



## **The Assessment of the current situation of the fruit and vegetable sector in Western Balkan countries: North Macedonia and Serbia**

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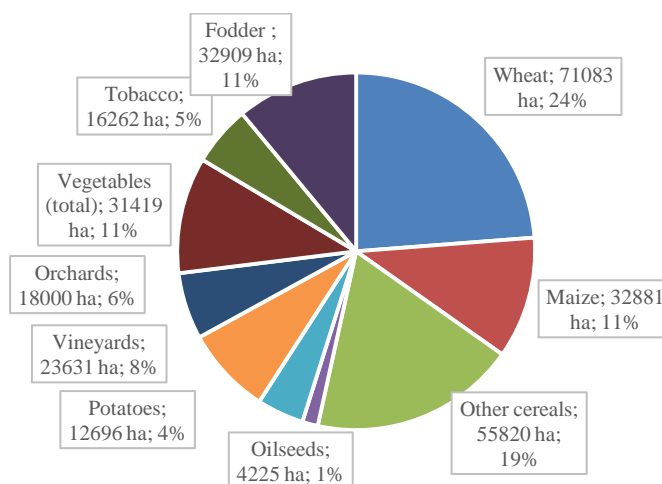
# The status of the fruit and vegetable sector in North Macedonia

## 1. Introduction

Agriculture is one of the most important sectors in the economy of North Macedonia, contributing with around EUR 1 billion or 9% in the country's Gross Value Added (GVA) in 2022 (SSO, 2023). Coupled with the food industry (including beverages and tobacco industry), the share of the agri-food takes about 13-15% of the national GVA. Around three-fourths of the agricultural output comes from crop production. The climate and soil conditions allow production of wide range of crops and livestock types, which contributes to the importance of the agri-food complex in the North Macedonia. Although these sectors have seen a decrease in their relative share in the country's total exports over time, due to the significant growth in exports of other sectors, still primary agriculture and food industry remain strategic export sectors with great potential for further development.

Apart from the sector's importance in the national economy, agriculture continues to be a key source of employment and acts as a social buffer in the rural areas. Agriculture accounts for significant portion of total employment, although its share its been halved from 19% in late 2000s to 10% or 69 thousand people in 2022 (SSO, 2023).

Out of the total agricultural area in North Macedonia (around 1,262 thousand hectares), 64% or 800 thousand hectares are under pastures, arable land takes 33%, and the remaining 3% are covered with permanent crop. Nearly one-third of the total arable land is abandoned or it is not used for agricultural production (WB, 2020). Cereal production takes about half of the arable land in North Macedonia (160 thousand ha), followed by fodder crops, vegetables, vineyards, orchards and tobacco (Figure 1).



**Figure 1. Arable land in North Macedonia**

Source: SSO (2023)

With 178 000 farms, of an average size of 1.8 ha, the agricultural sector in North Macedonia is based primarily on small-scale family farming (SSO, 2017). Only 1% of the individual producers use more than 10 ha, whereas about 61% of farmers produce on less than 1 hectare. Half of farms make less than EUR 2000 of annual farm output value. Producers often have the farms scattered over several land plots. Given the low level of producer integration, these factors result into low productivity of the primary agricultural production, and affect both the quality of products, and their market potential. Most of the labour force in agriculture is between 45 and 64 years of age. In contrast, emphasising the strong dual structure of the Macedonian agricultural sector, there are around 280 business entities dealing with primary agricultural production, with an average size of 197 ha (SSO, 2017).

In the food processing industry, there are around 1,800 active companies, employing around 20,000 employees (SSO, 2023). Most of the companies are belonging to the group of small

and medium enterprises, where the most important are fruit and vegetable processing, followed by the wine industry, as well as dairy, meat, and confectionary industries.

There are estimated 60 thousand farmers that have agricultural land with vegetables (SSO, 2017), producing around 850-900,000 tons of vegetables annually. The most important crops in terms of production volumes are tomato, pepper, cabbage and cucumber. Over 75% of vegetable production is in open fields, 20% in plastic tunnels, and the remainder is grown in glasshouses. Yields differ significantly according to the production technology. Most of the vegetable production is concentrated in the Southeast region – about 60% in terms of quantity produced. The major share of the key vegetable crops (tomato, pepper, cucumbers) are produced in the South-East (Strumica, Gevgelija, Bogdanci).

The Agricultural Census (2007) registered fruit crops to be grown at 43 thousand farms. The more recent Farm Structure Survey (2017) estimated 36 thousand farmers that have agricultural land with orchards. Around 16% of the land under orchards is cultivated by companies. The individual farms are typically small, with an average size 1.4-1.6 ha. Around 200-250,000 tons of fruit are produced annually. Most important crops are apples (mostly grown at specialised farms in Pelagonia/Resen region), plums (East, South-East and South-West region), and peaches (Vardar, South-East).

Vegetables and fruits are either bought out to be used as raw material for the industry or to be marketed as fresh. The biggest buyers, both for fresh marketing or processing, are typically located near the production base. Vegetable and fruit production together comprise for 46% of agriculture output in the country and are hugely export oriented. Fresh fruits and vegetables, when not exported, are usually sold domestically on the green markets, but also at local convenience stores, small shops and larger retail chains.

Overall, in terms of total trade, North Macedonia is a net-importing country. The same applies to agri-food trade, where although trade is increasing, imports are still growing at a higher rate than exports, widening the agri-food trade deficit. Agri-food (including beverages and tobacco) takes about 9 percent of the country's total trade. Agri-food exports reached a value of USD 744 million (EUR 710 million), and imports of USD 1.19 billion (EUR 1.13 billion) in 2022 (SSO, 2023). North Macedonia's core exports are tobacco, lamb meat, fresh and processed vegetables and fruit, and wine, while the country's principal imports are meat and meat preparations, confectionary, cheese, processed foods and grains. Around one-third of the domestic supply of cereals is secured by imports. External shocks, such as the Covid-19 crisis, highlighted the vulnerability of this situation leading to a temporary ban on trade in wheat and flour from some countries.

The main destinations for agri-food exports are the EU countries, which absorb around half of total exports (out of which 18% are designated to Greece, 13% to Germany, and 12% each to Bulgaria and Croatia). The Western Balkan countries account for 34% of the agri-food exports, and the remaining 16% is exported to other countries than the EU and the Western Balkans.

Besides the growing exports and potentials of the agri-food complex, the small size of businesses, which characterize both the primary and processing sectors, the lack of financial resources, and the reliance on traditional production methods obstruct the process of rapid advancement and adoption of innovative solutions. In addition, the primary production sector's small-scale structure poses a significant barrier to grouping/joining resources for improved bargaining position in the chain. The research and development element of the value chain has been identified as having substantial gaps, including a lack of permanent,

functional, and easily accessible knowledge transfer channels, as well as innovation and commercialization of new products, processes, and services (Martinovska Stojcheska, 2023).

North Macedonia needs to further develop the export potential in its agri-food sector. Agri-food exports need to be diversified towards higher-value products. The country is exporting raw or semi-processed products and importing finalized processed products. Although some of the processors have already begun to negotiate and cooperate directly with the retail chains and/or to establish partnerships with specialized food product distributors, they are still heavily dependent on intermediate dealers (importers and wholesalers) when exporting their products abroad. In the domestic market, they either distribute their goods directly to retailers (particularly retail chains) or use middlemen (wholesalers/distributors) that have a well-established distribution network to cover a variety of small retail shops (Martinovska Stojcheska, 2023).

Despite the fact that domestic products have a good reputation with local and international food importers, the majority of exports are still sold with low export values. Producing and selling under own brands is lower than selling under private labels. As a result, rather of offering better value added products, the industry is currently constructing its export strategy primarily through competitive pricing (MAP, 2023). Deeper and more meaningful knowledge on foreign markets is missing, limiting more successful approaches. Also, within the companies, adoption of new, more efficient management practices often lag. In this context, the adoption of new and innovative tools and practices, especially linked to digitalisation or automatisisation, is far from reaching its potential, primarily because of the size of small farms and firms (larger companies tend to adopt such new technologies sooner); education (understanding the benefits for the production, management and marketing processes); and age of key value chain actors (elderly farmers or business managers are less inclined to learn about the benefits of new and innovative technologies) (Martinovska Stojcheska, 2023).

## **2. Current regulation and agricultural policy**

The main document behind the national agricultural and rural development policy is the Law on Agriculture and Rural Development (LARS, 2010), which regulates the sector and defines the key policy objectives. These include ensuring stable production of good quality affordable food, providing the population with sufficient quantities of food, increasing sector competitiveness, ensuring stable incomes for agricultural holdings, promoting sustainable development of rural areas and optimal use of natural resources. These objectives are actualized through different measures and instruments to organize and support agricultural markets, direct payments and rural development.

Agricultural and rural development policy in North Macedonia increasingly aligns with the European Union's policy framework. The country is assessed as moderately prepared in terms of alignment with the EU acquis (EC, 2022). The National Strategy for Agriculture and Rural Development (NARDS) for 2021–2027 presents the cornerstone for the strategic development in the sector. The document sets goals, policies and measures for the development of agriculture and rural areas in North Macedonia (MAFWE, 2021). The main goals of the strategy are following the EU's Common Agricultural Policy (CAP) logic: to achieve an increase in agricultural production through modernization in order to better meet consumption with domestic production, raising the quality of Macedonian agricultural products with added value, ensured food safety and animal welfare (i.e. to create conditions for sustainable agriculture that is competitive in the domestic and foreign markets). Improved agricultural performance along with other policy interventions, such as diversification and improving the quality of life in rural areas, are seen as crucial contribute to improved rural

sustainability. At the same time, agricultural practices should be beneficial for the protection and promotion of the environment and the maintenance of biodiversity.

Many other strategic and programming documents cover different aspects of the sectoral development. These include: the National Programme for Agricultural Development and Rural Development (2018–2022) and the new one for the period 2023–2027, the Instrument for Pre-Accession Assistance for Rural Development – IPARD III Programme (2021–2027), the National Plan for Organic Production (2013–2020), the Industrial Strategy with Action Plan (2018–2027), the National Strategy for Small and Medium Enterprises (2018–2023), the Strategy for Balanced Development (2020–2030), the Food Safety Strategy 2020–2025, the Innovation strategy (2012–2020) and the Competitiveness Strategy (2016–2020). The Smart Specialisation Strategy is in the final stage of its preparation, having the smart agriculture and food with higher value added domain as one of its priorities.

Public support for agriculture has been generous and has increased over recent years. Between 2013 and 2020, national budgetary transfers amounted to EUR 866.7 million, or an average of EUR 123.8 million per annum. In recent years (2021 and 2022), the budgetary transfers to agriculture have reached the level of EUR 150–160 million annually (MK APMC, 2023).

Following the intervention logic of the EU Common Agricultural Policy (CAP), national policy is delivered through measures for market and direct producer support and structural and rural development. Current agricultural policy remains linked to the production structure of agricultural holdings. Market support and direct payments represent on more than 75% of the agriculture budget outlays and are coupled using various criteria: per unit of agricultural land, per livestock head or per output. Furthermore, the high share of direct payments in the total budget structure raises questions about the effectiveness of this type of support and the capacity to make necessary structural adjustments, for example regarding land and farm consolidation, productivity enhancement and modernization through technology investments (IBRD, 2020). Measures to improve competitiveness dominate in terms of rural development support, but in recent years, increasing funds have also been allocated to measures that curb the negative environmental externalities of agriculture, such as organic agricultural practices and subsidies to stimulate rural economies.

Significant levels of funding also come increasingly from the European Union's Instrument for Pre-Accession Assistance for Rural Development (IPARD). Aside from this financing component, the role of IPARD is much broader, assisting the country in preparing for the effective utilization of structural and rural development funds upon EU accession. It is important to mention though, that farmers and agri-food companies are increasingly using the IPARD funding. Namely, within the closing implementation of the IPARD 2014–2020 cycle, the EU funds of approved projects amounted EUR 62.7 million as of end 2022, out of which 56% or EUR 34.9 million were already paid to the beneficiaries. Most of the projects in Measure 3 – investments in the processing industry, are related to fruits and vegetable processing (43% of the realised projects), followed by projects in meat and milk processing, and wineries. The Measure 1 – on-farm physical assets projects were mostly dedicated to investments in cereal production, orchards and vineyards (PA, 2023). However, more effective use of these funds, which is an important lesson for the upcoming IPARD III implementation, requires strengthening of national institutions in terms of set-up and human capacity, and greater support to applicants in the preparation of sustainable projects.

There is a well-established regulatory framework in the food quality and food safety segment. The country has a good level of preparation of alignment of the food safety, veterinary and phytosanitary policy to the EU acquis (EC, 2022). The Law on Food Safety was adopted in



2010, in alignment with the EU regulations, followed by a significant consolidation update in 2015 and a growing number of accompanying by-laws. This law regulates the basic principles of food and feed safety, general and specific food hygiene requirements, organizational structures of the food safety system, and official controls on food and feed. The purpose of this law is to ensure a high level of protection of human health and consumer interests in relation to food, in particular taking into account the diversity of food supply including foods with traditional characteristics, ensuring the efficient functioning of the internal market. The labelling of food products in North Macedonia is regulated by the Law on Food Safety and additional bylaws. It is obligatory to label the product name in a way that is clear and visible to the consumer, nutritional table, composition, net weight, and shelf life. The product may contain voluntary information including nutritional claims, such as certain vitamins or minerals levels and health claims associated with the product. The regulations aim to provide greater protection from the potential health concerns related to eating food that has been fortified or contains additives.

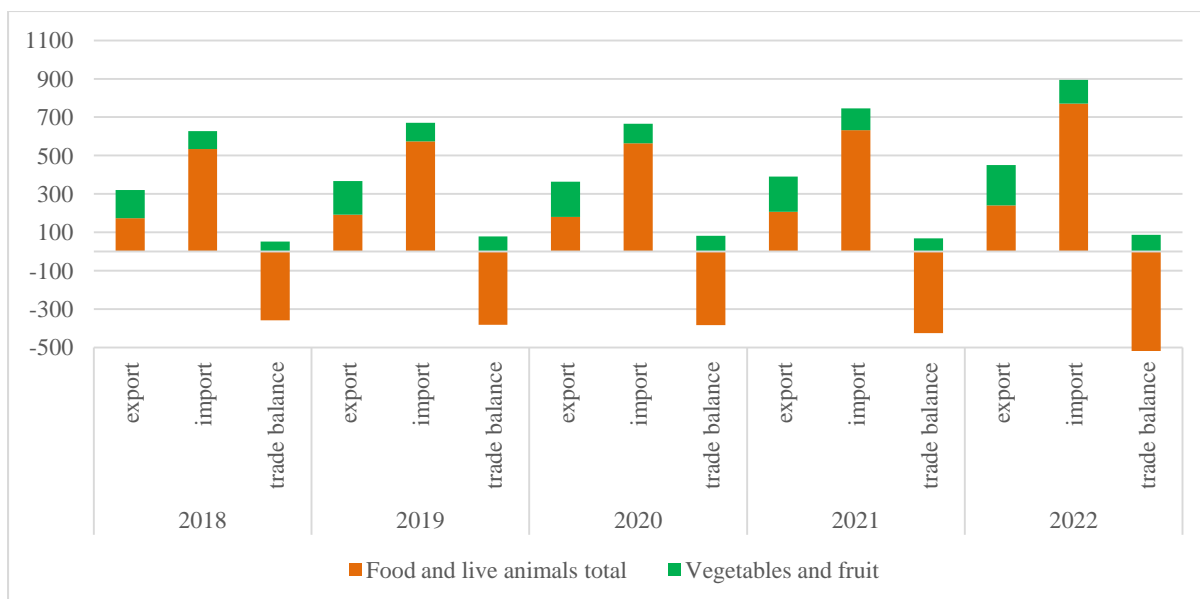
Another important legislative act is the Law on Quality of Agricultural Products (2010). This law regulates markets of agricultural products, quality standards, classification, quality labelling and information systems, and protection of agricultural and food products with geographical name and traditional specialties. In addition, the Law sets the measures and activities that must be performed by the quality assurance authorities and corresponding institutions to assess quality control in the agricultural sector.

The institutional framework related to the whole agri-food system in North Macedonia is well established, and comprises all major relevant public institutions and organizations. However, coordination and collaboration, especially on cross-cutting challenges (e.g. climate change, gender and youth, digitalisation and green transformation), is often lacking.

### **3. International competitiveness of F&V**

The vegetables and fruit production and the associated processing industry are traditionally export oriented. Compared to the total volume of agri-food trade, the primary fruits and vegetables sector, together with the processing industry, take about one-third of the agri-food exports (on same level as the total beverage and tobacco industry), persisting in stable growth over the years. Looking more closely in the food and animal exports, the vegetable and fruit primary and secondary production took almost 47% of their exports share with EUR 210 million in 2022 (Figure 2).



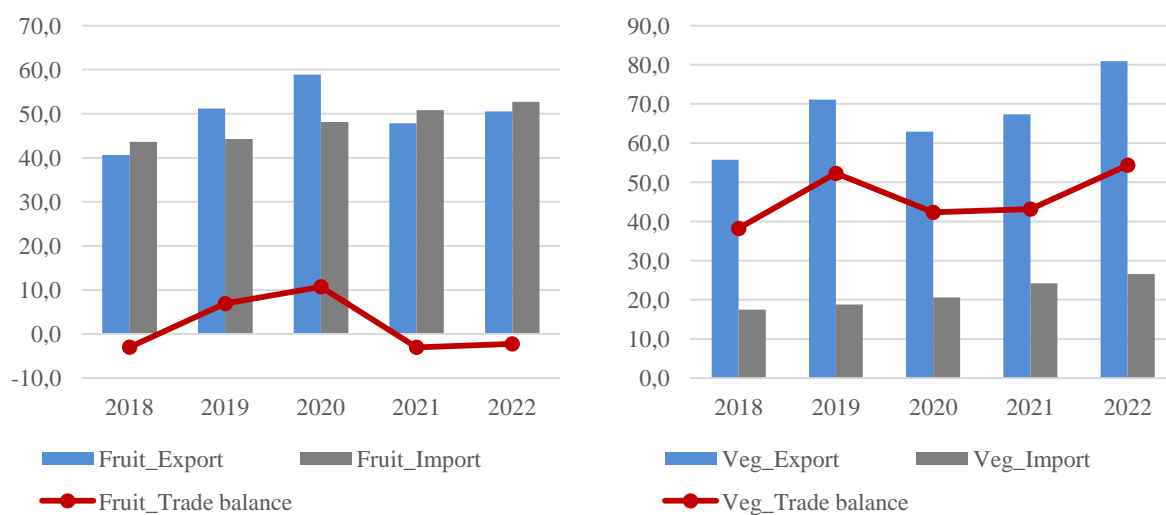


**Figure 2. Total agri-food trade and trade of fruits and vegetables (in EUR million)**

Source: SSO (2023)

### Fresh vegetables and fruits trade

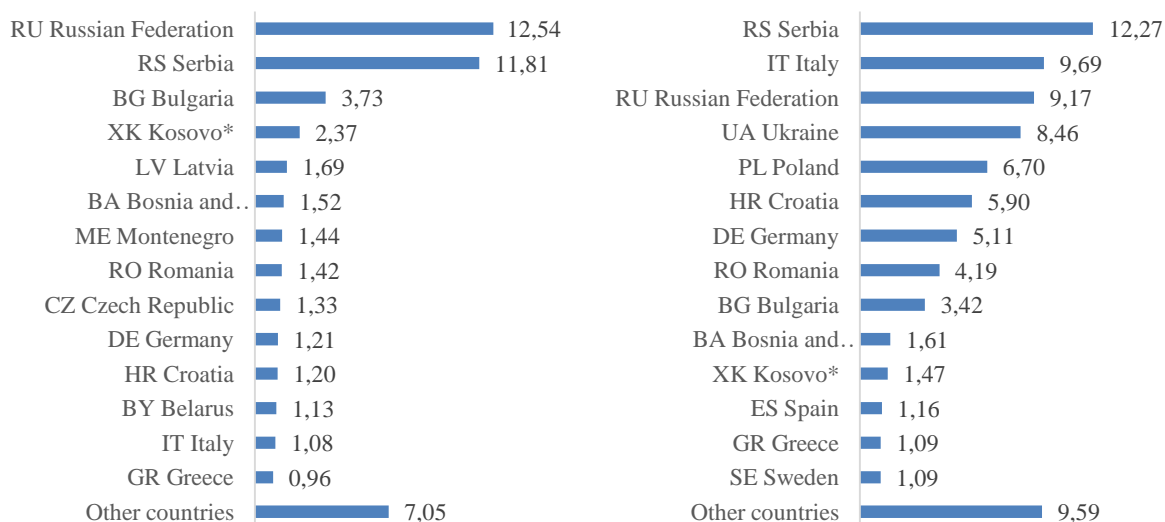
Primary production of vegetables, in total trade terms, is more successful both in terms of quantities produced and value achieved, and a continuously positive trade balance over the years, as compared to the fruit production subsector (Figure 3). The fresh fruits, and the fruits used as raw materials for the processing industry, are head-to-head in value in terms of exports and imports, slightly more inclining into net negative balance in recent years, except for the Covid-19 years when the trade was disrupted.



**Figure 3. Fruits and vegetables trade North Macedonia (million EUR)**

Source: SSO (2023)

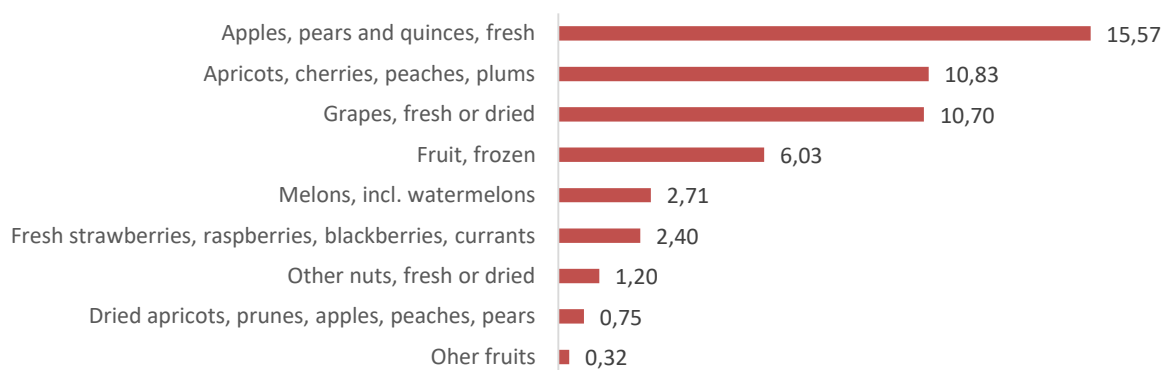
The regional markets and neighbourhood countries are most important destinations for fresh vegetables and fruits, led by Serbia (in 2022, EUR 12.3 million worth of vegetables and EUR 11.8 million worth of fruits), then Bosnia and Herzegovina, Kosovo\*, Croatia, Bulgaria and Greece. Important destination, especially for apples and peaches, is the Russian Federation (Figure 4).



**Figure 4. Fruits and vegetables export destinations in 2022 (million EUR)**

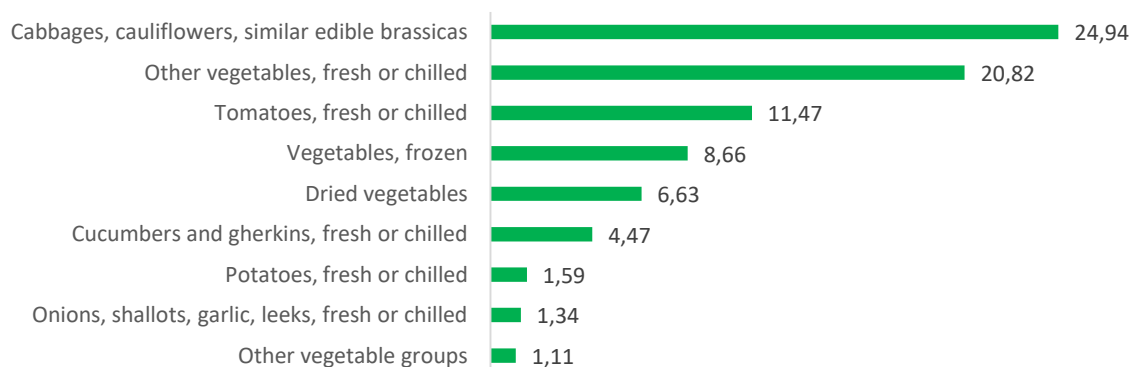
Source: SSO (2023)

Out of the fresh and dried fruits, most exported is the group of apples and pears, taking up 31% of the exported value in 2022 with around EUR 16 million, followed by apricots, peaches and plums, as well as grapes, with 21% or around EUR 11 million of export value each (Figure 5).



**Figure 5. Most exported fresh and dried fruits in 2022 (million EUR)**

Source: SSO (2023)



**Figure 6. Most exported fresh and dried vegetables in 2022 (million EUR)**

Source: SSO (2023)

Cabbage is the single most exported vegetable product, with an annual export value of EU 25 million in 2022 or almost one-third of the total fresh, chilled and dried vegetable exports. With less than half of the cabbage export value, tomato is the second single most important vegetable crop with EU 25 million export value in 2022 (Figure 6).

The main difficulty facing vegetable and fruit farmers is competitiveness. In recent years, competition from countries in the region has intensified, and these crucial sectors comparative advantage is eroding. Better cost structures, effective production processes, improved product quality, product consistency, demand-side competence, trend-following adaptability, and the ability to quickly alter technology are all ways that vegetable producers can set themselves apart from their rivals; the foundation for increased sector competitiveness and overcoming impending challenges must be horizontal and vertical integration in the value chain, supported appropriately by advisory and knowledge transfer systems, as well as relevant policy support, particularly in terms of modernization and structural aids (Martinovska Stojcheska et al., 2021).

The domestic market is experiencing an increase in competition from nearby countries. For instance, there has been a noticeable increase in vegetable production in Albania in recent years due to new investments in machinery, equipment, technology, and as well as higher standards for both primary production and processing. Serbia has long been a pioneer in the region for fruit production, but it is now also making investments in early vegetable production. A recent study using the Revealed comparative advantage (RCA) Balassa index (Martinovska Stojcheska et al., 2021) found that although the North Macedonia is still a net exporter of vegetables, there is an evident decreasing trend of the RCA index during the period 2010-2019, while Albania has significantly improved its exports of vegetables and in 2019 had the highest comparative advantage among the Western Balkan countries. Serbia and Bosnia and Hercegovina had still however noted comparative disadvantage in the trade of vegetable products, with RCA index lower than 1.

### **Processed vegetables and fruits trade**

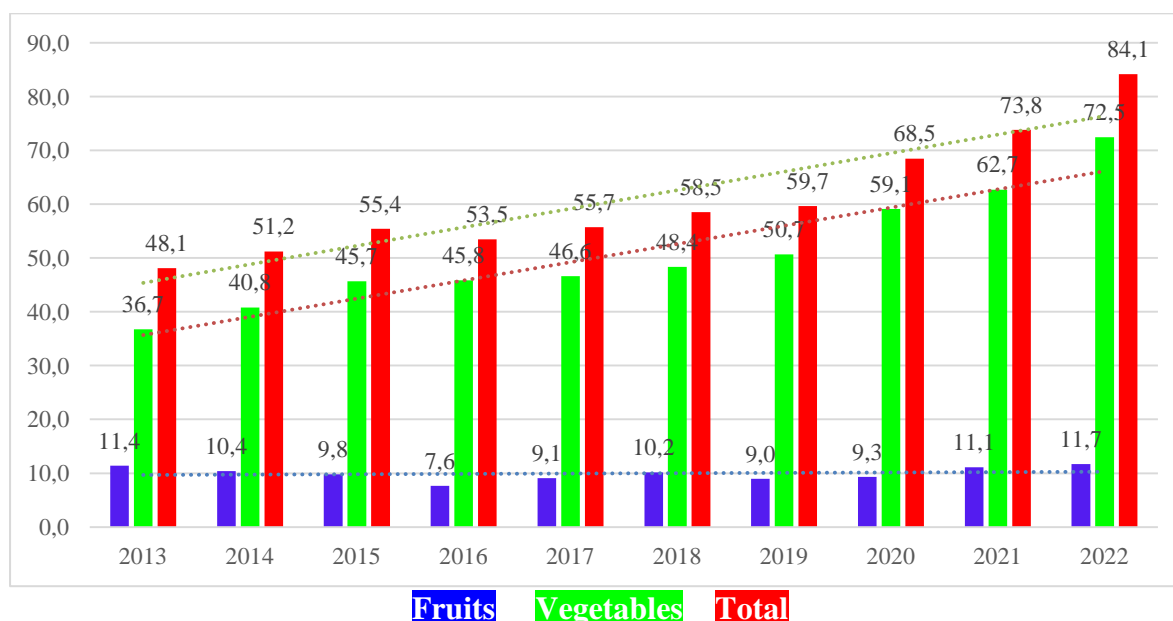
The most prominent value added export segment in the country's agri-food context is the fruits and vegetables processing industry. The fruit and vegetable processing industry consists of about 60 processing facilities. Most of the enterprises process only vegetables or combined vegetables and fruits (about 85% of the total number of active facilities), while only a small number of facilities (about 15%) process only fruits (MAP, 2023).

For this industry alone, the value of exports in 2022 amounted to a record EUR 84.1 million, which is EUR 10.3 million or 14% more than in 2021, i.e. EUR 15.6 million or 23% increase compared to 2020 (Figure 7). The structure of exports in 2022 was dominated by processed vegetables, which by value participate with 86% (or 1% increase compared to 2021) compared to fruit processing, whose share is 14%, i.e. 1% fall to the share in 2021 (MAP, 2023).

Regarding the average export prices per unit of measurement (kilogram), the overall average export price in 2022 was record high and amounts to 1.72 EUR/kg, with an increase of 0.25 EUR/kg or 17% when compared to the previous year.

The main export market for the Macedonian processed fruits and vegetables are the EU countries, a destination of 52% of the total exported quantities (-3% compared to 2021) and 48.5% in the total value of exports in 2022 (-1.5% compared to 2021). Other non-EU markets participated with 48% in the total exported quantity (+3% compared to 2021) and with 51.5% in the total export value (+1.5% compared to 2021). Individually, the most important export

destinations are Serbia, Croatia, Germany, Kosovo, Bosnia and Herzegovina, Italy, Australia, USA, Slovenia, Italy, Bulgaria, Great Britain, Montenegro and Sweden (MAP, 2023).



**Figure 7. Exported quantities of processed F&V 2013-2022 (million EUR)**

Source: MAP (2023)

The production and supply of agricultural products as raw materials for the domestic processing industry practically determine the volume, quality and trade. The sector is almost fully dependent on agreements with individual farmers, agricultural companies, and cooperatives engaged in primary production, as well as middlemen - traders who supply the industry. Imports of fresh agricultural products to be used as inputs in the processing industry are very seldom realised due to high tariffs and complicated import procedures. The introduction of contract production as a useful approach for controlling the supply and demand of raw materials for the sector is still not functional, although there is a legal framework to support it. Additionally, prices fluctuate widely according to regional fresh produce demand and national output levels.

Importers of food products from the region and EU have a favourable opinion of North Macedonia's processed goods (MAP, 2023). The advantageous trading terms with the EU, the free trade agreements reached with the countries in the region, as well as additional liberalization (the CEFTA agreement), should help the processed fruits and vegetables remain competitive in the market and continue the trend of rising export volumes.

#### 4. Impact of COVID-19 and the effect of Russia-Ukraine war

Like all other economic sectors, the agricultural sector has been impacted by the Covid-19 pandemic. Even so, it managed to continue to be one of the few industries that saw growth during the pandemic. Small-scale farmers being the most vulnerable group in the sector, the Covid-19 crisis only exacerbated their challenges and structural deficiencies (Martinovska Stojcheska, Nacka, and Tuna, 2021). The critical links in the supply chain were disrupted due to mobility restrictions that had an impact on transportation and logistics, the availability and cost of seasonal labour, and timely product sales. From the standpoint of buyers and

processors, the crisis effect was characterized by a breakdown in communication with farmers and a brief, sharp fall in HORECA channel sales. The Covid-19 crisis, and the war in Ukraine even further demonstrated the importance of food security and raised many questions among general public and policy makers.

Different sets of interventions were undertaken to address the challenges met both by the food supply and food demand side. The government implemented six sets of economic measures to assist individuals, businesses, affected industries, including agriculture, and the economy as a whole in order to lessen the financial effects of the Covid-19 pandemic. Different types of measures were put into action, which can be broadly categorised into several groups (Buzarovska, 2020): (i) direct support for sustaining the liquidity of the companies, the job positions of the employees, but also for strengthening the competitiveness of the companies in stabilization and renewal of their business activity, as well as rapid economic recovery for micro, small and medium-sized companies; (ii) measures within the competitiveness, innovation and entrepreneurship programme, aimed to support the development of micro, small and medium-sized enterprises and to encourage the entrepreneurship by providing financial support, but also by capacity building activities; (iii) measures by the Employment agency aimed to protect the employees for retaining their job positions, subsidizing their wages and also by attracting and supporting young labour force; (iv) measures related to the postponement and releasing of debts and introduction of new credit lines; and (v) tax interventions aimed to support and maintain economic activity.

The threats of market distortion as a result of the Covid-19 crisis are currently prolonged by the crisis on food, energy and finance caused by the war in Ukraine. Both Russia and Ukraine are important trading partners of North Macedonia, especially when it comes to the fruits and vegetables sector, and dominantly in the fresh segment. The war caused significant increase in the prices of primary raw materials and prices of inputs peaking in spring 2022 (energy, fertilizers, protection, animal feed, packaging, etc.), coupled with the reduced purchasing power, especially on the domestic market. The share of household expenditure on food and beverages has risen from 39.7% in the period 2010-2019, to 45.0% in 2020, and 50% in 2022 (SSO, 2023), alerting to the increased prices of food items. This increasingly burdens the household budget, with major foodstuffs consumer prices soaring over the last period.

However, although there were drawbacks and distortions of markets as a result of the Covid-19 crisis, and issues on food security increasingly risen also by the war in Ukraine, some new opportunities emerged that in some segments pushed the sector into faster transformation, notably in the area of using certain digital and ITC tools and solutions. The Covid-19 situation also accelerated demand-driven growth in e-commerce, home delivery, individual consumer packaging, etc. (Martinovska Stojcheska, Nacka, and Tuna, 2021).

## **5. Conclusion**

Agriculture, together with the food processing industry, remain one of the most important sectors in the Macedonian economy. The overall gross value added of the sector is growing over time, however in parallel with its decreasing importance as compared to the growth of other sectors, as well as less people engaged in agriculture.

North Macedonia is a net importer of agri-food products, but the fruits and vegetables, both and primary and processing level, balance out with significantly higher exports than imports (apart from the fresh fruits sector, where the imports/exports ratio is flat to slightly negative in recent years). The fruit and vegetable processing industry is gradually increasing its

performances by volume and values. This market segment proved to be resilient in market distortion conditions, such as the Covid-19 crisis and the crisis caused by the war in Ukraine.

Nevertheless, competitiveness issues persist, both at primary production and processing sector level. The large number of non-aggregated small-scale farmers face productivity, financing, marketing and recently also labour scarcity challenges, having little or no bargaining power. Despite the successful trend in the fruit and vegetable industry, still, the average export price of the industry points at selling low value-added commodity-type products, where the future direction should be focused on branded, higher value added exports. By applying a more "holistic" approach, the four key pillars of access to markets, access to training, collaborative coordinated horizontal and vertical linkages, and access to finance, can be used to address the major competitiveness limitations across the chain.

A special focus should be put on the ongoing need for more intensive education, training, dissemination of information and expertise both to farmers and processors, for suitable production and processing technologies, as well as understanding of the market demands and regulations. The advisory segment's operations must run smoothly and be strengthened. With the help of the research community, functional knowledge and innovation transfer throughout the chain should also improve the performance of the fruits and vegetables subsectors. It is crucial that all chain participants work together, communicate effectively, and have trust in one another

# The status of the fruit and vegetable sector in Serbia

## 1. Introduction

Agri-food sector is one of the most important sectors of the Serbian economy. Value added in agriculture, forestry and fishery was reported at 10 percent of the country's GDP and some 20 percent of the total export. Serbia's plant production represents approximately 66 percent of the total value of Serbia's agricultural production, and remaining part of 34 percent represents livestock production.

Agricultural production and food processing have a long tradition. Serbia is the largest agricultural market in the Western Balkans.

This high contribution to the country's GDP is because of Serbia's fertile land and natural conditions for agricultural production.

In addition, rural economy still plays important role to Serbia's population. According to the Serbian Statistical Office, some 680,000 people are employed in agriculture or 21 percent of the total labour force in the country.

The Serbian Agriculture census data shows that there are some 630,000 registered agricultural entities of which 99.6 % are family holdings with the average size of only 4.5 ha. Commercial registered farms have approximately 10.6 ha.

The food processing has some 15,000 food business companies, with 100,000 employees. Those entities are predominantly micro, small or medium sized and the largest subsectors by value are dairy, meat, fruits, vegetables, wine and confectionary.

During a COVID-19 and due to global price inflations and disruptions caused from the war in Ukraine Serbia ban the export of wheat and corn (from 11 March 2022 to 21 July 2022), wheat flour (from 11<sup>th</sup> March 2022 to 15<sup>th</sup> May 2022) and refined sunflower oil (from 11 March 2022 to 11<sup>th</sup> August 2022).

The Republic of Serbia is a net importing country. In contrary, agri-food sector is net exporter with a trade surplus of 1.4 billion \$ USA, contributing with approximately 19.6 % the total Serbian export.

The main Serbian agri-food export products are maize, frozen raspberries and cigarettes with the export value of approximately 300, 427 and 190 million \$ USA respectively in 2022. Fruit and vegetable are products that enjoy significant foreign demand, but in the total value of the top 10 agri-food export Serbian products, besides raspberries are only fresh apples with an export of some 90 million \$ USA.

In spite of the high contribution to the Serbian export, added value in the agri-food products is still on the low level. Main export partners are neighbouring countries with relatively low purchasing power. To increase product export with higher added value and to reach more developed markets, producers needs to invest in knowledge and appropriate technology.

The reasons for the low export performances lies in the facts that, firstly, there is are not enough knowledge on foreign markets and import procedures of different countries,



secondly, marketing-management on companies and products are lacking contemporary knowledge, and finally, product development and management in companies do not lead to the highest efficiency and productivity.

Knowledge updating of employees from companies and other stakeholders involved in the international business in the specific field would significantly contribute to the efficiency and productivities growth and thus to the international competitiveness increases. We point out international, because Serbia is small market and further development of the agri-food sector would largely depend on the foreign markets.

Fruits and vegetable production and processing should be priority, not just because of foreign demand, but because of fact, that since the changes in Serbia in 2000 significant investments in fruit and vegetable production took place. There are structural changes in place that could make this production internationally competitive. That development could provide a wide range basis for fruit and processing and further export.

## **2. Current regulation and agricultural policy**

For the field of agriculture, the most important is the Law on Agriculture and Rural Development (Official Gazette of the RS, no. 67/2021- and 114/2021), on the basis of which further laws related to individual sectors of agriculture are prepared.

In 2019, Serbia adopted the new Food Safety Law. The law is now fully harmonized with the EU General Food Safety Regulation (EC 178/2002) and includes an integrated approach to food safety “from farm to table”. The amendments introduced a new concept that includes all sectors of the food chain and creates a comprehensive and integrated food safety system.

The new law divides jurisdiction for food safety between the Ministry of Agriculture and the Ministry of Health. The law established a Food Safety Council, which is in charge of giving scientific advice and assistance to the competent authorities.

Although Serbia is fruit net exporting country the key challenge is the quality especially is the export of fresh fruit and vegetables. The main legislation regarding market quality of fresh fruits and vegetables is Law of Organisation of the Agricultural Product Markets (Organization of the Agricultural Products Market (Official Gazette Republic of Serbia, No.67/2021).

This law establishes special requirements related to the fruit and vegetable sector, such as: Marketing standards and other requirements for placing fruit and vegetable on the market; Inspection Service, Control body and procedure of quality check control; Register of fruit and vegetables traders; Establish producers’ organization in fruit and vegetable sector; Operational programs for producer organization in the fruit and vegetable sector; Establishment of School fruit and vegetable scheme. For implementation of new regulation the deadline for rulebooks is set by the second quarter of 2024.

Establishment of marketing standards true legislation and its implementation by all value chain members: producers, traders, institutions and public audience, would create better functioning supply chains. The central power in the value chain in Serbia is by supermarkets. Leading in market share are international supermarkets like Delhaize, Lidl and Mercator followed by domestic Aman and Univerexport. All of them have centralized procurement of

fresh fruits and vegetables and the supply contracts are made without public procurement procedure with suppliers that could be domestic producer or traders or importers.

In purchase of fresh fruit and vegetables supermarkets are implementing both state and internal standards. Private standards are higher than the state and gain additional consumer trust to the supermarkets. For example, Delhaize Serbia in cooperation with Faculty of Agriculture, University of Belgrade, in 2022 introduced concept "Zero residue" for melons and water melons from one Serbian producer. Introduction of this concept is aimed at increasing food safety in Serbia and would be extended to other producers and other products.

The total area under the fruit of all kinds is 175,863 ha, where plums are the most represented (39%), followed by apples and raspberries with 14% each, cherries with 10%, peaches, apricots, and nectarines (7%), and the remaining 16% are all other fruits species.

The number of plum trees has recently decreased slightly, but production is increasing, which indicates an improvement in production. Plums are mostly processed into brandy, while a negligible part is sold fresh.

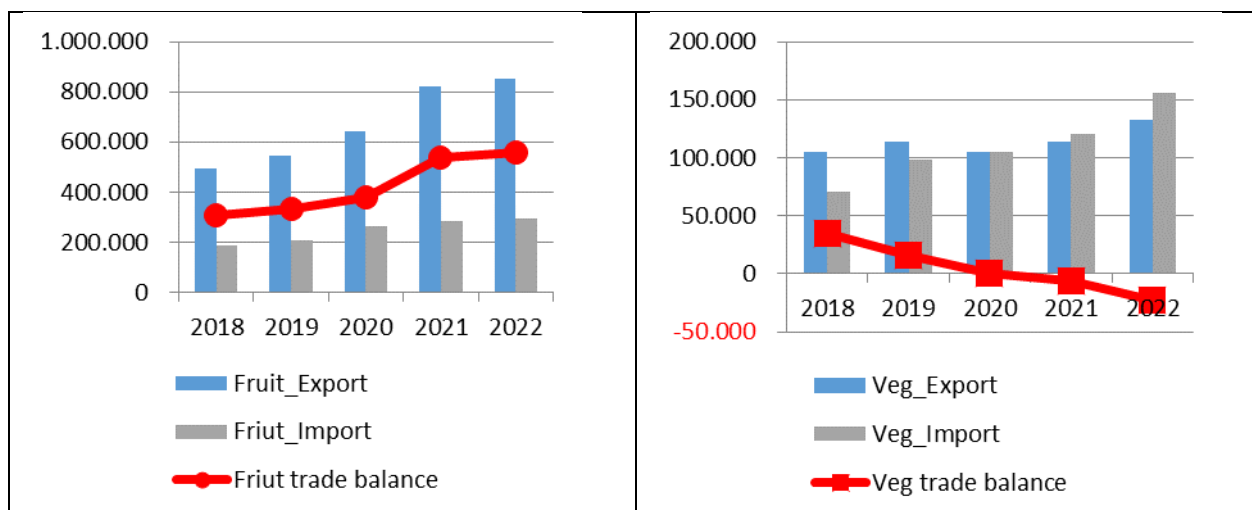
Apples are mostly sold fresh, directly after harvesting or after being stored for several months. Out of the total apple production some 37% are exported as fresh fruit and approximately 15% as processed, while marketing via supermarkets amounts about 20%, and traditional marketing channels represent 28%.

The most represented apple varieties are "Ajared" (41%), followed by the category "miscellaneous" (20%), and in third place is Golden Delicious (14%). The variety structure is one example of limited export potential since foreign consumers are increasingly looking for varieties that Srijia does not have in its assortment. The high frequency of "miscellaneous" results in smaller quantities and difficulties in marketing through large supermarkets. The most common pear variety is "Viljamovka" (58%), followed by "variety" (33%). Pears are mostly processed into brandy, and a small share is sold fresh. Cherries are mostly processed, while peaches are sold fresh and are available from mid-June to mid-July.

For all fruit species, it is characteristic that new plantings are established in a modern way with the mandatory installation of irrigation and fertilization systems. State policy measures encourage investment in fruit production, through direct payments, incentives for rural development measures, and special incentives for credit support. The amount of funds per measure is limited and the user must register for the tender in order to be included in the support. Untimely registration and incomplete documentation exclude a potential user from the support scheme. Obtaining proper documentation is a major challenge for small producers.

### **3. International competitiveness of F&V**

Fruit export is constantly increasing and has a positive trade balance, while vegetable has trade deficit, starting from 2020. Obviously, the vegetable produced were more affected by COVOD-19 than fruit producers



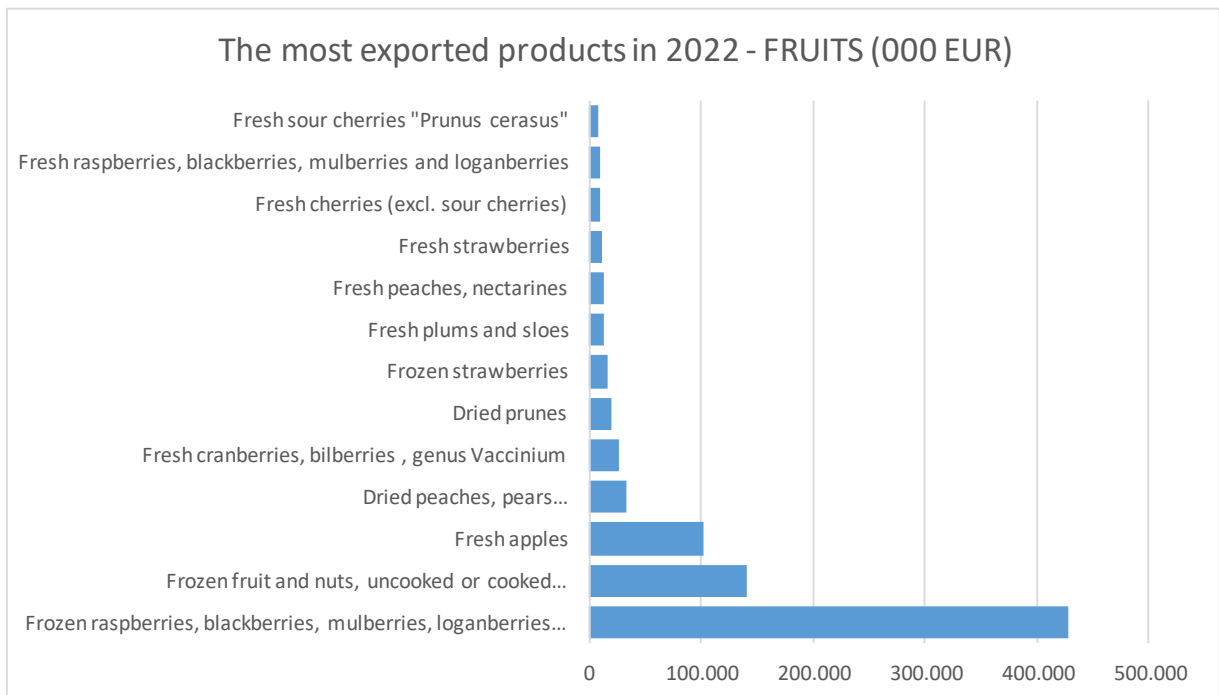
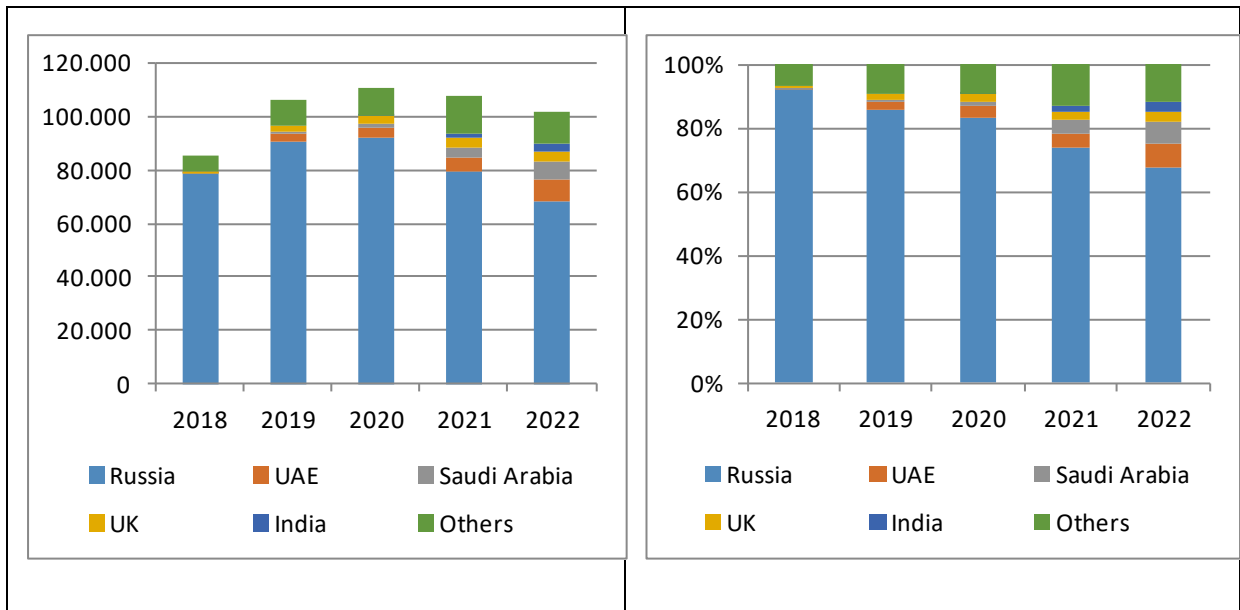
The most important export products are frozen raspberries, followed by frozen fruit and nuts, uncooked or cooked and fresh apples. In the year 2022 the export of frozen raspberries amounted 427.4 mil EUR, and fresh apples 101.8 mil EUR. Raspberries in Serbia are grown on some 22,000 ha with average yield of 5.4 t/ha which gives production of 118 mil tons. Total production is slightly decreasing because of climate changes, not satisfactory plantation quality and due to poor maintenance of raspberry plantations. Still Serbia is the fourth world producer of raspberries with a share of 13 percent of the total world productions. The dominant varieties are Willamette and Miker. Some 75 percent of the total production is exported of which fresh is only 3 percent.

Serbia fruit sector export more than import and confirms international competitiveness. Major export markets for fresh fruit sector are Russia and EU. CEFTA markets and other markets are important partners only for some fruits. Russia market is decreasing by the most important product fresh apples. Major export destinations for fresh vegetable sector are CEFTA and EU. Russia is important partners only for some vegetables.

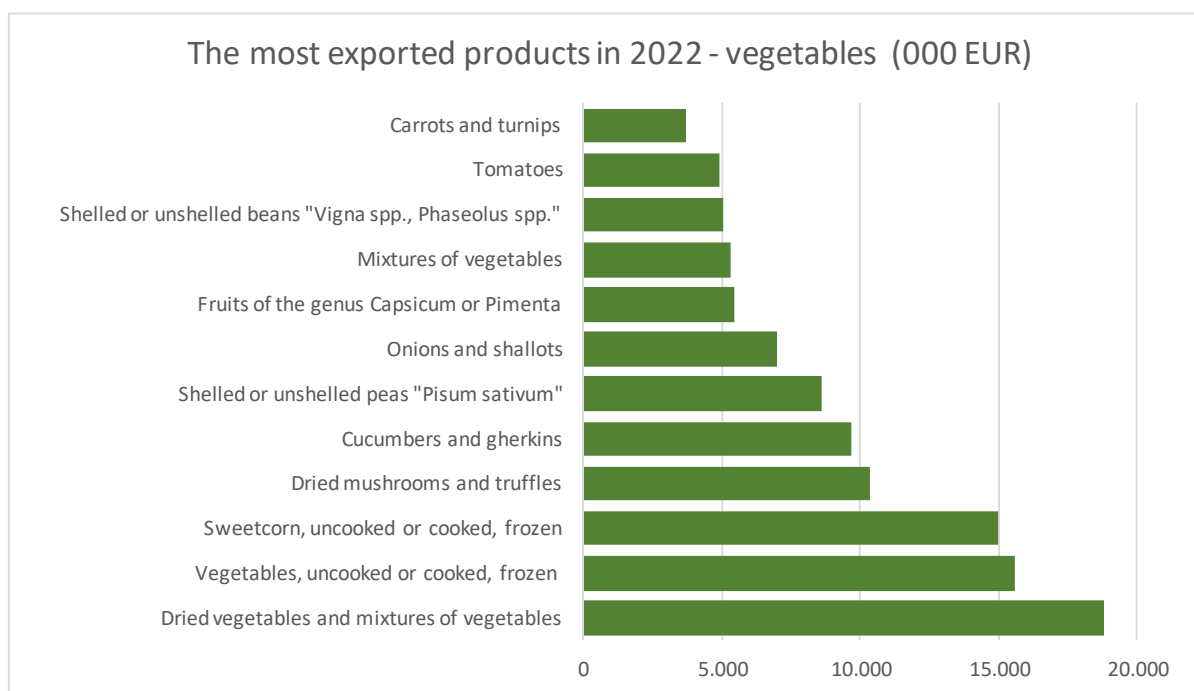
Export trend of selected Serbian fresh fruit and vegetables to EU (value and share)

1	2	3	4	5
Decrease	Slow decrease	No specific trend	Slow increase	Increase
Value	Value	Value	Value	Value
Sour cherry		Apricot, Raspberry		Apple, Pear, Plum, Peach, Sweet cherry, Blackberry, Strawberry
Potatoes, Cabbage	Tomatoes, Onions, Carrots	Peppers, Watermelons		Cucumbers
Share of export to EU	Share of export to EU	Share of export to EU	Share of export to EU	Share of export to EU
Sour cherry		Raspberry		Apple, Pear, Plum, Peach, Apricot, Sweet cherry, Blackberry, Strawberry
Potatoes, Cabbage	Tomatoes, Carrots	Onions, Cabbage, Watermelons		Cucumbers, Peppers

Fresh apple are most important fresh product and the main market is Russia. However, share is growing down from 91,98 percent in 2018 to 67,30 percent in 2022.



By vegetable most important export products are dried or frozen ...



#### 4. Impact of COVID-19 and the effect of Russia-Ukraine war

During the global COVID-19 pandemic, state measures included increased controls at borders, prevention of any gathering, limited movement of people, introduction of curfew, and the like. All this led to the inability of people to carry out their daily functions and especially hindered agricultural producers who were far from their properties.

Increased border controls, which in that period were extremely strict and lasted longer than usual. As vegetables are easily perishable goods, this type of detention at the borders had a significant impact on the deterioration of their quality.

Sales on the domestic market were also difficult due to the closure of markets, restaurants, schools, and kindergartens. Then many agricultural producers switched to online sales. However, with the easing of COVID-19 measures, the majority of small producers have returned to traditional sales channels, and mostly to different forms of direct sales, where personal contact is nurtured and trust is established.

Russia and Ukraine are important trading partners of Serbia. Cooperation with these two countries is extremely important for agriculture. From these countries, Serbia imports oil, and agricultural inputs - like mineral fertilizers and plant protection products. During the period of COVID-19, there was a significant price increase for these products, which caused a cost increase in agriculture production.

In addition to being important import partners, Russia and Ukraine are large export markets for Serbian agricultural products.

Domestic apples are mostly exported to the Russian market. In addition, other important types of fruits and vegetables are sold in both countries.

Exporting to other countries has also become more difficult, because transport on regular routes was not impossible, so the delivery time has increased significantly, which further led to an increase in transport costs.

Due to COVID-19 and the Russian-Ukraine war international markets are more price sensitive. Frozen raspberries are relatively expensive, so supermarkets offer other fruits or fruit mix to satisfy consumer needs for frozen fruit. It is expected that international raspberries demand will continue to decrease. Due to the impact of international crises the demand decreases by almost one third.

## **5. Conclusion**

Serbian agricultural production and food processing have a long tradition and Serbia is the largest agricultural market in the Western Balkans. The Agri-food sector is one of the most important sectors of the Serbian economy, having some 630,000 registered agricultural entities of which 99.6 % are family holdings with an average size of only 4.5 ha. The Republic of Serbia is a net importing country, while the agri-food sector is a net exporter with a trade surplus of 1.4 billion \$ USA, contributing approximately 19.6 % of the total Serbian exports. Fruit and vegetables are important export products, but in the total value of the top 10 agri-food export Serbian products, besides raspberries are only fresh apples with an export of some 90 million \$ USA. Food Safety Law is fully harmonized with the EU General Food Safety Regulation and includes an integrated approach to food safety “from farm to table”.

Major export markets for the fresh fruit sector are Russia and the EU. CEFTA markets and other markets are important partners only for some fruits. Major export destinations for the fresh vegetable sector are CEFTA and the EU. Due to the international crisis, the demand for fruit and vegetables is more price-sensitive, so it is expected that Serbian supply chains of fruit and vegetables will be under additional pressure. Climate change creates necessary adaptation and mitigation measures. In short, the fruit and vegetable sector faces significant challenges.





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