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MARKET RESEARCH REGARDING THE DEMANDS OF THE BUSINESS OPERATORS ON THE SUPPLY CHAIN LOGISTICS

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Abstract

Berries are worldwide recognized as valuable source of polyphenols, especially anthocyanins, micronutrients, and fibers. They are mainly industrialized as frozen fruits but also in jams, or pies. Some berries are commercially important but there are some limitations such as: short shelf life of fresh fruit and soft texture which require special attention on the berry chain logistic. The berry industry varies from country to country as well as the types of berries cultivated or wild berries. Berries are one of the greatest assets of the Romanian forests and they are known to be products of a very high. Berries originating from non-polluted forests are very popular in the foreign markets. Unfortunately, most often they are sold in foreign markets without being locally processed and thus Romanian processors are losing valuable Romanian customers.

To analyze the requirements of the industry companies (production, harvesting and distribution of native berries) a questionnaire was designed and used as a research tool. This questionnaire represents a direct tool of collecting data and to communicate with the respondents. To investigate the value chain of berry fruits and its challenges, we opted for two ways: self-administered questionnaire which was either filled in on the spot or sent by electronic mail, then filled in by the person interviewed, and the questionnaire filled in by phone which was a faster and cheaper way to obtain the necessary answers. Over 200 questionnaires were sent by email to local branches of the National Forest Administration (ROMSILVA) but only 31 were filled in and sent to us. By phone, 20 persons of interest responded to our questionnaire.

Key words*: survey industry, berries.*

INTRODUCTION

Berries are becoming more and more sought after thanks to their flavor, nutritional values, and high contents of vitamins, minerals and fibers and not least their very good taste. At the same time, berries contain many secondary plant substances such as flavonoids and anthocyanins, which have antiviral, antioxidant and anti-inflammatory effects (Adams et al., 2009; Millogo et al., 2008). The harvesting period for berries varies with each species, climate conditions, from July to September and even October. Berries are picked by hand so they do not suffer any mechanical shocks. Picking berries for many represents an additional source of income. Market sales for berries are increasing from year to year, involving a large research effort to develop new techniques to offer the highest possible shelf-life and quality for their products. However, the conservation process of berries often leads to different kinds of damages, such as biochemical changes, loss of texture and nutritive value and microbial cross contamination (Saltveit, 2003).

MATERIALS AND METHODS

The marketing research field uses different methods to investigate customers' opinions and preferences based on direct and indirect information and data on both qualitative methods and quantitative methods. While there are many ways to perform market research, most businesses use one or more of five basic methods: surveys, focus groups, personal interviews, observation, and field trials.

Surveys involve asking a series of questions to a sample of the target population that is large enough to be statistically valid. Surveys generally offer primarily closed-ended questions, although some open-ended questions may be included. Surveys can be administered by mail, telephone, email, Internet or in person. From the multiple choices of marketing research methods, taking into account our

objectives, the interview questionnaire-based method was chosen. In order to know and analyze the needs of the industry companies (production, harvesting and distribution of native berries) a questionnaire was made and used as a research tool. This questionnaire was a direct way of collecting data and to communicate with the respondent.
The questionnaire was made for the berries industry in 2016 and over 200 questionnaires were sent by email to local branches of the National Forest Administration (ROMSILVA) but only 31 were filled in and sent to us. By phone, 20 persons of interest responded to our questionnaire.
The data resulting from the questionnaires was analyzed and collected in Microsoft Office Excel Worksheet.

RESULTS AND DISCUSSIONS

The first question asks the respondents if they are either growers of berries, producers of berry products, pickers or retailers. Out of the 51 respondents, 39 of them cultivate and pick the fruits. 31 of the respondents are retailers and only 1 of the respondents is a company that is packaging fresh berries. Out of 51, 7 of them process fresh berries. The responses are represented in figure 1.

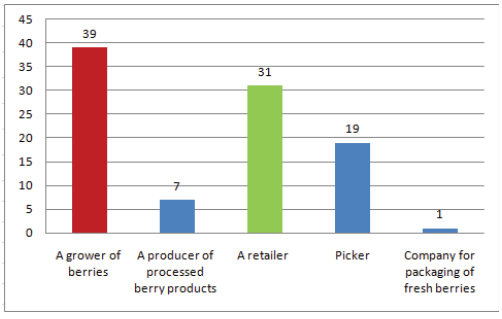

Figure 1. The part of the value chain of berries the respondents work

The second question refers to the type of berries the respondents work with. They had to choose between "conventional berries only", "organic berries only" or "both conventional and organic". Out of the 51 respondents, 39 work only with organic fruits, 4 of them with conventional fruits and 7 of them work with both conventional and organic fruits. The responses are represented below in figure 2.

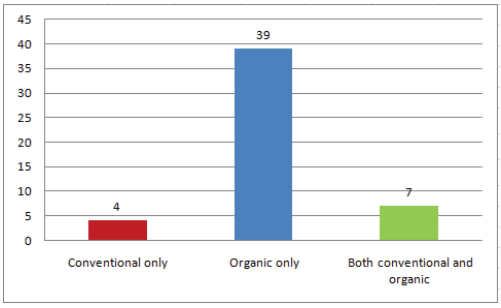

Figure 2. The type of berries that the respondents work with

In the next section of the questionnaire (Fresh berries category), the respondents are asked to choose in what part of the value chain they work. They were able to select one, two or all that apply.

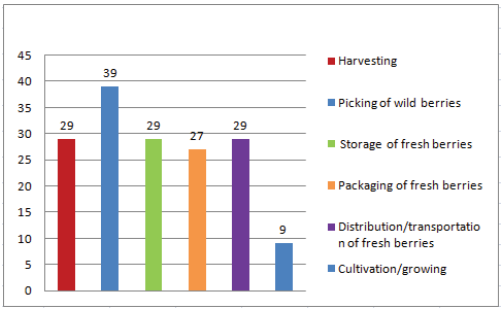

Figure 3. Fresh berries category – Value chain responses

After collecting all answers, out of 51 respondents, 39 stated that are cultivators and growers of berries, 29 are harvesting and storing them and 27 of them are handling the packaging of the berries. Only 9 of them are pickers. The results are presented in figure 3.

In the next question (figure 4) the respondents are kindly asked in what part of the value chain of the processed products of berries they work. They could choose from the four variants: Processing of berries, Storage of processed berry products, Packaging of processed berry products and Distribution/transportation of processed berry products.

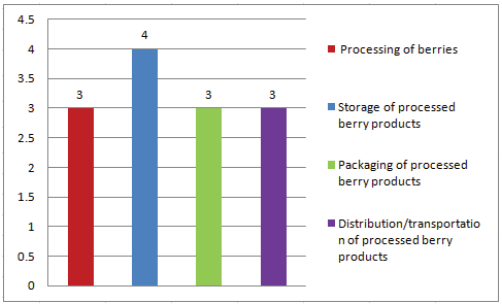

Figure 4. Processed berries – Value chain responses

At this question not all respondents provided us with an answer. Four of the respondents stated that they work in the storage of processed berry products value chain and the others stated that they work either in the processing of the berries, packaging of the processed berry products or in the distribution/transportation process.

In the next question the respondents are asked in what part of the value chain of reaching the consumer they are involved. They could choose from the following answers: Storage of fresh or processed berries and berry products, Packaging of fresh berries and berry products, Transportation, Assortment selection, Shelf display and Consumer relationship. The responses are shown in figure 5.

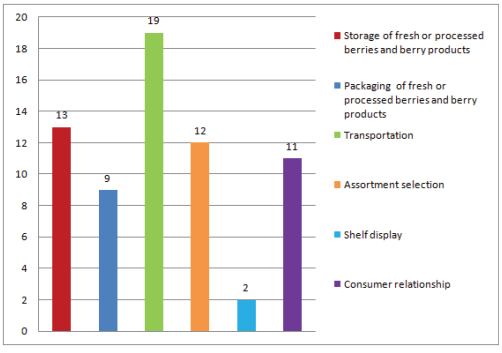

Figure 5. Reaching the costumer

Out of the 51 respondents, 19 of them answered that they manage the transportation of the berries, 13 of them are working on storing the fresh or processed berries, 12 of them are working in the assortment selection and 11 of them are involved in the consumer relationship. Only 2 answered that they work in the shelf display department.

In the next section, following the same three directions: *Fresh berries, Processed berries and Reaching the consumer*, it is shown the activities in which the respondents are encountering problems and want improvements.
In figure 6 are shown the answers of the respondents on the problems they encounter and want improvements in the fresh berry field of work.

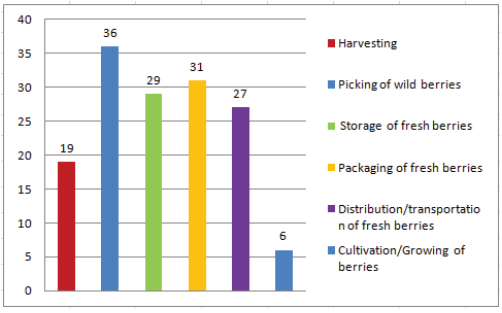

Figure 6. Problems – Fresh berries

Out of 51 respondents, 36 answered that they have problems and want improvements in the field of picking berries. Also, 31 of the respondents answered that they have problems in the packaging of fresh berries area.
In figure 7 are shown the answers of the respondents on the problems they encounter and want improvements in the processed berries field.

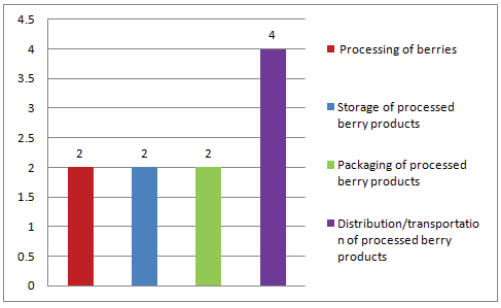

Figure 7. Problems – Fresh berries

Out of the total of the respondents who answered this part of the survey, 4 of them

encounter problems in the distribution and transportation of processed berry products.

In figure 8 are shown the answers of the respondents on the problems they encounter and want improvements in reaching the consumer.

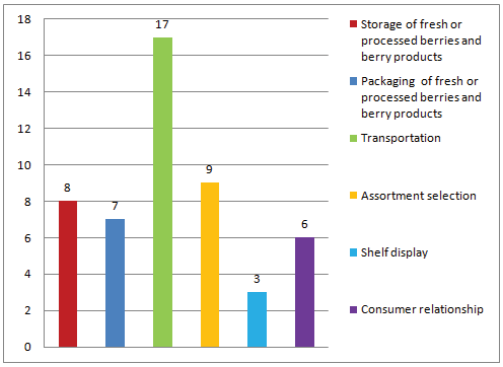

Figure 8. Problems – Fresh berries

Out of the total of the respondents who answered this part of the survey, 17 of them encounter problems in the transportation field.
Following the same elements of the food chain *Fresh berries, Processed berry products* and *Reaching the consumer*, the respondents were asked their opinions on the following items: actual procedure, positive aspects, occurring problems and improvements needed.

In the topic concerning the cultivation and growth of fresh berries, our participants stated that the actual procedure in cultivating berries is the following: garden picking, fruits grown in the garden and greenhouse and using only forest berries. The positive aspects are high efficiency production, better quality and superior nutritional quality. The problems that our respondents answered are the lack of government subsidies and more structural programs to increase the productivity.
The actual harvesting procedure of fresh berries is manual picking and the main positive aspect is the possibility of collecting fruits during the harvest period. The problem is that it requires a lot of manpower at a high price.
The picking of wild berries is a manual process made by pickers. The positive aspects are that this brings jobs to the country side, the selection of berries is at a high quality and for the casual pickers it's a very good source of income. The main problems stated by our respondents are that the pickers must be monitored, the presence of many illegal harvesting in an uncontrolled market is made and the manpower is insufficient.

The next question is regarding the condition of storage for the fresh berries. The respondents stated that the actual procedures that they use are the following: after picking the berries are sold in the markets, stored in the cooling chamber at 10-18^{o}C, without controlled atmosphere or frozen at temperatures around – 30 ^{o} to – 40^{o} C. The positive aspects stated by our respondents were either that berries sell quickly and do not have the chance to spoil or the frozen berries retains overall integrity of tissues, nature, physicochemical and microbiological changes are reduced. The problems encountered are the lack of transportation means, the short shelf-life of the fruits and high energy consumption. Another problem is that the storage rooms need a high consumption of electricity.

The next questions are regarding the packaging procedure (respondents were asked to specify whether the packaging is done under modified atmosphere). The respondents told that the most common packaging techniques are glass jars, trays for fresh fruits and for processed foods. The main problems indicated are the short shelf-life of berries and the packaging price that make the berries more expensive.
In the processed berry products part, the respondents stated that the actual procedure consists in making gems, syrups, smoothies or nectars from the fresh berries. Also, some respondents stated that they use the berries to make yogurt with fresh berries. The positive aspects of these products are the high shelf-life and that the biological compounds are kept active in the products. Jams are stored at room temperature (24 – 25 C) and yogurts are kept at around 4 degrees. The distribution of these products is made either by normal trucks or refrigerated trucks. The shelf-life of jams is around 1 or 2 years. The positive aspects of these type of processed berry products is that they do not need refrigeration.

In the reaching of consumer part, most of the respondents stated that they sell the berries in open markets at ambient temperature or in supermarkets. The positive aspects of this are that the consumer can easily buy the fruits. The biggest problem brought up by our respondents is the short shelf-life of fresh berries, so they have to sell them very fast.

At the end of the survey we asked the participants to tell us other comments about the problems encountered in the berry value chain. The first comment stated that the price of the berries from the producer is high, so the price of berry jams is high. Another respondent said that they would like to increase the consumption of berry jams/syrups in the Romanian market, since the consumer prefers to produce such products in their own household (either from parents, grandparents, relatives, etc.), and thus ensuring the necessary product from this range this way, rather than purchasing the industrially processed products.
Another interesting comment is stating that berries from the spontaneous flora are not affected by pollution, not treated with chemical fertilizers or with pest control substances. For these reasons, such berries are very sought after in the pharmaceutical industry.

CONCLUSIONS

These products of the forest hold a special importance from a medicinal point of view, but they can also be used as foodstuffs. Fruit processed by pressing are suitable for the production of juices which are rich in biologically active substances and their quantity is influenced by the ripening period of the fruit. In the first phase of the ripening, the fruits are rich in vitamin C and in the second phase of maturation they are rich in flavonoids, anthocyanins and carotenoids. On the value chain of the berries, the social component must be introduced. The existence of a quantitatively valuable cargo in a certain area represents opportunities for the people in that area to ensure income, even if they are seasonal and occasional.
The findings of this study can be grouped in three directions: fresh fruit, fruit processing and the relationship with the consumer. The main conclusions of this study show that there are no government subsidies for fresh fruit harvesting and the harvesting process requires a large labor force and the workers demand high salaries. Another important conclusion is that there are no structural programs aimed at increasing productivity, so the industry cannot develop as fast as they would like. Fresh fruit harvesting is dependent on environmental and climate factors, which can sometimes be a problem in performing this operation. Regarding the storage of fresh berries, the main weak points are the lack of refrigerated means of transport, the short shelf-life of the fresh berries and the amount of energy needed to keep the berries refrigerated until they get to the customer. The main problem encountered by our respondents in the matter of packaging is the high price of the package itself, which increases the final cost of the berries. One of the main conclusions brought up by almost all of our respondents is the need to improve the shelf-life of the berries through processing.

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