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Challenges Of Rural Areas Development: Possible And Existing Models Of Vegetable Producer Organisations In Pannonian Croatia

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Abstract : *Pannonian Croatia, as the least developed Croatian region, is at the same time a most significant agricultural region. Characteristics of this region are a decrease in population, stagnation in terms of development, lack of recognized prospective. This is a region that on the other hand has many opportunities for its inhabitants, especially in the field of agriculture, and various forms of connecting and organizing farmers are needed to achieve better results and make this region better for living. In this paper, the results of research among 150 farmers in the Pannonian region, specifically those engaged in vegetable growing, will be presented. The presented results will indicate the strengths, weaknesses, opportunities and threats facing this group of manufacturers. This research is a good basis for further research, but also a guideline in which way the vegetable growers of the Pannonian region should go.*

Keywords: *rural development, sustainable development, vegetable production, organization.*

I. INTRODUCTION

In literature, there is various and many definitions of "rural areas", here, however, we will heavily pragmatic, simply defining „rural areas" as those with „low population density containing scattered dwellings, hamlets, villages and small towns", and effectively put to one side such questions as „How low is low"?, and „How small is small"?, since there is no agreed answer to such questions, the cut-off points of density and settlement being best set according to the task in hand. [1]

Each farmer has objectives for his business. Management is considered with ensuring that these objectives are attained. Every business has three primary resources; capital, which is used to obtain other resources; land (including buildings); and labour. Superimposed on these is what might be termed the key factor-management ability. [2]

The farm is the firm and the farmer is manager or entrepreneur. The need to plan production arises from three basic factors:

1. Individuals have various wants which they seek to satisfy
2. The means available to satisfy these wants are in scarce supply
3. The means available can be put to many different uses. [3]

The paradigm of "sustainability" equally refers to agriculture and other fields of economy, or, more generally, areas of human activity. Much like in the case of the superior concept of "Sustainable Development", the discussion on "Sustainable Agriculture" holds many definitions and interpretations of this concept. The numerous attempts to define "Sustainable Agriculture" clearly show that the definitions are derived from various perspectives. In social categories, the main premise for consideration, which strongly accents the ethical point of view, is the "satisfaction of the needs of the present generation without lowering the prosperity of future generations" from the Brundtland Report. The social and natural aspects of "Agricultural Sustainability", as well as its long-term significance, are strongly emphasized by Francis and Youngberg, who believe that "it is a philosophy based on human goals and on understanding the long-term impact of our activities on the environment ..." (Francis, 1990). Runowski (2007) highlights ethical aspects of farming in line with the sustainability paradigm and a need of balancing environmental, economic and ethical objectives. [4]

Fruits and vegetables are important for maintaining the human health, and, thus, they are present in everyday consumers' basket. They are seasonable and perishable products and, as a result, they need to be processed and transformed into cans and preserved products. [5]

Food processing is an important sector in agriculture due to the growing world population, but at the same time it generates large amounts of fruit and vegetable waste that cause health hazards due to environmental pollution. However, waste from fruit and vegetable processing is difficult to manage, and the main problem is

the variety of waste that depends on the production in a particular region and on the different specifications of the biological substrate. In the case of production plants that process different types of fruits and vegetables, the amount and variety of waste can be very rich. In addition, the organizational aspect in the industry in question is very difficult, primarily due to the uneven yield resulting from many unpredictable factors such as weather conditions or pests and the large number of species and varieties of fruits and vegetables of different utility. Each of these factors affects the processing and use of fruit and vegetable processing waste. In particular, the first two of them can be a problem in terms of predicting the amount of waste that will be available in a given period, as they cannot really be estimated given the unpredictability of phenomena such as droughts, floods or crop plagues. The use of fruit and vegetable waste is still not sufficiently developed, which is why there is a lack of work that is directly related to a particular market situation and reveals the true potential of the analyzed product obtained from waste. So far, it has turned out that the best method for its disposal is composting, ie the production of organic fertilizer that is returned to nature through use in crop cultivation.

A Producer Organisation (PO) is a legal entity formed by primary producers, viz. farmers, milk producers, fishermen, weavers, rural artisans, craftsmen. A PO can be a producer company, a cooperative society or any other legal form which provides for sharing of profits/benefits among the members. In some forms like producer companies, institutions of primary producers can also become member of PO. The main aim of PO is to ensure better income for the producers through an organization of their own. Small producers do not have the volume individually (both inputs and produce) to get the benefit of economies of scale. Besides, in agricultural marketing, there is a long chain of intermediaries who very often work non-transparently leading to the situation where the producer receives only a small part of the value that the ultimate consumer pays. Through aggregation, the primary producers can avail the benefit of economies of scale. They will also have better bargaining power vis-à-vis the bulk buyers of produce and bulk suppliers of inputs. "Farmers Producer Organisation" (FPO) is one type of PO where the members are farmers. Small Farmers' Agribusiness Consortium (SFAC) is providing support for promotion of FPOs. PO is a generic name for an organization of producers of any produce, e.g., agricultural, non-farm products, artisan products, etc. [6]

One of the greatest unsung triumphs of human progress is that most people are no longer working on the land. That is not to demean farming. Rather, it is to praise the monumental productivity growth in the industry, achieved almost entirely by the application of technology in the form of farm machinery, fertilisers and other agrochemicals, along with scientifically improved crops and livestock. [7]

II. (PANNONIAN) CROATIA FIGURES

One of the sectors of agriculture is the production of vegetables whose market demand tends to grow because vegetables are consumed regularly and, in many ways, as fresh, semi-processed and processed. The Republic of Croatia records a continuous deficit in the foreign trade balance of vegetable crops. The Republic of Croatia imports the largest quantities of vegetables from Italy, the Netherlands, Spain and Germany, while it exports the largest quantities to neighboring countries such as Slovenia, Bosnia and Herzegovina, Serbia and Hungary. The largest vegetable exporting countries to the EU are Spain, Italy, the Netherlands, France and Poland.

In the Republic of Croatia, only 1.5% of agricultural holdings are engaged in vegetable production.

In order for small and medium-sized agricultural holdings of Požega-Slavonia County to be competitive on the market, they should direct their production towards the introduction of new products and lines based on the production of vegetable crops and their products.

It is often not necessary to have large production areas for vegetable production in order for the economy to be competitive. Significant yields and income can be achieved on 0.5 ha, depending on the type produced. The highest yields and revenues are generated by the production of tomatoes, peppers, cucumbers, lettuce, and eggplant, which means that fruitful vegetables, which are characterized by high quality, ensure excellent production results.

When it comes to vegetable production volumes and trade balances throughout the EU, it should be noted that the trade balance of fresh vegetables in the EU is negative, which indicates the need to increase production volumes throughout the EU, not just in the Republic of Croatia. Based on the above, it can be concluded that the Republic of Croatia has great potential in increasing the competitiveness of agricultural production by increasing production areas under vegetable crops, which are the most profitable crops and achieve the highest yields per unit area. With, for example, tomatoes, it is possible to achieve an average of 200 t / ha of fruit (greenhouse production) and to achieve a gross income of 0.7 - 1 million kuna[1] / ha, which is significantly more than any other crop produced for fresh consumption. condition. [8]

Table 1. Total production of vegetables in Republic of Croatia in 2020, in tones

[1] 1 Croatian kuna (HRK) = 0,13 Euro (EUR)

2019. [1]			2020.			Indeksi ukupne proizvodnje 2020./2019. *Total production indices*	
ukupna *Total*	za tržište *For market*	u povrtnjacima (pretežno za vlastite potrebe) *In kitchen gardens (mainly for own consumption)*	ukupna *Total*	za tržište *For market*	u povrtnjacima (pretežno za vlastite potrebe) *In kitchen gardens (mainly for own consumption)*		
1 896	1 680	216	3 265	2 905	360	172,2	*Cauliflower and broccoli*
34 105	31 580	2 525	36 183	33 001	3 182	106,1	*Cabbage, white and red*
6 637	4 271	2 366	8 708	6 337	2 371	131,2	*Lettuce*
1 343	1 181	162	2 513	2 179	334	187,1	*Leek*
30 314	22 018	8 296	39 544	33 368	6 176	130,4	*Tomatoes*
4 935	3 003	1 932	9 051	7 095	1 956	183,4	*Cucumbers and gherkins*
4 811	4 727	84	2 681	2 587	94	55,7	*Melons*
20 657	20 297	360	15 129	14 872	257	73,2	*Watermelons*
13 224	8 985	4 239	16 328	13 157	3 171	123,5	*Red peppers, capsicum*
25 931	21 149	4 782	22 774	17 927	4 847	87,8	*Onions and garlic*
13 369	11 905	1 464	11 113	9 851	1 262	83,1	*Carrots*
4 523	3 291	1 232	4 798	3 765	1 033	106,1	*Beetroots*
4 577	2 718	1 859	6 306	4 553	1 753	137,8	*Green beans*
5 397	4 760	637	6 770	6 186	584	125,4	*Green peas*

Source: The Croatian Bureau of Statistics 2021.

The production of tomatoes increased in 2020 by 9 230 tonnes, as compared to 2019. The production of other vegetables also increased: cucumbers and gherkins by 4 116 tonnes, red peppers by 3 104 tonnes, cabbage, white and red, by 2 078 tonnes, lettuce by 2 071 tonnes, green beans by 1 729 tonnes

III. RESULTS OF VEGETABLE PRODUCER SECTOR SURVEY

The results of the survey in the vegetable sector provide insight into six different groups of data that help identify the limitations and potentials in dealing with vegetables in the Požega - Slavonia, Osijek-Baranja, Virovitica-Podravina, Vukovar-Srijem and Brod-Posavina County.

Methodology: All surveys are adapted for online completion and submission through the Google forms format. The survey questionnaires contain up to 34 questions divided into 6 groups. The groups include Basic Data, Sector Data, Customer and Distribution Data, Cooperation Data, Internet and Marketing Data, and Further Development. All questions except from the group of Sectoral Questions are identical for all Models and the methodology of their processing (qualitative and statistical) is common. The total number of collected valid survey questionnaires was 150.

3.1. BASIC INFORMATION

From the section "Basic data" we get an insight into the structure of agricultural holdings engaged in vegetable growing. When identifying recognizable sequences and trends, it is important to keep the evaluation exclusively at the indicative level. The organizational form of agricultural holdings in the vegetable sector is in line with aggregate data, 80% of them are Family farms (OPG), while the rest are individual crafts, Self-sufficient family farm (SOPG) and a company.

Agricultural holdings in the vegetable sector are equally represented in the available categories with regard to the length of registration in the Register of Agricultural Holdings and therefore represent relatively "young" economic entities. This is one of the most positive measured indicators on the available sample, which indicates the interest of young farmers in growing vegetables. The engagement of seasonal and permanent workers is more intensive in this cause compared to the aggregate data. 20% of OPG holders employ seasonal workers, while 13% employ both permanent and seasonal workers. Since only one in five farms in the aggregate sample employs at all, we can indicate that it is easier to engage in this sector new employees.

3.2. SECTORAL DATA

The collected sample primarily (47%) represents one group of farmers with regard to the volume of production, ie the size of the plots. These are GHGs with less than 2 ha, which indicates the primary cause of non-competitiveness of the sector. Areas under vegetables in the group between 3 - 5 ha and 5 - 10 ha represent a total of 40% of the sample, while only two farms (13%) have areas larger than 10 ha for vegetable growing.

For the needs of the survey, 4 categories of production types were identified: Semi-intensive, Extensive cultivation, cultivation in low tunnels in the open and cultivation in protected areas (greenhouses / hothouses). Respondents were given multiple choices. The largest number of farmers grow vegetables extensively (53%), followed by a semi-intensive method of cultivation (47%). 33% of farmers have their own greenhouses or hothouses and two (13%) grow vegetables in low open tunnels.

We asked ourselves about the primary output in the survey of their farm, where the possible choice was: fresh vegetables and other, all farmers stated that they primarily grow fresh vegetables (no one marked the cho: Other).

The primary crops represented on the areas under vegetables are cabbage or cabbage (66%), potatoes (33%), and garlic (20%). Only a few respondents testified about the available assortment, and the white cabbage variety "Agressor" is grown by a few respondents.

3.3 CHANNELS AND DISTRIBUTION

53% of producers distribute their output products through their own channels, which is the smallest share of this category compared to other sectoral models. As many as six producers participate in retail and wholesale and they use one or two intermediaries in the distribution channel, through processing companies and / or stores, while the others (who use their own distribution channels) do not have intermediaries.

Manufacturers who distribute output products through their own channels for primary customers have individual consumers. Given that the average number of respondents using their own channels is 86% among all sectors, producers in the vegetable sector are extremely dependent on their own ability to place products on the market, which can represent high independence but also poor connectivity of key sector stakeholders.

Only 20% of the sampled holdings participate to some extent in vegetable exports, with a maximum capacity of up to 30%.

47% of producers have their own storage capacities, while 47% of them do not need to store the produced vegetables.

87% of respondents do not think that they need processing capacities, while two producers (13%) have their own processing capacities. This data does not coincide with the previous statement on the primary output of the holding, but it is not possible to make a subsequent correlation given that these respondents listed multiple crops in cultivation. This percentage of 87% that don't need processing capacities means that they are still oriented on primary agriculture, not even thinking about secondary activity like food processing, or making some other product with added value.

3.4 PROBLEMS AND CHALLENGES

Among the 5 most common problems/obstacles that vegetable growers face, the respondents point out:

- Market pressure of cheaper imported products (93.3%)
- Insufficiently developed network of purchasers of primary products (80%)
- Low sales prices (66.7%)
- High prices of inputs / repro materials for production (60%)
- Limited opportunities for land consolidation (53,3%)

IV. CONCLUSION

To optimize the business of relatively small Family Farms, it is necessary to use available subsidies and establish a vertical chain of purchase, processing and sale of branded high quality products in the increasingly demanding domestic and European markets by uniting farmers. Potential members of the producer organization should see the opportunity to increase competitiveness in the joint placement and adaptation of production and products to market requirements and by using numerous opportunities to improve the vegetables sector using financial resources from EU funds

The starting point for the establishment of the organizational model are: selected production model in the vegetable sector, spatial framework of the county, existing legislation related to the organization of organized forms of agriculture and related activities, availability and purpose of co-financing, and of course a number of relevant analyzes presented in this document. the first phase of the Project.

The goal of this approach is to present a sustainable model that will have the ability to connect as many vegetable growers in Pannonia Croatia who want to perform this activity as their primary activity for as long as possible, in accordance with verified recommendations of the profession and modern (European) market

requirements. This includes processing, development and design of diversified products from high quality raw materials, which will meet the highest standards, and will be able to be sold at prices lower than currently represented competitive products of lower quality, with sufficient profits for further development according to the principles and vision of the producer organization.

Due to the currently available support in the form of dedicated co-financing of producer organizations, the starting point in developing the model of organizations in agriculture are precisely producer organizations.

The producer organization is founded on the initiative of producers with the purpose of combining the activities of individual producers into joint activities aimed at planning production and adapting it to demand, concentrating supply and marketing its own members, optimizing production costs, stabilizing product prices, raising commercial value and promotion products and crisis prevention and management. In this way, manufacturers strengthen their position in the market, consequently ensuring the sustainability, economy and continuity of production.

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