriculture and rural development are decreased from 207.400.000 MKD to 143.456.200 MKD;**
- **The financial means from this programme allocated for the Fund of Innovation and Technology Development are decreased from 10.600.000 MKD to 9.923.800 MKD.**

## Official Gazette 116/2020, 05.05.2020

DECREE WITH THE FORCE OF LAW FOR AMENDING OF THE DECREE WITH THE FORCE OF LAW FOR SUBSIDIZING OF PAYMENT OF CONTRIBUTION FROM OBLIGATORY SOCIAL SECURITY WAGE DURING A STATE OF EMERGENCY

(У Р Е Д Б А СО ЗАКОНСКА СИЛА ЗА ИЗМЕНУВАЊЕ И ДОПОЛНУВАЊЕ НА УРЕДБАТА СО ЗАКОНСКА СИЛА ЗА СУБВЕНЦИОНИРАЊЕ НА ИСПЛАТА НА ПРИДОНЕСИ ОД ЗАДОЛЖИТЕЛНО СОЦИЈАЛНО ОСИГУРУВАЊЕ ЗА ВРЕМЕ НА ВОНРЕДНА СОСТОЈБА)

- **Different measures to support businesses are put in force. For more details check file OG_116_2020, p. 5.**

## Official Gazette 123/2020, 13.05.2020

PROGRAMME FOR FINANCIAL SUPPORT OF NATURAL PERSONS WHO PERFORM A SOLE ACTIVITY AFFECTED BY THE HEALTH AND ECONOMIC CRISIS CAUSED BY COVID-19

**This programme determines the payment of funds for financial support of natural persons who perform a sole activity – applicants for financial support, affected by the health and economic crisis caused by COVID-19, for the months of April and May 2020, amounting to 14,500 denars per month.**

## Official Gazette 147/2020, 03.06.2020

DECREE WITH A LEGAL POWER FOR AMENDUM OF THE DECREE WITH A LEGAL POWER FOR FINANCIAL SUPPORT OF CITIZENS AND EMPLOYED PERSONS WITH LOW INCOME, YOUNG PEOPLE AND HEALTH WORKERS THROUGH ISSUANCE OF A DOMESTIC PAYMENT CARD INTENDED FOR PURCHASE OF MACEDONIAN PRODUCTS DURING A STATE OF EMERGENCY

**In the Decree with legal force for financial support of citizens and low-income employees, young people and health professionals through issuance of a domestic payment card for purchasing Macedonian products and services during a state of emergency:**

**"Low-income citizens" are adult citizens of the Republic of North Macedonia, users of rights of financial assistance and allowances in accordance with the Law on Social Protection, the Law on Child Protection, and The Law on Social Security for the Elderly, as follows: holder of a household right for guaranteed minimum assistance; user of the right of children's supplement; user of the right to a supplement for education; user of the right to social security for the elderly as well as the unemployed who are active job-seekers registered with the Employment Agency of the Republic of North Macedonia as of 22.5.2020, which for 2019 realized an annual income in net amount not exceeding 180,000 MKD and for the period January-April 2020 achieved a net amount not exceeding 60,000 MKD in accordance with the records of the Public Revenue Office.**

## Official Gazette 149/2020, 05.06.2020

A decision on the criteria and procedure for the allocation of funds for financing programme activities of associations and foundations from the Budget of the Republic of North Macedonia for measures to manage the COVID-19 crisis.

Programme for financing the programme activities of the associations and foundations for measures for dealing with COVID-19

**1. This programme determines the purpose of the funds provided in the Budget of the Republic of North Macedonia for 2020, Division 040.01 – Government of the Republic of North Macedonia, Program P – Measures to manage the COVID-19 crisis, Subprogram – 46, Subsidies and transfers, item 464 – Various transfers, in the total amount of 30,000,000.00 MKD.**

**2. The funds referred to in paragraph 1 of this Programme shall be used to finance the programme activities of associations and foundations to take urgent action to deal with the crisis caused by COVID-19, through grants in the amount of 600,000.00 up to 900,000.00 MKD, for programs (projects) for the following priority purposes:**

- **Direct support for vulnerable categories of workers from low-paid branches with conceptual solutions that will help them generate income for times of crisis (for example, setting up online stores for individual farmers);**
- **Promotion of domestic agricultural production, local facilities for rural development and tourism and local food production. (these two are priority proposes in connection to agriculture)**

# Annex 9.
# IT tools/platforms for support of the agriculture sector

**Private sector/NGO information webpages and IT tools/services created to support the agriculture sector**

https://zelenaberza.com.mk/

Website with popular information and articles in agriculture. Also, they have a magazine-type publication (Zelena Berza, available online).

https://zemjodelie.mk/

Website with popular information and articles in agriculture, including voluntary registration for veterinarians, agricultural advisors and agricultural shops. In the part 'announcements' there are several buy/sell offers.

https://organskisvet.mk/

https://play.google.com/store/apps/details?id=com.organska.hrana

Website for organic production and registered organic producers/shops which are mapped as producer, shop, restaurant and boarding house.

https://ruralmarket.net/

https://play.google.com/store/apps/details?id=com.ruralmarket.tab&fbclid=IwAR0JbSy9vTXYfIgQV_dcOVptWFFUHifac18eKcc-oH3lbeGkCrORaJ23DgM

https://www.facebook.com/Ruralmarketnet-103385911288458/

The user needs registration to access the information. It works basically as an advertiser to selling different agricultural products from individual producers. The advertisers are published on the Facebook page of the website

https://www.paket.mk/

Website working as an online supermarket; there are many products including vegetables, fruits, dried herbs and spices.

**Available institutional IT tools/services created to support the agriculture sector**

### Registries of state agricultural land

http://www.mzsv.gov.mk/%D0%9F%D0%BE%D1%87%D0%B5%D1%82%D0%BD%D0%B0/%D0%91%D0%B0%D0%BD%D0%B5%D1%80%D0%B8/%D0%A0%D0%B5%D0%B3%D0%B8%D1%81%D1%82%D1%80%D0%B8_%D0%BD%D0%B0_%D0%B4%D1%80%D0%B6%D0%B0%D0%B2%D0%BD%D0%BE_%D0%B7%D0%B5%D0%BC%D1%98%D0%BE%D0%B4%D0%B5%D0%BB%D1%81%D0%BA%D0%BE_%D0%B7%D0%B5%D0%BC%D1%98%D0%B8%D1%88%D1%82%D0%B5.aspx

### http://www.maksoil.ukim.mk/masis/ - Macedonian Soil Information System (MASIS) – digital soil map of the country offering plenty of data for Macedonian soils

### http://zpis.gov.mk/ - Agricultural Market Information System (ZPIS) concept

Description of the web platform: The Sector for Analysis of Agricultural Policy through the system of ZPIS has developed and maintains a special web application entitled "supply-demand" of agricultural products. On the one hand, producers through it offer their available agricultural products or livestock, and on the other hand, users can request the necessary products or livestock and then the interested parties can agree and make a trade transaction. It offers other agricultural data (annual product price information, annual reports from the MAFWM, etc.).

### National Extension Agency website - http://agencija.gov.mk/

The home page of National Extension Agency website has different links and buttons to support the different needs of farmers/companies as: an agricultural calendar, calendar for plant protection, agricultural prices (linked to the Agricultural Market Information System – ZPIS), good quality material for production practices, etc. It looks like a good idea and product, but some of the provided information is not updated or the pdf files do not open. Also, it should be more user-friendly, adapted to farmers, and it is better for the provided information to be readable from the screen, as well as exporting it to pdf to be an option for advanced computer users.

### Faculty of Agriculture, Goce Delchev University (Shtip)

- UNILAB tools:
    - Agrichemical calculator – application for calculation of fertilizer needs of important crops according to soil analysis
        - https://play.google.com/store/apps/details?id=com.kalkulator.agrohemiski
    - Plant health database – the database is complex - structures according to diseases, pests and weeds and appropriate pesticides for different culture groups (field crops, vegetables, fruits, viticulture). Also, the active substances of each pesticide and pesticide commercial name is listed.
        - http://obp.ugd.edu.mk/
- Different educational materials for conventional, organic and plant protection are available at the Department for Plant and Environmental Protection: http://dpep.ugd.edu.mk/
- Real-time meteorological stations for Shtip and Strumica
    - http://meteo.ugd.edu.mk/

- http://eprints.ugd.edu.mk/view/subjects/AS.html
  - Repository of different teaching, research and professional papers in agriculture available free of charge
- https://e-lib.ugd.edu.mk/kategorija=3&ugd=d3fe7bd260c75ec36adb1c5f1be63f18
  - E-library with numerous books and professional items in agriculture free of charge

### Agrometeo website - http://agrometeo.mk/website

The Agrometeo website provides numerous information about the weather conditions, alarm signals for development of certain diseases and pests, basic information for several diseases. The website provides data for Kochani, Strumica and Gradsko. FAO-supported project.

### https://play.google.com/store/apps/details?id=biz.prointegra.meteobot&hl=en - Metobot mobile app collecting and displaying data from 10 meteo stations in the Southeastern region

The user chooses a site of interest and there are meteo data, weathercasting and agronomically important data as cumulative rainfall, temperature sum, last rainfall, foreseen rainfall and evapotranspiration.

The project is supported by the Swiss Embassy and the Ministry for Local Governance.

### http://www.agroberza.com.mk/

The official website of the Public Enterprise 'Agroberza', which has been established for connection and mediation in offer/demand of products among producers, traders and processors in the agriculture and food production sector. The website gives information about some products' prices.