INSTITUTE FOR MARKET ECONOMICS

Analysis of the potential for cultivation of fruit and vegetables in Bulgaria

2012

PUBLISHED WITH THE SUPPORT OF "AMERICA FOR BULGARIA" FOUNDATION

Purpose of the study

The purpose of this study is to identify the perspective crops in the vegetable- and fruit-growing sectors from the viewpoint of domestic demand and export potential.

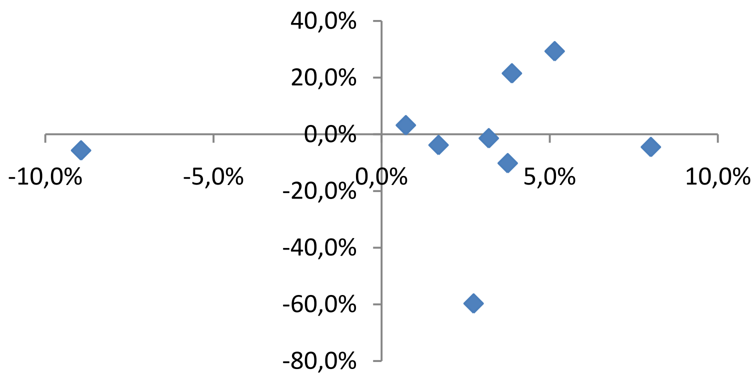
Methodology

To determine which crops hold the greatest potential, we use two main indicators:

1) Domestic demand – the quantity of domestic demand is based on data of household consumption and the demand of food processing companies. To minimize the possible weaknesses of such data compilation, we use information for aggregate demand (production + import - export),
2) Export demand – taking into account that the greater part of the export of fruit and vegetables (84% in 2011) is to other EU member states' markets, we use data on the import of fruits and vegetables in EU

We observe the dynamics of household consumption, the demand of raw materials in the processing industry and the import of fresh fruits and vegetables for 10-year period (2002-2011), while also considering the compound annual growth rate (CAGR). We analyze the crops that mark a positive growth, could be cultivated in Bulgaria (in accordance with the environmental and climate conditions) and their produced quantity is more than 1000 tons or BGN 1 mil. in net value. To determine whether the Bulgarian producers have competitive advantage in growing these crops, the formula for revealed competitive advantage RCA[1], is applied. The RCA refers to the foreign trade position of the country for the particular goods in comparison to its general foreign trade standing.

The crops with growth potential are identified as such based on examined demand increase on domestic and EU market and on competition coefficient greater than zero, derived through the RCA formula. In the matrix below the crops with better perspectives are placed it the upper right part of the graph, while those with low or none potential are in the bottom left corner. An exemplary matrix, complied this way, would look like this:



[1] The applied in the study formula for RCA is developed by CPAII, 1998 and used by ITC 2000, as well as in the research project "Are the Mediterranean countries competitive in fresh fruit and vegetable exports?", Nilsson, Fredrik O.L. Lindberg, Emma Surry, Yves R, Department of Economics, Swedish University of Agricultural Sciences, 2006.

Introduction

The vegetable- and fruit-growing industries are going through a severe crisis in the last decade. For the 2002-2011 period the production value of these two sectors has plummeted by more than 60% at base prices. Their share in crop production and in agriculture as a whole decreases by 76% and 73% respectively. For the same time period, the land cultivated with vegetables dropped down by 61% and the land with perennial crops (fruit trees without vineyards) decreased by 30%. The domestic production is insufficient to meet demand and this has turned the country from net exporter to net importer of fruits and vegetables.

The neighbouring Turkey and Greece, where the warm weather lasts much longer, allows the import of particular crops at lower prices for longer time periods during the year. This possibility, however, pressures the Bulgarian production to either expand or to specialise in the areas of competitive advantage.

In the last couple of years we observe retention in the land, used for some. We also observe investment in new fruit plantations and slight increase in output. Although it is too soon to discuss breaking the negative trend, the sector is at an important crossroad. In this context, this study might be valuable in determining the crops with greater development perspective in the country.

Traditionally cultivated crops

Among the most widespread vegetables today, most of them are relatively recently brought to Bulgaria's market. Potatoes, tomatoes, pepper, beans and spinach have started to be cultivated on a large scale less than 150 years ago. Cultures such as turnip, carrot, onion, garlic, cabbage, lentils, peas, broad beans and cucumber have been grown for thousands of years on Bulgarian soils.

From the traditionally cultivated fruits most popular is the cultivation of plums, apples, peaches, cherries, and in the past – mulberries.

The weather conditions in the country are suitable for cultivation of some unconventional fruits, such as the kiwi for instance.

Domestic market

Three main factors influence the demand for fruits and vegetables for direct consumption or for processing:

- Seasonal – related to quantity and quality of the crop
- Economic – related to the real disposable income of the population
- Consumer habits – they change rather slowly but could considerably alter the structure of the food demand.

Fruits

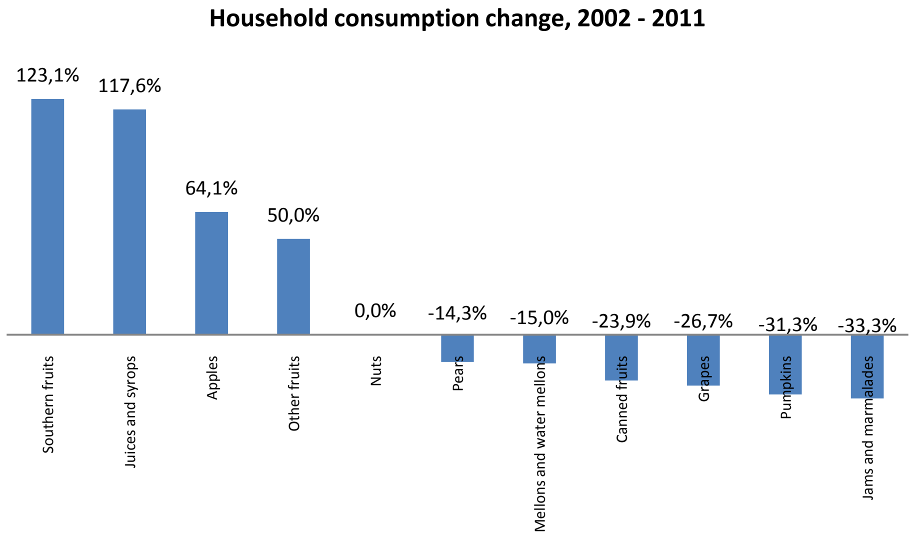
Household consumption

According to National Statistical Institute (NSI), the household consumption of fruits and vegetables has increased for the 2002-2011 period. Despite the weaknesses in the household budgets research study, it still provides a picture of the general tendencies in consumers' attitudes.

The main conclusions to be drawn in relation to the fruit consumption are the following (see Graph 1):

- The traditional for Bulgaria fruits such as grapes, pears, watermelons give way to the southern and citrus fruits
- Among the traditional fruits in the country, only apples score steady growth
- If we check the information on household consumption with the data for production and import, we observe an increase in the consumption of peaches, cherries, strawberries, kiwi and some sorts of nuts (walnuts and almonds)
- Regarding the preserved goods, the consumption of fruit juices has increased more than two times for the last ten years. However, the consumption of jam and marmalade decreases.

Graph 1 – Household consumption of fruits



Source: NSI

An explanation of the results might be found in the increase of the purchasing power of the population in the last ten years and in the widening accessibility to fruits and nuts, which in the past were missing from the Bulgarian market or were too expensive.

Apples, cherries, peaches, nuts (walnuts, almonds) and kiwi are outlined as perspective for the Bulgarian producers.

The data on household consumption does not reflect the factor of “private production”. Hence, the increased consumption of some fruits might be attributed to deliveries by someone different from industrial production (like family gardening).

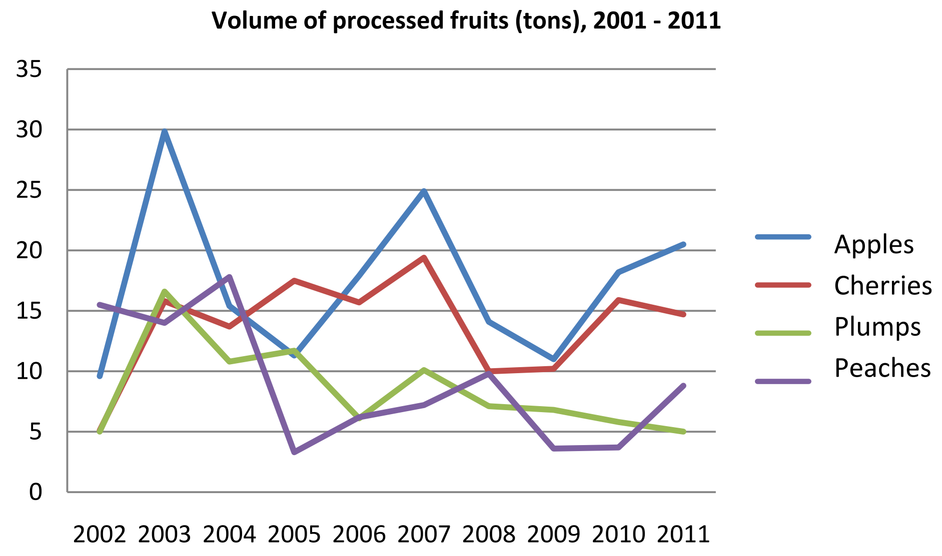
Processing industry

The fruit processing industry is organically related to the supply of raw material to the domestic market. With greatest volume are apples, cherries, peaches and plums.

Data shows that domestic supply is insufficient to satisfy the needs of the processing branch, part of which is covered by imports.

After the problematic 2008 and 2009 the business sector is recovering at high pace. The greatest recovery is observed in the apples and peaches niches. The processing of plums has dropped.

Graph 2 – Volume of processed fruits



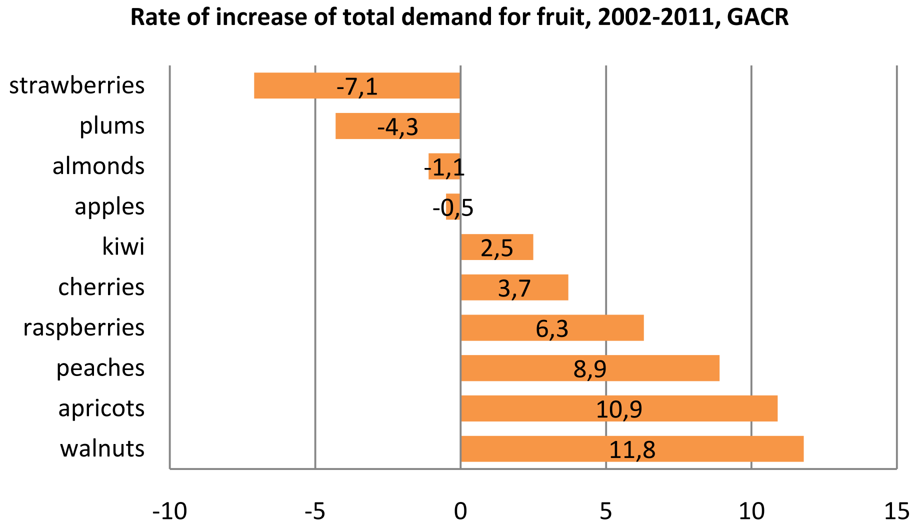
Source: Agro statistics

Aggregate demand

To eliminate as much as possible the potential weaknesses in the applied statistical data, we take into account the aggregate demand. The indicator is a result of the sum of the domestically produced and the imported quantity, from which we then subtract the exported amounts. This way we include the goods that are consumed by the tourism, catering and public sectors, as well as the amount used by households for home preservation of goods.

The reported results (see Graph 3) indicate positive dynamics and consequently better perspectives for the production of walnuts, apricots, peaches, raspberries, pears and kiwi to satisfy the internal market demand.

Graph 3 – Cumulative aggregate growth rate of fruits (CAGR)

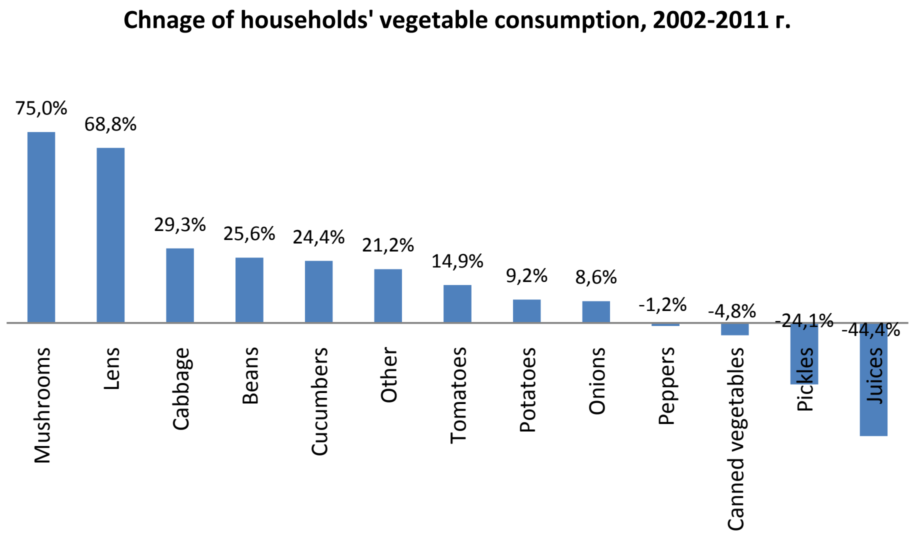


Vegetables

Looking at the vegetables consumption, the consumption of the following goods appears to be greater (see Table 4):

- Mushrooms – with 75%
- Cabbage – with 29%
- Frozen vegetables, cucumbers and to a lesser degree - tomatoes
- Growth is observed in niche crops such as cauliflower and broccoli if the household budgets is compared to the export accounts
- Decline is examined only in the preserved vegetables – pickled vegetables/pickles and juices

Table 4 – Household consumption of vegetables



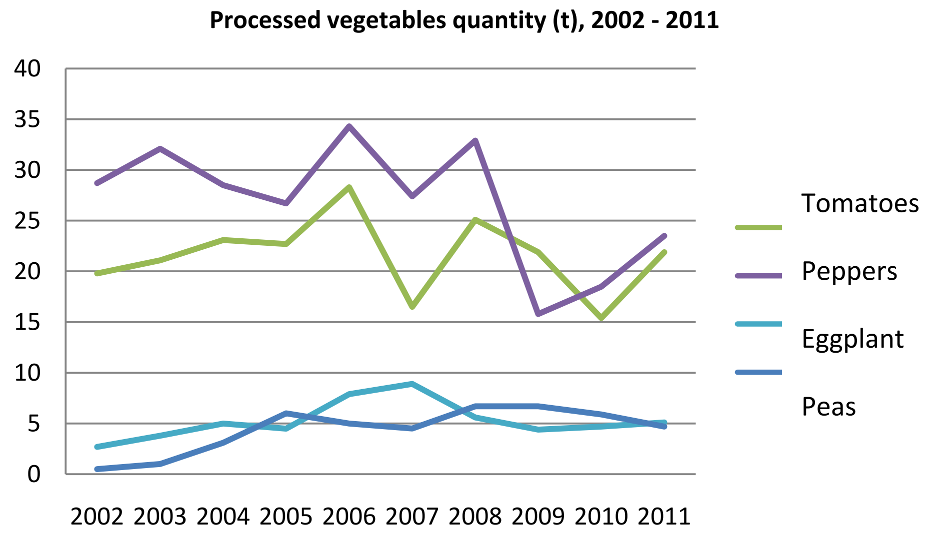
Source: NSI

The shifts of beans and lentils consumption should not be considered as long term tendencies. Their growth is concentrated in the last two years of the crisis. This focus is a disadvantage of the household budgets study because a big portion of the interviewees belong to low income households. Obviously, a considerable part of the population has increased the consumption of such basic foods. However, there is enough evidence to assume as perspective for production mushrooms, cucumbers, cabbage, tomatoes and onion, as long as they are cultivated and marketed at (highly) competitive prices.

Processing industry

The key vegetable crops in demand of processing are pepper and tomatoes. From significance for the processing branch are also aubergine, peas and gherkin, although their importance is declining in the last couple of years. It should be noted here that potatoes and mushrooms have completely vanished as goods in the processing sector.

Table 5 – Processed vegetables quantity

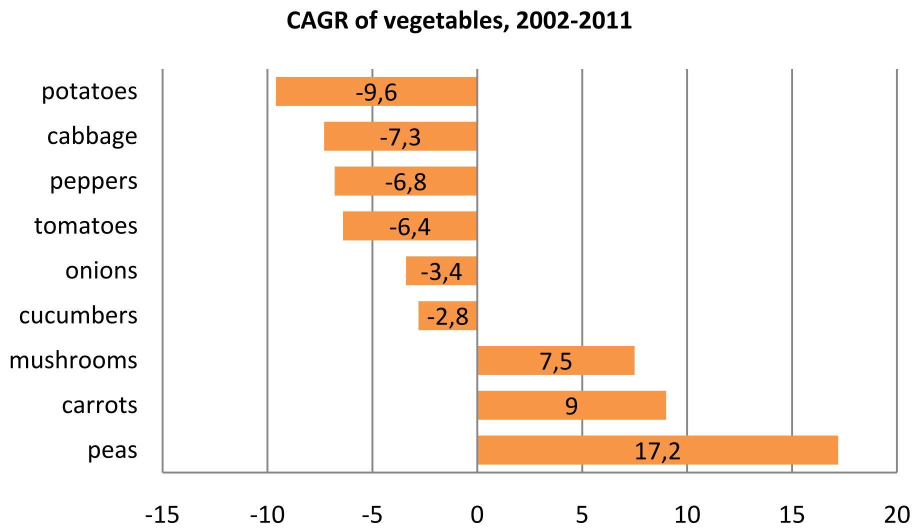


Source: Agro statistics

Aggregate demand

The data on the total quantity of vegetables delivered/imported to the domestic market differ from the household consumption statistics. It signals for positive dynamics only in the peas, carrots and mushrooms values.

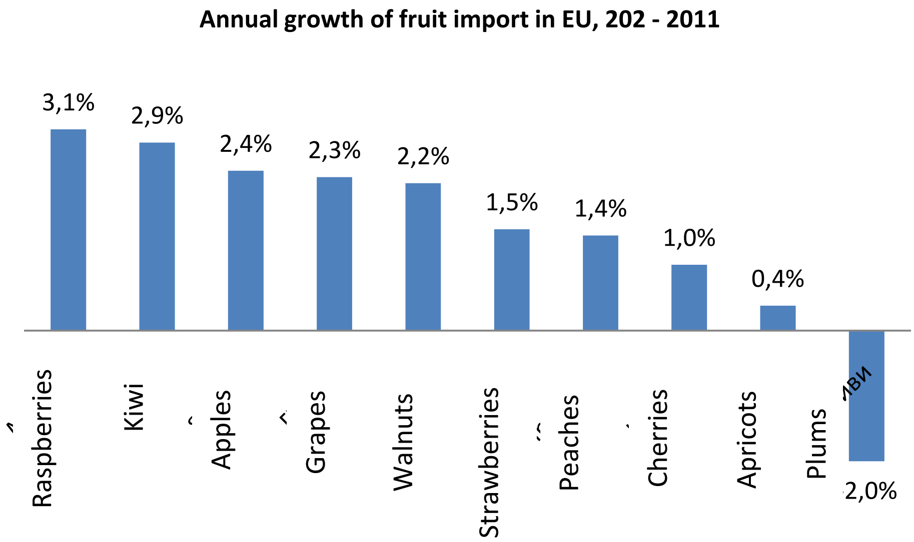
-Table 6 – Cumulative aggregate growth rate of vegetables



External market

We apply the information on export in the EU for the last ten years to analyze the export potential. The focus is on this particular market because a considerable part of Bulgarian exports of fruits and vegetables goes to other countries of the Community. Moreover, the EU market due to its mere size provides great opportunities for the Bulgarian farmers.

Table 7 – Growth of fruit imports in EU

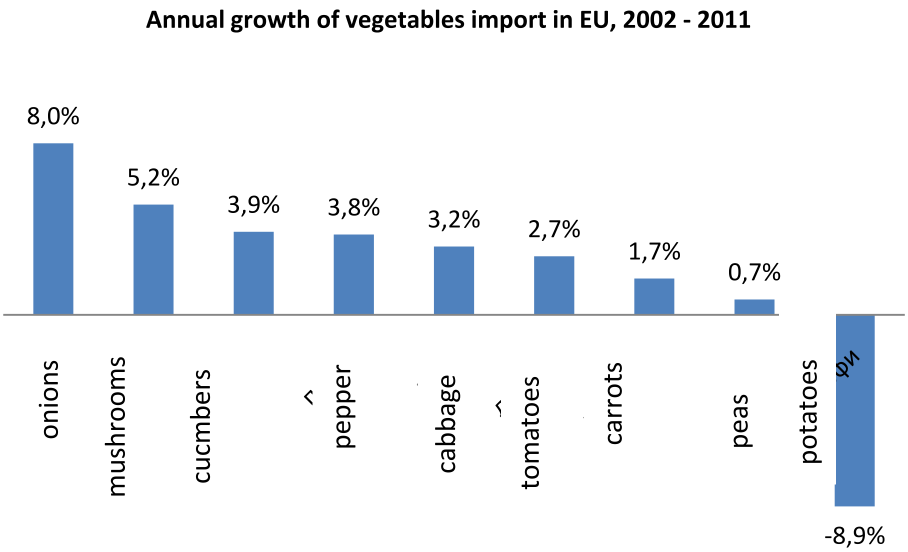


Source: Eurostat

The table identifies a significant growth in the demand of raspberries, kiwi, apples, desert grapes and walnuts in EU.

Regarding the demand of vegetables, onion, mushrooms, cucumbers, pepper, cabbage and tomatoes appear as the most popular goods in the EU for the last ten years.

Table 8 – Growth of vegetables imports in EU



Source: Eurostat

Bulgaria's competitive advantages

In order to identify the competitive advantages of particular crops, we apply the Revealed Competitive Advantage method (RCA) and we get the following results for fruit and vegetables:

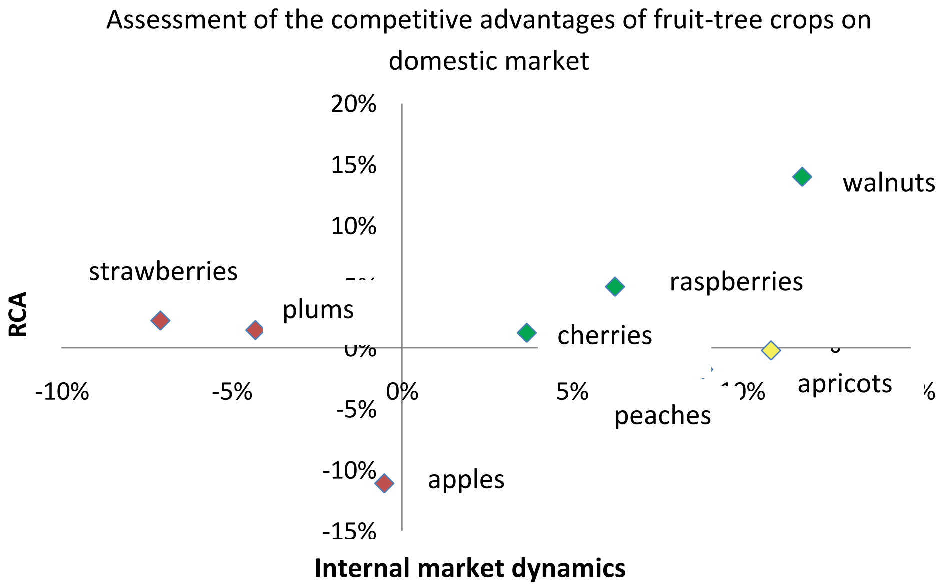
Конкурентоспособност на отделните култури / Competitiveness of particular crops			
Fruits	RCA	Vegetables	RCA
Walnuts	14,0%	Mushrooms	29,3%
Raspberries	5,0%	Cucumbers	21,5%
Strawberries	2,2%	Peas	3,2%
Plums	1,4%	Cabbage	-1,4%
Cherries	1,2%	Carrots	-3,8%
Apricots	-0,2%	Onion	-4,5%
Peaches	-1,8%	Potatoes	-5,7%
Grapes	-2,5%	Peppers	-10,2%
Apples	-11,1%	Tomatoes	-59,7%

Source: Own calculations

Domestic market

In relation to meeting the internal market demand, walnuts, raspberries and cherries appear to hold the greatest potential. Apricots, as well as peaches, also have market potential that needs to be further developed.

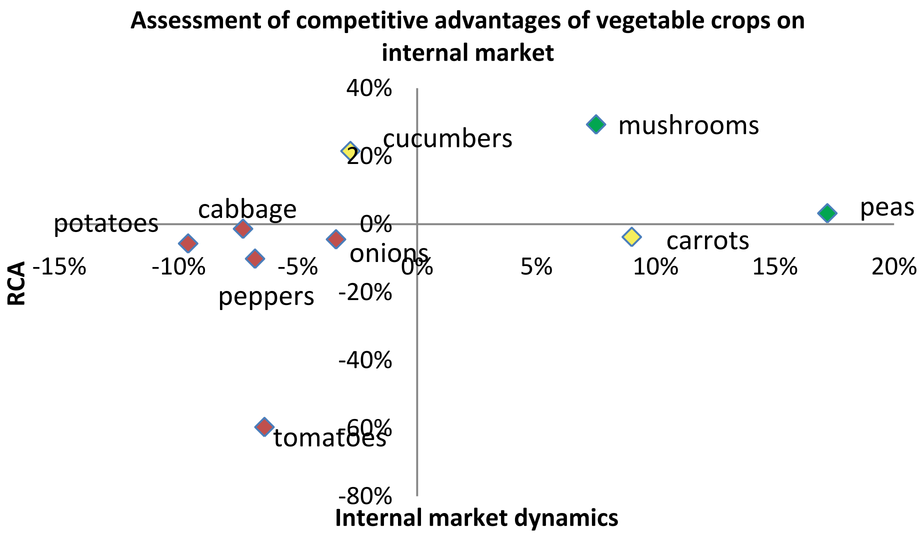
Table 9 – Perspectives for the fruit-tree crops on domestic market



Source: Own calculations

With respect to vegetables, as most perspective are outlined mushrooms and peas, and to some extend carrots and cucumbers.

Table 10 – Perspectives for vegetable crops on domestic market

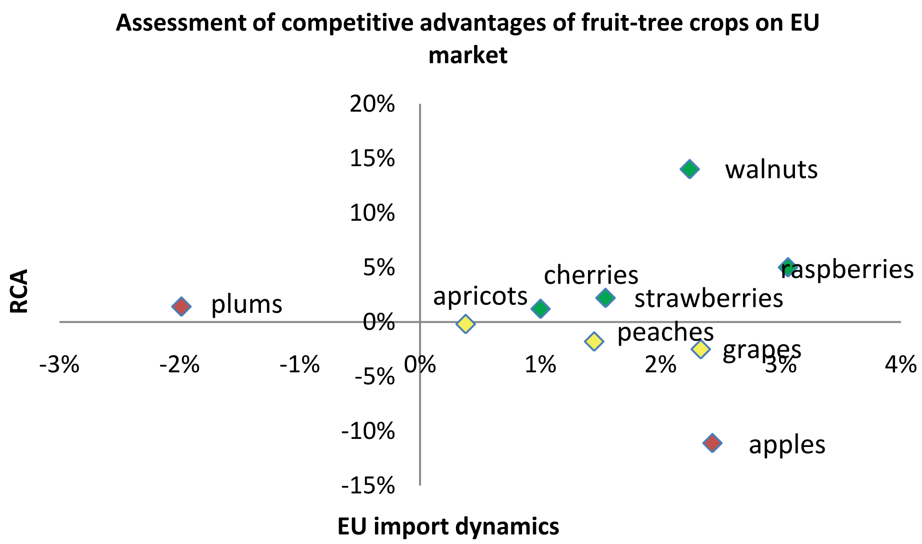


Source: Own calculations

External market

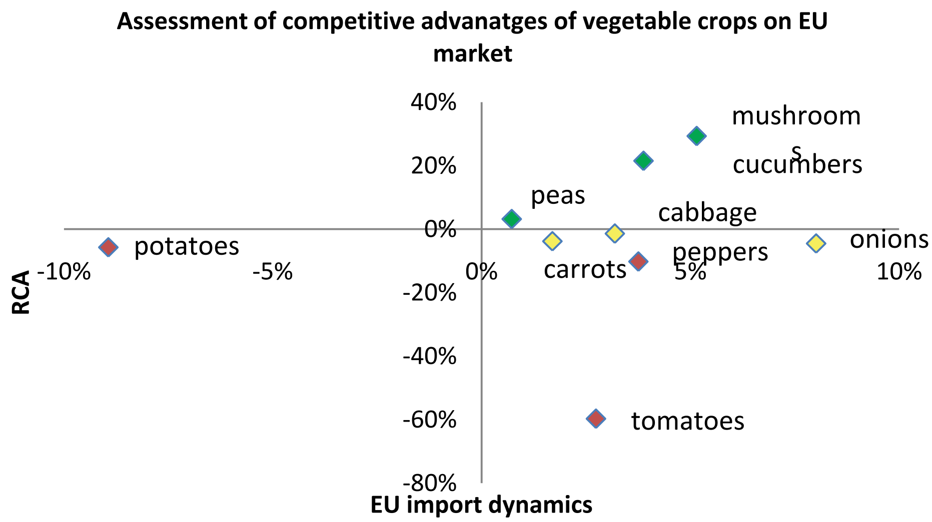
Cultivation of walnuts, raspberries, strawberries, cherries and apricots stands out as one holding the greatest potential for export to the EU.

Table 11 – Perspectives for fruit-tree crops on EU market



Source: own calculations

The crops with potential for export to the EU are mushrooms, cucumbers, peas and with some reservations, cabbage, carrots and onion.



Source: own calculations

Summary of findings

As a result of our analysis, the examined crops can be divided into three groups:

1. **Most perspective crops** – i.e. crops in the cultivation of which Bulgaria has competitive advantage after its accession to the EU
2. **Crops with certain potential** – crops that require additional efforts and investments to improve their production effectiveness; and/or that experience stable or increasing demand on EU level, despite declining demand in Bulgaria
3. **Crops with no potential** - crops that need to undergo drastic improvement of effectiveness (related to enormous investments, production optimization and cost reduction) and/or face permanent decrease in demand.

Fruit

Most perspective	With potential	With no potential
1. Walnuts	1. Apricots	Plums
2. Raspberries	2. Peaches	Apples
3. Cherries	3. Grapes	
4. Strawberries	4. Kiwi	

**for which there is insufficient information to assess its competitiveness; yet, it is included because its cultivation is possible and it enjoys strong demand*

Vegetables

Most perspective	With potential	With no potential
1. Mushrooms	1. Carrots	1. Tomatoes
2. Cucumbers	2. Cabbage	2. Pepper
3. Peas	3. Onion	3. Potatoes

Note: The findings of the study should be considered in the context of the applied methodology and not as absolute facts.

Contacts:

Nikolay Valkanov

Institute for Market Economics

Sofia, 10 „Patriarh Evtimii“ blvd, fl. 2

tel.: (2) 952 62 66

e-mail: nikolay@ime.bg