Supporting sustainable value chain integration in Montenegro's fruit and vegetable sector

Knowledge exchange in Serbia, and Bosnia and Herzegovina: best practices in farmer organization and fruit and vegetable production and marketing focusing on berries

17 – 21 September 2018
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<tbody>
<tr>
<td>BiH</td>
<td>Bosnia and Herzegovina</td>
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<tr>
<td>CEFTA</td>
<td>Central European Free Trade Agreement</td>
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<tr>
<td>d.o.o.</td>
<td>društvo sa ograničenom odgovornošću (limited liability company)</td>
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<td>EU</td>
<td>European Union</td>
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<tr>
<td>EUR</td>
<td>Euro currency</td>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>F&amp;V</td>
<td>Fruit and Vegetables</td>
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<td>EBRD</td>
<td>European Bank of Reconstruction and Development</td>
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<td>GI</td>
<td>Geographical Indication</td>
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<td>GlobalGAP</td>
<td>Global Good Agricultural Practices</td>
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<td>HACCP</td>
<td>Hazard Analysis and Critical Control Points</td>
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<td>IFS</td>
<td>International Food Standard</td>
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<td>ISO</td>
<td>International Organization for Standardization</td>
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<td>MARD</td>
<td>Ministry of Agriculture and Rural Development</td>
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<td>OK</td>
<td>Organska Kontrola</td>
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<td>PDO</td>
<td>Protected Designation of Origin</td>
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<td>ZZ</td>
<td>Zemljoradnička Zadruga (Agricultural Cooperative)</td>
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INTRODUCTION

The Food and Agriculture Organization of the United Nations (FAO) and the European Bank of Reconstruction and Development (EBRD) are implementing the project “Supporting sustainable value chain integration in Montenegro’s fruit and vegetable sector” in collaboration with the Montenegrin Ministry of Agriculture and Rural Development (MARD). The aim of the project is to improve linkages between fruit and vegetable producers with buyers (e.g. processors, retailers, wholesalers, importers/exporters and other aggregators/off-takers) through consolidation of supply and upgrading of quality standards; to support increased integration and sustainability of the value chain and support the adoption of international best practices to increase food quality standards and ensure supply reliability.

In this context, as part of the capacity building component, a knowledge exchange was organized from 17 to 21 September 2018 for a Montenegrin delegation composed of 16 Fruit and vegetables (F&V) producers and two representatives of the MARD to Serbia and Bosnia-Herzegovina, on best practices and experience in farmer organization and F&V production and marketing, with a focus on berries.

The aim of the knowledge exchange was to introduce Montenegrin value chain actors to:
- advanced production technologies, including new trellising systems for raspberries and new varieties;
- post-harvest handling technologies as well as value-adding through packaging and processing;
- meeting market requirements through aggregating, packaging, compliance with international standards and certification;
- the role and importance of organization through agricultural cooperatives and associations.

The itinerary included visits to leading nurseries, cooperatives and associations, producers of relevant equipment (greenhouses and irrigation), as well as processors.

Experiences in Serbia, and Bosnia and Herzegovina are relevant for the following reasons:
- Both Serbia and BiH have a long tradition in berry production. Serbia is 5th and 7th largest raspberry producer in the world;
- In BiH, berries are by far the most important export product, accounting for about 40 percent of the value of all exports from the BiH fruit and vegetable sector. More than 38 million EUR of frozen berries were exported in 2017;
- BiH has been trialing new varieties (for fresh and frozen market) and trellising systems in the last five years;
- Rapid growth of the berry sector has brought economic benefits but also issues (due to global oversupply in 2017 resulting in a falling price) and such lessons learned would be invaluable for Montenegrin producers in planning their production, adaptive management and mitigating risks as a result of global price oscillations.
KEY MESSAGES

The knowledge exchange was highly appreciated by the delegation and has provided interesting inputs and sharing of experiences from various perspectives of the F&V value chain. The participants took stock of this experience which gave them some ideas to ponder for their own context. From all the visit and discussions held, some important and common key messages were delivered by all the different actors:

- The need to upgrade farmers technical knowledge and adopt innovation both in production and processing;
- A cooperative system is the best way to empower producers and enable them to enter new marketing channels;
- It is easier to create a cooperative from scratch than resurrecting old cooperatives or converting them from other types of aggregations (e.g. association);
- To ensure profitability, it is important to invest in value adding activities, especially cooling chambers, processing, storage and packaging facilities;
- A cooperative systems should also offer a range of services for members including trainings, and provides also assistance on finance,
- It is also important to focus on quality production (organic, origins, quality labelling), as especially in the case of berry production, competition from mass producers is increasing. Quality of berries of the Balkan region is already recognized by local and foreign markets, and it is important and convenient to maintain this recognition and valorize it;
- Blueberry production is increasing given the oversupply of raspberry (being this major raspberry production area in BiH). This is an interesting area where Montenegrin producers can look into.
- Packaging is important, particularly the use of labels with traditional design providing additional value to the product;
- Certifications, both at production and processing levels, are increasingly important for product marketability, and especially in the context of EU accession.
Day 1: Visits at Cooperative Agro Eko Voce and Association Ariljska malina  
Monday, 17 September 2018

The delegation arrived to Požega, Municipality of Arilje, Serbia, and visited the Cooperative Agro Eko Voce and the Geographical Indication (GI) Association Ariljska malina. Mr Božo Joković, Cooperative manager and Vice President of the Association presented their activities and recent market developments. Agro Eco Voce is a cooperative founded in 2013, counting over 145 members and engaged in the production, purchase and processing of raspberries. In the first three years of activity, the Cooperative has leased space to build a refrigerator and continued with investments in processing raspberries with a total investment value of EUR 0.5 million. Plans for future business include the production of organic raspberries, as well as the export of fresh raspberries. Moreover, an initiative has been launched to establish eight more cooling chambers in different parts of Serbia, which would represent some kind of regional centers for the purchase of fruit to be processed by the Cooperative.

Representatives of the processing company Drenovac, which is a member of the GI Association Ariljska malina, also attended the visit and presented the company's activities. The company started operating in 1992 and is engaged in purchasing (from around 100 suppliers), processing and selling of deep frozen and freeze dried (lyophilized) fruit, mostly raspberries, blackberries, plums and strawberries. After few years, the company expanded its capacity by building a new facility and also increased the range of its operations. Mr Nemanja Bojičić, Drenovac’ quality manager, briefed the participants on their innovative fruit drying technology of lyophilization. Fruits that are mostly used for lyophilization are raspberries, strawberries, sour cherries, apricots, apples and redcurrants. Chocolate coating process of lyophilized fruits is also carried out. From the market point of view, the local market for these processed products is strong, as well as the export to the EU and USA. Mr Bojičić also highlighted the benefit of the obtained Protected Denomination of Origin (PDO) status for Ariljska malina (raspberry from Arilje), supported by a FAO-EBRD project on quality labels in Serbia, providing quality recognition and additional value to the product they market.
Day 2: Visits at Cooperative Insieme ZZ and Plant do.o
Bratunac, Tuzla - Tuesday, 18 September 2018

Cooperative Insieme ZZ
On day 2, the delegation travelled to Bratunac, BiH, to attend a visit to the Cooperative “Insieme”. The Cooperative started in 2003 initially with 20 members and a nursery with 10,000 seedlings, and now it counts 500 members and 500,000 seedlings distributed along the municipality. The cooperative counts between 25 and 30 workers. Initially, they focused on frozen berries, but being the latter not profitable, they then decided to focus on processing, with production and marketing of quality berry jams and juices. Freezing berries now comprises only about 5 percent of their operation. Almost all of their products are exported to Italy with trial shipments sent to the Middle East (United Arab Emirates and Qatar) recently. Also, for the first time, their products are available on the local market through the Mercator retail chain. In terms of market trends, demand of blueberries is on the rise, especially from the Italian market. On the production side, cultivated raspberry represents the 30% of their total output, the rest being forest raspberry and blueberries. The cooperative stipulates a supply agreement with each producer member, with an agreed price at harvest, as the output is not predictable at the beginning of the season. With respect to certification, the cooperative has built a full traceability system, Hazard Analysis and Critical Control Points (HACCP), International Food Standard (IFS) certification. On the production side, Global GAP certification is also implemented, since it is a requirement for export. They have also developed an organic line of products, which is certified as organic though the local accredited and European Union (EU)-recognized certification body Organska Kontrola (OK). Given the increased competition from mass producers such as Ukraine, the cooperative recognizes the importance to focus on quality.

As for packaging, attention is paid to product aesthetics both through the choice of glass, also for juices, and through the use of labels with traditional design that provide additional value to the product. For instance, the sealing of jam jars with paper is preferred by consumers. This operation is done manually. The packaging material, i.e. glass and lids, is imported from Hungary and the Czech Republic, respectively.

The participants were able to visit the cooperative's sorting and cooling chamber, in which the berries, after sorting are kept at a temperature of -18° C, and to assist the manual sealing process of the jams.
Plant d.o.o.

The delegation arrived then in Tuzla and met with Mr Adnan Hodzic, Director of the company Plant d.o.o., which operates mechanized production of seedlings, mainly peppers, cucumbers, tomatoes, strawberries. The delegation first visited some fields where the company produces strawberries in plastic high tunnel and open field, and then the company’s headquarters and greenhouses. Plant d.o.o. currently owns a total of 6,000 m² of greenhouses, producing 3-4 million seedlings of vegetables. The company stopped producing flower seedlings, as it became difficult to compete in the market and they are planning to produce 100,000 seedlings of lavender.

During the visit, Mr Hozdic described their operations from seeding process to the final seedling. The whole production and seedling management is highly labor intensive. During the visit, the participants received technical advices on greenhouse management and use of plastic tunnel for anticipated strawberry production, choice of varieties, weed and pest management; which were much appreciated.
Day 3: Visit at ZZ Gračanka Cooperative
Wednesday, 19 September 2018

ZZ Gračanka
On day 3, the delegation met with the General Director of the Cooperative Gračanka ZZ, Mr Rasim Husic, and with Ms Rada Svitlica, expert on cooperatives and associations. Mr Husic presented the structure of the cooperative, sharing their experience and views in forming the cooperative. Overall, BiH counts 854 cooperatives (with a total of 60,000 members) of which 582 are agricultural cooperatives. This cooperative was founded in 1954 and operates organized production and purchase of milk, fattening cattle, and organized production and purchase of fresh fruits and vegetables, with 8500 ha of land and 10 facilities (cooling chambers, processing premises and selling points). There are currently 1000 members, 23 employees and work in 16 municipalities that cross entity boundaries. It covers a range of services for members including trainings, and provides also assistance to producers on credit repayment plans, operating through a joint and coordinated management of the repayments. The cooperative also owns an agricultural supply store as well as a small grocery store where cooperative members can sell their produce.

Ms Svitlica provided a presentation on the cooperative system clarifying that, differently from an association, members are working together having a marketing channel, to increase profits and in parallel benefiting from a range of services created within the cooperative. Each member should benefit from the cooperative system. Strong motivation is also one of the key elements for starting a cooperative, independently from producer dimensions.

During the discussions, one of the main questions raised by the participants was about cooperative specialization. Participants asked if in the case of raspberry producers in Bijelo Polje, it would be convenient to form a cooperative on specialized raspberries. Mr Husic highlighted that this depends on the context. If there is a relevant group of producers specialized in a specific production, it can be advantageous to start with a specialized cooperative. In the case of raspberry, since harvest and fresh selling would occupy only few months per year, it would be convenient and profitable to invest in processing and added value activities (investing in cooling chambers, processing and packaging facilities) as well as potentially other related products (other fruits and vegetables) to make sure the facilities are used for most of the year at full capacity.

After the presentation, participants visited one of the Cooperatives input selling points and one of its storage/cooling and sorting facility for peppers and cucumbers. With respect to certifications and standards, GlobalGAP is implemented at production level. For their cooling chambers and other facilities, HACCP and International Organization for Standardization (ISO) are implemented.
Day 4: Visits at Heko doo and Cooperative BIOS
Kopčić Polje, Visoko - Thursday, 20 September 2018

Heko doo
On day 4, the participants visited the plant nursery in Kopčić Polje of the company Heko doo. The company's nursery manager, Mr Aldin Islamovic, showed the participants their berry (raspberry, blueberry) seedling production. Their activity started 20 years ago and they currently have 50 percent of the domestic market share. The company holds 100 ha of land (both open field and under greenhouses), of which 70 ha under plantations.

The company uses several varieties, to diversify production time and try to have as early production as possible for higher prices. It is testing some blueberry varieties newly introduced in the area, and at present the company cultivates 18 varieties of blueberry. Blueberry seedlings are produced in containers (of a capacity of 16 litres). Cultivation in containers aims at maximizing yields, being the substrate more manageable, especially in terms of pH (optimum soil pH for blueberry should be between 4.2 and 5.5). To reduce/maintain acid pH low pH substrates and organic pellet are used. The substrate is imported from Slovakia. Heko raspberry's production is certified organic. In the case of blueberry, this is also highly suitable for organic production as long as the soil pH and water availability are monitored. In comparison to raspberry, blueberry production needs more investment, but its cultivation is increasing given the oversupply of raspberry (being this major raspberry production area in BiH). This is an interesting area where Montenegrin producers can look into.
After the nursery visit, the delegation visited the company's storage and processing facility in Bugođno where they store and market berries and mushrooms. The facility includes cooling chambers with a total storage capacity of 1,700 tonne of frozen products, and three tunnels for deep freezing of the raw material of different capacities. Heko doo exports mushrooms mostly to the EU, as well as to the Central European Free Trade Agreement countries (CEFTA).

Cooperative BIOS
In the afternoon, the delegation carried out a visit at the cooperative BIOS in Visoko. It was founded in 2004 and at present counts 380 members. The main activities of the cooperative are: i) production and selling of greenhouses and drip irrigation systems; ii) production of pumps; iii) production of seedlings; iv) purchase and selling of fresh fruits and vegetables; and v) consulting services.

Regarding the vegetable production and marketing, the cooperative focuses on the fresh product. BIOS holds a cooling facility and operates the purchase of fresh F&V from their suppliers/members to then resell them to the green market as well as to public institutions and restaurants. One of their main buyer is a restaurant chain with which they have a supply
agreement. They operate very little export and small purchase of raspberry. During the visit, the manager provided advice to the participants on greenhouse management and drip irrigation.

Day 5: Visit at demonstration plots of the Faculty of Agriculture and Food Science
Sarajevo - Friday, 21 September 2018

On the last day of the study tour, the participants visited a berry demonstration plot of the Faculty of Agriculture and Food Science in Sarajevo. The group first visited the machinery premise where Prof. Adnan Maličević showed and provided explanations on the use of different implements and machinery, e.g. for mechanical weeding of raspberry and for spraying operations.

![Tiller machinery for weeding and different types of sprayers](image)

The participants then visited the raspberry (of Polka variety) demonstration plot, where Mr Maličević provided technical advices on raspberry management, i.e. on pruning, pest management and trellising systems. The trellising system used in the demo plot is innovative both in terms of material and structure. The structure is in plastic and suitable for the installations of nets, and overall is more manageable than traditional used ones. This trellising system was also applied to a nearby raspberry commercial plantation that the participants had also the chance to visit. Other cultivated fruit trees i.e. apples and pear trees were shown at the demonstration plot, where other related technical advice were provided to the participants.
Raspberry (Polka cv) demonstration plot with plastic trellising system

Visit at a raspberry commercial plantation with plastic trellising and net system applied
ANNEX 1 – List of participants

- Mr Andrija Delić, Raspberry producer, Bijelo Polje
- Mr Miroslav Došljak, Raspberry and fruit producer, Berane
- Mr Pero Filipović, Raspberry producer, Bijelo Polje
- Mr Sefer Hurić, Raspberry producer, Bijelo Polje
- Ms Marijana Kljajić, Rural tourism and raspberry production, Berane
- Mr Radonja Mašković, Strawberry producer, Bijelo Polje
- Mr Amar Muratović, Raspberry and fruit producer, Petnjica
- Mr Marko Novović, Raspberry and vegetable producer, Andrijevica
- Ms Suzana Rovčanin, Adviser, Secretariat for rural and sustainable development, Municipality of Bijelo Polje
- Mr Besim Salković, Vegetable producer, Pokrajci
- Ms Sanja Simonović Delević, Fruit and vegetable producer, Berane
- Ms Vučeta Šebek, Blueberry and raspberry producer, Bijelo Polje
- Mr Nebojša Veličković, Extension Officer (Fruit production and beekeeping), Ministry of Agriculture and Rural Development, Podgorica
- Mr Ivan Vuletić, Berry production and storage, Murino, Plav
- Mr Kenan Zekić, Blackberry and raspberry producer, Bijelo Polje
- Mr Vukoman Žujović, Raspberry producer, Bijelo Polje
- Mr Benjamin Toric, FAO Consultant, Podgorica
- Ms Stefania Manzo, FAO Consultant, Rome
ANNEX 2 - Itinerary map