

# ECONOMIC EFFECTIVENESS OF ACTIVITIES OF VEGETABLE GROWERS' ASSOCIATIONS IN SERBIA

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**Abstract:** Taking into account that agriculture is one of the most important parts of economy of Republic of Serbia, it is necessary to pay special attention to its improvement. One of ways to significantly incentive agricultural development is formation of farmers' associations, primarily because Serbian agricultural production is based at small family farms. It is very important to form such associations among vegetable producers, because they are small scale producers and encounter many problems in business operations. Thus, the paper deals with economic effects which are possible to achieve for small farmers by involving in growers' associations.

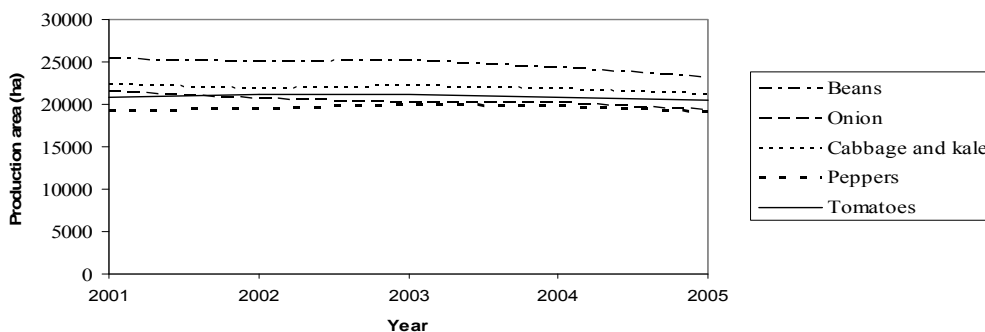
Farmers who are members of associations have an opportunity to sale their products to big retail chains, as well to export vegetables, and get higher price for their products. Along with income improvement, they may reduce production costs and sale costs. Consequently, membership in growers' associations provides higher profit for small family farms. Analysis showed that associations should primarily take care about relation with their customers, because changes of vegetable prices could increase farmers' profit more than costs reduction. To achieve their goals such associations need serious state support, as well as support from various other organizations.

## 1. Introduction

Agriculture is a source of various goods that are necessary for human nutrition, food industry, textile industry and many other industries, as well. Agriculture is traditionally important activity and one of the most developed branches of Serbian economy, because there are favorable natural conditions for that production. Since agricultural production is primarily situated in rural areas, it significantly contributes to economic development of these areas. At the same time agriculture is one of the most important fields where it is possible to apply results of technical and technological development. Comparing to other branches of agriculture, in vegetable production is necessary to use the latest scientific results in order to make that production profitable.

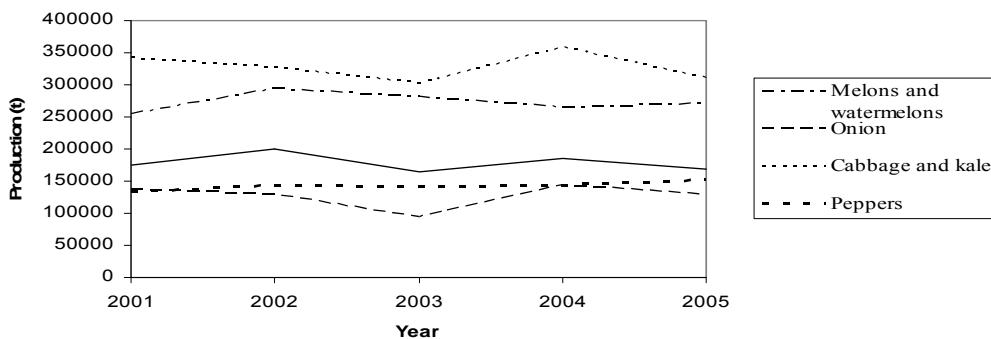
Significant political and economical changes have occurred in Serbia during last 20 years. As a result of above mentioned changes, contemporary agricultural production in Serbia is based on private ownership as well as on opened and competitive market. Serbia is involved in CEFTA agreement and has intensions to join WTO. In such circumstances it is necessary to invest in projects which provide the highest economic efficiency. Vegetable production is branch of agriculture that requires significant investments, and could provide high profits, due to fast turnover of invested capital. One of the ways to acquire higher profits in vegetable production is to connect producers and establish various kinds of associations.

Very important vegetable crops in Serbia within period 2001 – 2005 (regarding production areas and volume of production) are beans, cabbage and kale, tomato, onion, peppers, melons and watermelons (Figure 1 and Figure 2). The most important vegetable commodity is potato which is produced at the area of approximately 90.000 ha. Total potato production (within analyzed period) range from 900.000 t to 1.000.000 t per year.



**Fig. 1: Production area of the most important vegetables in Serbia**

*Source: Statistical yearbook of Serbia (2006)*



**Fig. 2: Production volume of the most important vegetables in Serbia**

*Source: Statistical Yearbook of Serbia (2006)*

To carry out vegetable production successfully it is necessary to develop and organize modern production at field as well as at greenhouses and glasshouses. Contemporary vegetable production assumes usage of modern agricultural machinery, irrigation systems, adequate usage of fertilizers, plant protection means, high-quality seeds etc. Purchase of appropriate equipment and construction of modern warehouses is needed, as well. Especially it is necessary to improve distribution of vegetables at big retail chains and to export vegetables, primarily in western countries.

## 2. Reasons for formation of vegetable growers' associations

One of the most effective ways to improve vegetable production is formation of vegetable growers' associations. Such associations enable small producers to accomplish many conveniences which influence economic effects of vegetable production. Associations organize permanent education for their members i.e., various seminars and lectures on vegetable production. Continuous education is very useful

because producers could acquire new knowledge regarding production technology, modern technical solutions, economic problems of vegetable production and other related areas.

Through associations vegetable growers get an opportunity to use favorable climate and high-quality arable land in the best manner. By joining concerning vegetable growing, producers also make possible usage of convenient geographical location as well as good traffic connection with markets. Vegetable growing gives the best economic results if it is situated near big cities, because of negligible transport expenses, and possibility to sell large vegetable quantities.

Besides, the associations could play an important role regarding purchase of raw material for vegetable production (seed, fertilizers, plant protection means, fuel, wrapping material). By purchase of larger raw material quantities, associations provide convenient purchasing prices and decrease total costs. Second very important reason to establish associations of vegetable producers is possibility of selling their products together, because the biggest problem that vegetable producers encounter is not production process but distribution of production. For the time being, small family farms have a few possibilities for disposal of their vegetable products: farmers' markets, grocery stores and export. Farmers who are involved with associations have an opportunity to offer big quantity of products that have standardized quality. In such a way agricultural producers can sell vegetables not only at farmers' market, but also in big retail store chains. Associations are also able to provide possibilities for export and ensure income in foreign currency, because isolated producers cannot provide sufficient quantity and quality of products to satisfy export standards and needs.

In order to follow modern nutrition trends and to sell vegetables in big grocery stores or in an export, production has to be in accordance with healthy food principles. These principles assume that vegetables originate from known production area and are marked appropriately (to confirm adequate quality). All that is possible to achieve by introduction of HACCP system, and in practice is impossible without work of vegetable producers' association. HACCP system assumes principles which have to be applied by all the participants in agricultural production, processing industry, warehouses, transport enterprises etc. The main goal of HACCP system is to guarantee food safety through appropriate preventive acts and to control vegetables "from field to table".

Therefore, advantage of introduction of HACCP system is provision of healthy (safety) food by law enforcement as well as efficient inspection supervision. Besides, that system provides better competitiveness at grocery stores, farmer's market, successful entry to foreign markets and possibility to gain higher profit. Since vegetable production is controlled in accordance to HACCP program, wrapping material is recyclable and not dangerous for environment, so that ecological risk doesn't exist. In that way favorable conditions for organized approach in production and sale of vegetables are made. Introduction of HACCP system is also opportunity for increase of intensity of vegetable production as well as of entire agricultural production.

There are also many other reasons to form associations of vegetable growers, such as participation at various national and foreign fairs (agricultural fairs, horticultural fairs, tradeshows fairs). As a result of participation in fairs, members of associations could make contact with many enterprises related to vegetable production (traders, food processing enterprises, raw material suppliers) as well as similar vegetable growers' associations. Besides, vegetable growers' associations organize various events by themselves with a goal of presentation of assortment and product quality, as well as

production potential of associations. Such events are very good opportunity for advertisement of agro industrial enterprises which sponsored them, as well.

Using associations, vegetable growers accomplish collaboration with many other associations and institutions. The most important connection is among vegetable growers on regional level as well as on national level. Along with cooperation among similar associations, farmers make contacts with other institutions that are of big importance for their business success, such as agricultural scientific institutes, faculties of agriculture, faculties of economics, ministry of agriculture, regional and national chambers of commerce, various national and foreign development agencies, non government organizations, municipality administrations, tourist organizations, etc.

Vegetable growers' associations also work on advertising, promotion and popularization of vegetable production and products. They preserve and cherish tradition of vegetable growing, and in such a way help young people to stay at countryside and incentive rural development. Through membership in associations vegetable growers help each others regarding labor force, exchange experiences and advises concerning production activities etc.

However, vegetable growers associations encounter some difficulties such as farmer's distrust concerning such organizations, insufficient organizational support provided by state and regional government, lack of financial means, impossibility to participate in international events and to cooperate with international organizations, lack of managers who are capable to lead such organizations etc.

### **3. Economic effectiveness of vegetable growers' associations activities**

In Republic of Serbia, vegetables are mostly produced on field, and only small percentage is produced in glasshouses or greenhouses. Growers' associations promote changes in production habits, so that growers become more interested in modern ways of vegetable production. Associations facilitate such transformations and provide knowledge which is necessary to use new production manner. Besides, profitability increase is achieved by better market position that is provided by membership in growers' associations. Because growers' associations offer higher quantity of standardized products, they are able to get higher prices. On the other hand, due to purchase of big quantity of row material, members of association could get the material under more favorable conditions. Therefore, they decrease production costs and provide additional profit increase.

So, production in greenhouses requires significant increase of total costs and higher investments, but at the same time enables producers to achieve higher income, lower costs per unit and higher profit. Therefore, changes in vegetable production are important opportunity for vegetable producers to develop and improve their operations.

To evaluate effects of vegetable producers joining, example of onion and lettuce production is used. It was assumed that production of these commodities was based in greenhouse on 100 square meters. For these crops production value, production costs, and contribution margin have been calculated (Table 1, Table 2, and Table 3). Result of calculations shows that lettuce production is more profitable than onion production.

Table 1

Production value (EUR)		
Calculations elements	Crop	
	Onion	Lettuce
Production quantity (kg)	271,00	483,00
Price (EUR/kg)	0,80	0,50
<b>Production value (EUR)</b>	<b>216,80</b>	<b>241,50</b>

Source: Authors' research

Table 2

Production costs (EUR)				
Calculation elements	Onion	%	Lettuce	%
Seed	11,10	12,13	9,70	10,00
Plant protection means	8,30	9,07	12,10	12,47
Fertilizers	13,90	15,19	24,23	24,97
Costs of sale	41,60	45,46	36,40	37,51
Other costs	16,60	18,14	14,60	15,05
<b>Total costs</b>	<b>91,50</b>	<b>100,00</b>	<b>97,03</b>	<b>100,00</b>

Source: Authors' research

Table 3

Contribution margin (EUR)		
Calculation elements	Crop	
	Onion	Lettuce
Production value	216,80	241,50
Total costs	91,50	100,00
<b>Contribution margin</b>	<b>125,30</b>	<b>144,47</b>

Source: Authors' calculation

Sensitivity analysis is used to determine changes in contribution margin caused by market price increase. It is assumed that market prices of onion and lettuce could increase up to 30% due to activities of growers' association. Although differences are not significant, it is obvious that contribution margin of onion increases faster (is more sensitive) than contribution margin of lettuce (Table 4).

Table 4

Contribution margin increase caused by increase of vegetable market prices

Market price increase	Contribution margin (EUR)			
	Onion	Increase (%)	Lettuce	Increase (%)
5%	136,14	8,65	156,55	8,36
10%	146,98	17,30	168,62	16,72
15%	157,82	25,95	180,70	25,08
20%	168,66	34,60	192,77	33,43
25%	179,50	43,26	204,85	41,79
30%	190,34	51,91	216,92	50,15

Source: Authors' calculation

Sensitivity analysis method is also used to notice effects of total cost decrease to contribution margin. Analysis started from assumption that total costs of onion and lettuce decrease up to 30% because row material is purchased and other costs are paid by mediation of growers' association. Similarly to previous results, contribution margin in onion production increases faster than contribution margin of lettuce, due to total costs decrease (Table 5).

**Table 5**

**Contribution margin increase caused by total costs decrease**

Total costs decrease	Contribution margin (EUR)			
	Onion	Increase (%)	Lettuce	Increase (%)
5%	129,88	3,66	149,32	3,36
10%	134,45	7,30	154,17	6,71
15%	139,03	10,96	159,02	10,07
20%	143,60	14,60	163,88	13,44
25%	148,18	18,26	168,73	16,79
30%	152,75	21,91	173,58	20,15

*Source: Authors' calculation*

Previous analysis of costs structure (Table 2) showed that the most important variable costs are costs of sale. Therefore, decrease of these costs is assumed and its influence to contribution margin is calculated (Table 6). Such cost decrease is also supposed to be a consequence of vegetable growers' association activity. It is noticeable that contribution margin for onion is more sensitive than contribution margin of lettuce to changes in sales costs.

**Table 6**

**Contribution margin increase caused by decrease of costs of sale**

Decrease of costs of sale	Contribution margin (EUR)			
	Onion	Increase (%)	Lettuce	Increase (%)
5%	127,38	1,66	146,29	1,26
10%	129,46	3,32	148,11	2,52
15%	131,54	4,98	149,93	3,78
20%	133,62	6,64	151,75	5,04
25%	135,70	8,30	153,57	6,30
30%	137,78	9,96	155,39	7,56

*Source: Authors' calculation*

#### **4. Conclusion**

Taking into account all elements and factors that influence family farms oriented towards vegetable growing, necessity of formation of vegetable growers' associations is obvious. Growers' associations incentive changes in production tradition, and encourage producers to use greenhouses and glasshouses instead of producing vegetables on field. Associations also help farmers to broad market for their products, to purchase row material and other services at lower price, and to sale their products at higher price.

On the basis of previous analysis it is noticeable that vegetable price increase, which is result of associations' activities, can cause bigger increase of contribution margin than decrease of total costs. Consequently, associations have to take care much more about vegetable prices than about production costs. Therefore, attention should be paid primarily to relations with big buyers of vegetable products i.e., association's activities have to be devoted to new and big markets. Sensitivity analysis showed that reduction of costs could provide very favorable economic effects, as well. In the first place it is necessary to decrease costs of sale i.e., to improve relations with customers.

Due to above mentioned facts, growers' associations have to deal mostly with marketing of vegetable products in order to achieve higher profits for their members. But, it is almost impossible without serious support from various organizations and institutions. Therefore, it is primarily necessary to incentive and support vegetable growers' associations by authorities on state, regional and local level.

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