Increasing the International Competitiveness of the Romanian Horticultural Chain

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Abstract

The paper aims to determine the level of competitiveness in horticultural sectors. Determining the existing level of competitiveness in Romania on international trade and identifying methods to increase the competitiveness of international trade in horticulture, a quantitative analysis of the volume of exports and imports of Romania for the main chapters and sections of the Nomenclature found on the website of the National Institute of Statistics, the basis from which information used in this research was taken. At the same time, taking into account the structure of products by chapters and sections, the opportunity to determine the degree of concentration of exports and imports according to the structure produced, respectively for each section of the agri-food sector, was taken into account. The Gini coefficient was used to determine the degree of concentration.

Keywords

Agri-food chain, competitiveness, trade balance, Romanian horticultural chain.
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Introduction

The agri-food chain is a component of the agri-food system and can be defined as all the actors involved in order to meet the needs of certain markets. According to Garcia-Wilder, et al. (2007), the agri-food chain is used in several contexts, namely: in the socio-economic context, the chain comprising all raw material suppliers, processors, distributors, carriers; in an analytical context, the supply chain representing a set of contractual or commercial relations from the raw material supplier to the final consumer and in the operational context, the supply chain representing an institutional commitment for strategic planning, management policy, dialogue and consensus among stakeholders or as a social contract where the state, the private sector and civil society establish medium or long-term arrangements for its development.

Trade in agri-food products is a component of the agri-food supply chain, occupies an important place in the world economy and has a number of peculiarities related to the seasonality of agri-food production and their perishability which requires compliance with certain microclimate requirements. According to Ion (2017), international trade in agri-food products has intensified due to the following factors: population growth, which determines the increase in food demand; the increase of the income level of some categories of population, which determines the increase of the solvent demand; increasing world agricultural production and, therefore, supply and stocks; improving the means of transport,

storage and preservation of agricultural products; development of new online sales and distribution methods; development of agricultural scholarships.

Thus, international trade has an important role to play in ensuring the food security of the population and increasing competitiveness in third markets.

According to the National Strategic Framework for Sustainable Development of the Agri-Food Sector and the rural area in the period 2014 - 2020 - 2030, the area occupied by vegetables represents approximately 3.25% of the total cultivated area, a percentage close to that of the European Union, but Romania cannot ensure the consumption needs of domestic resources, due to much lower average yields per hectare than the EU average. In this respect, the fruit and vegetable sector requires special attention from the national authorities, which is why there was additional funding, through the Orchard Program for the period 2014-2020, designed to help increase the competitiveness of the horticultural sector.

Material and method

In order to determine the existing level of competitiveness in Romania on international trade and to identify methods to increase the competitiveness of international trade in horticulture, a quantitative analysis of the volume of exports and imports of Romania for the main chapters and sections of the Nomenclature found on the website The National Institute of Statistics, the basis from which the data used in this research were taken.

At the same time, taking into account the structure of products by chapters and sections, it was considered appropriate to determine the degree of concentration of exports and imports according to the structure of products, respectively for each section of the agri-food sector. In order to determine the degree of concentration, the Gini coefficient was used, the formula of which is presented below (Săvoiu, et al., 2012):

$$G = \sqrt{\frac{n\sum_{i=1}^{n} g_i{}^2 - 1}{n-1}}, \text{ where} \qquad (1)$$

G – Gini coefficient
n – number of observations
gi – the weight of each element (observable unit) in total

Results and discussions

Value of exports

By analyzing the data available in the statistics, respectively the export value (FOB) according to the combined nomenclature of the NIS, we can analyze the dynamics of exports by sections and chapters. The related sections and chapters that can be included in the agri-food sector were taken into account.

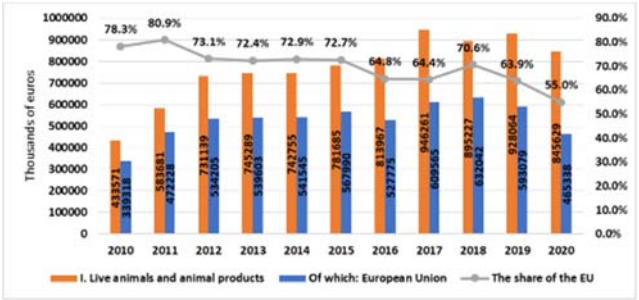

Figure no. 1. Analysis of export value dynamics for the Live animals and animal products section

Source: processing based on NIS data

The first section is on live animals and animal products. The total value of exports under this section ranged from EUR 433 million to EUR 946 million, averaging EUR 768 million. The deviation registered from this average is of 19.8%, observing an ascending slope, the average growth rate being of 6.9% annually. This section has an average share, in total Romanian exports, of 1.4%.

Of this total value of exports of live animals, on average, 530 million euros are made to European Union member countries, respectively 70%. As can be seen, this percentage decreased in the period analyzed, to 55% (in the last year) which means that exports to other non-EU countries have intensified given that the growth rate of the value of exports to the EU is lower than the trend general.

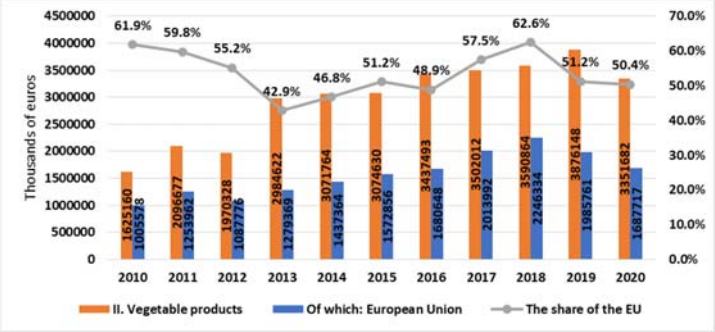

Figure no. 2. Analysis of export value dynamics for the Vegetable Products section
Source: processing based on NIS data

The second section is on vegetable products. The total value of exports under this section ranged from EUR 1.625 billion to EUR 3.88 billion, averaging EUR 2.96 billion. The deviation registered from this average is of 24.9%, observing an ascending slope, the average growth rate being of 7.5% annually. This section has an average share, in total Romanian exports, of 5.4%.

Of this total value of exports of plant products, on average, 1.57 billion euros are made to European Union member countries, respectively 53.5%. As can be seen, this percentage decreased during the analyzed period, to 50% (in the last year) which means that exports to other non-EU countries decreased due to the fact that the growth rate of exports to the EU is higher than the general trend.

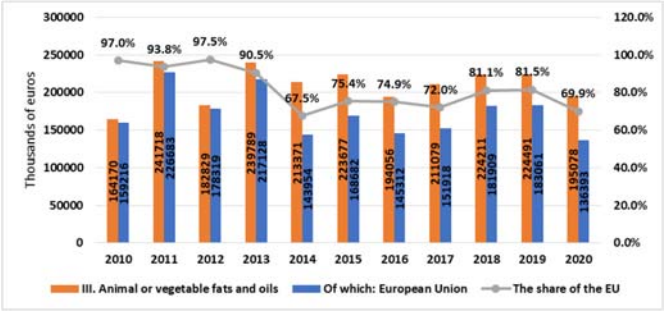

Figure no. 3. Analysis of export value dynamics for the Animal or vegetable fats and oils section
Source: processing based on NIS data

The third section is on fats and oils, both animal and vegetable. The total value of exports under this section ranged from EUR 164 million to EUR 241 million, averaging EUR 210 million. The deviation registered from this average is 11.5%, observing an ascending slope, the average growth rate being 1.74% annually. This section has an average share, in total Romanian exports, of 0.4%.

Of this total value of exports of fats and oils, on average, 172 million euros are made to European Union member countries, respectively 81.9%. As can be seen, this percentage decreased in the period analyzed, to 70% (in the last year) which means that exports to other non-EU countries have intensified given that the growth rate of exports to the EU is lower than the trend general.

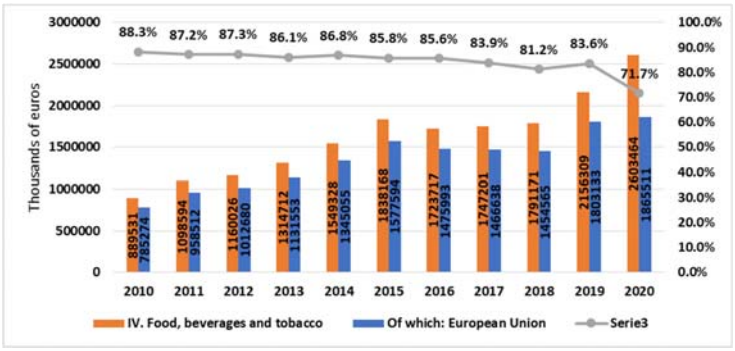

Figure no. 4. Analysis of export value dynamics for the Food, Beverages and Tobacco section

Source: processing based on NIS data

The fourth section is on food, beverages and tobacco. The total value of exports under this section ranged from EUR 890 million to EUR 2.6 billion, averaging EUR 1.625 billion. The deviation registered from this average is of 30.6%, observing an ascending slope, the average growth rate being of 11.3% annually. This section has an average share, in total Romanian exports, of 3%.

Of this total value of exports of food, beverages and tobacco, on average, 1.35 billion euros are made to member countries of the European Union, respectively 84.3%. As can be seen, this percentage decreased in the period analyzed, to 72% (in the last year) which means that exports to other non-EU countries have intensified given that the growth rate of exports to the EU is lower than the general trend.

Value of imports

Similarly, an analysis will be made of the evolution of the import values for the agricultural sector by sections and categories of the Combined Nomenclature.

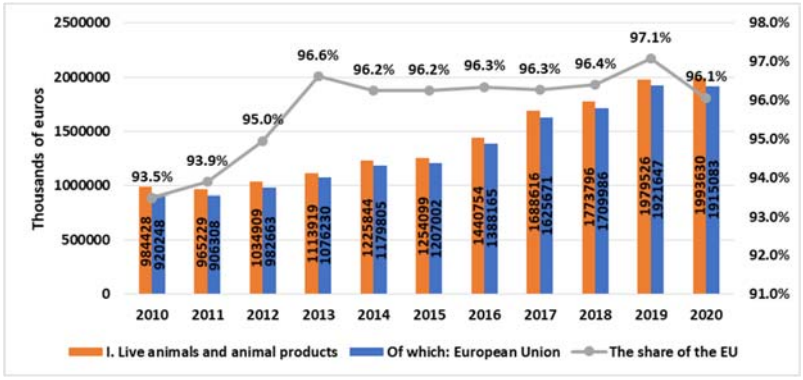

Figure no. 5. Analysis of the dynamics of the value of imports for the section Live animals and animal products

Source: processing based on NIS data

The first section is on live animals and animal products. The total value of imports under this section ranged from EUR 965.2 million to EUR 1.98 billion, averaging EUR 1.4 billion. The deviation registered from this average is of 27.9%, observing an ascending slope, the average growth rate being of 7.3% annually. This section has an average share, in total Romanian imports, of 2.1%.

Of this total value of imports of live animals, on average, 1.35 billion euros are made from European Union member countries, respectively 95.8%. As can be seen, this percentage increased in the period considered, to 96% (in the last year) which means that imports from other non-EU countries decreased due to the fact that the growth rate of the value of EU imports is higher than the general trend.

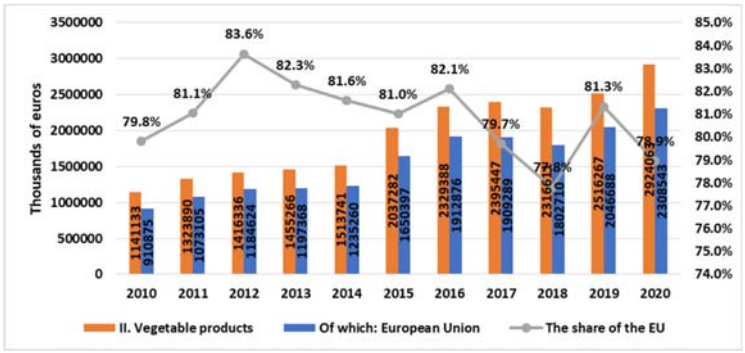

Figure no. 6. Analysis of the dynamics of the value of imports for the section Vegetable products

Source: processing based on NIS data

The second section is on vegetable products. The total value of imports under this section ranged from EUR 1.14 billion to EUR 2.92 billion, averaging EUR 1.94 billion. The deviation registered from this average is of 30.5%, observing an ascending slope, the average growth rate being of 9.8% annually. This section has an average share, in total Romanian imports, of 2.9%.

Of this total value of imports of plant products, on average, 1.56 billion euros are made from European Union member countries, respectively 80.8%. As can be seen, this percentage decreased in the analyzed period to 79% (in the last year) which means that imports from other non-EU countries have developed given that the growth rate of the value of EU imports is higher than the general trend.

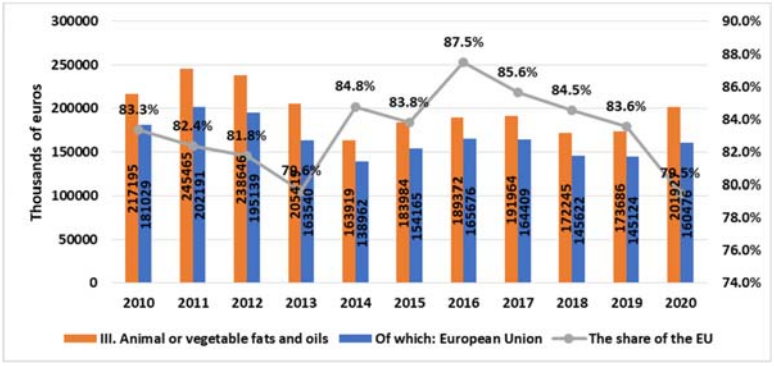

Figure no. 7. Analysis of the dynamics of the value of imports for the section Animal or vegetable fats and oils

Source: processing based on NIS data

The third section is on fats and oils, both animal and vegetable. The total value of imports under this section ranged from EUR 164 million to EUR 245.5 million, averaging EUR 198.5 million. The deviation registered from this average is of 13.4%, observing a descending slope, the average rate of change being -0.7% annually. This section has an average share, in total Romanian imports, of 0.3%.

Of this total value of imports of fats and oils, on average, 165 million euros are made from European Union member countries, respectively 83.3%. As can be seen, this percentage decreased in the analyzed period to 79% (in the last year) which means that imports from other non-EU countries have developed given that the pace of change in the value of EU imports is higher than the trend general.

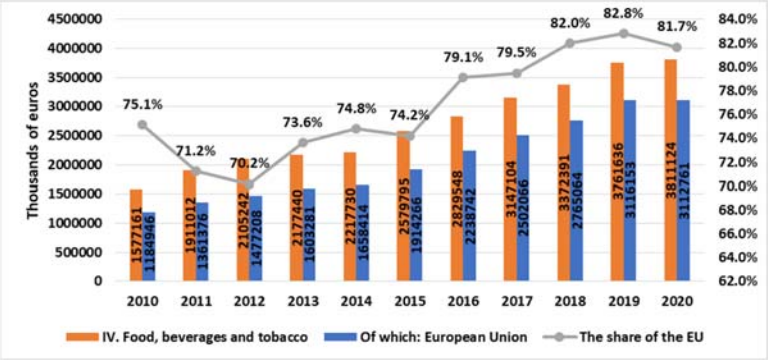

Figure no. 8. Dynamics analysis of the value of imports for the Food, beverages and tobacco section

Source: processing based on NIS data

The fourth section is on food, beverages and tobacco. The total value of imports under this section ranged from EUR 1.57 billion to EUR 3.8 billion, averaging EUR 2.68 billion. The deviation registered from this average is of 28.4%, observing an ascending slope, the average growth rate being of 9.2% annually. This section has an average share, in total Romanian imports, of 4.1%.

Of this total value of imports of food, beverages and tobacco, on average, 2.08 billion euros are made from European Union member countries, respectively 76.8%. As can be seen, this percentage increased during the analyzed period, to 82% (in the last year) which means that imports from other non-EU countries decreased due to the fact that the growth rate of the value of EU imports is higher than the general trend.

Trade balance

In order to determine the competitiveness of domestic products and to establish a strategic direction to increase this international competitiveness of Romania, the balance of payments will be determined for each section and chapter.

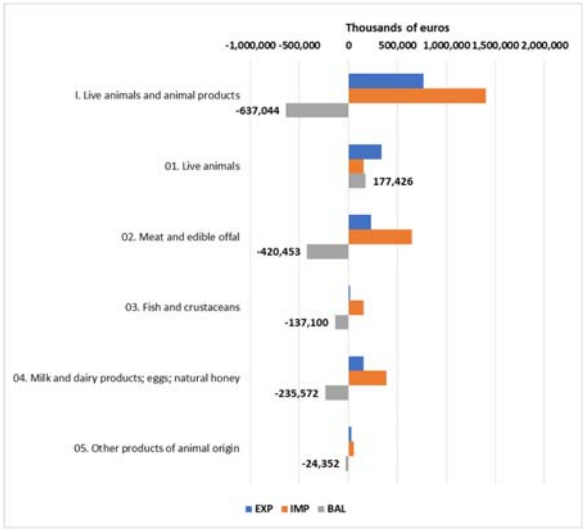

Figure no. 9. Balance of payments for the Live animals and animal products section and for the related chapters

Source: own calculations

Analyzing the first section, that of Live Animals and Animal Products, but also of the chapters that are included in this section, we can see the following. At the level of the whole section, on average, in the period 2010-2020, there is a deficit of 637 million euros per year. Most of the chapters participate in this deficit, with the exception of live animals, a chapter whose balance sheet is positive, respectively 177.4 million euros. At chapter level, the largest deficit is in the category of edible meat and offal, with an average value of 420 million euros per year.

In order to be able to determine whether there is a certain degree of concentration for a certain category (chapter) of products, or not, both at the level of exports and at the level of imports, the Gini coefficient was determined, by means of which this degree of concentration can be determined. . Calculating for this section, respectively for the chapters that are included in it, the following were found: the Gini coefficient for the export values was 0.39, and for the import values it was 0.38. Thus, it can be stated that there is a slight focus on a product category, but not very intensified, both for export and import, from the structure of the products that are included in this section. On export it can be considered that there is a concentration on live animals, and on import on meat and edible offal.

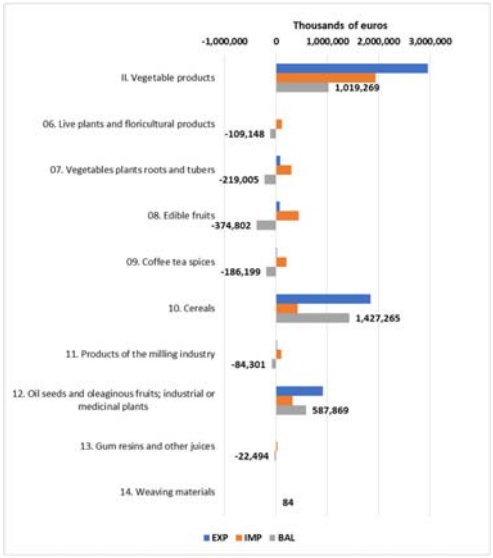

Figure no. 10. Balance of payments for the Vegetable Products section and related chapters
Source: own calculations

Analyzing the second section, that of Plant Products, but also of the chapters that are included in this section, we can see the following. At the level of the whole section, on average, in the period 2010-2020, there is a surplus of 1.02 billion euros per year. The largest contribution to this surplus has the chapter, Cereals whose balance is positive, respectively 1.427 billion euros. There is also a positive balance for the chapter Oilseeds and fruits; industrial or medicinal plants, with an average annual value of 588 million euros. At the chapter level, the largest deficit is registered in the Edible Fruits category, with an average value of 374.8 million euros per year, followed by Vegetables, Plants, Roots and Tubers with a deficit of 219 million euros.

Determining the degree of concentration for export and import, using the Gini coefficient, the following were found. For the export of these products included in this category, a coefficient of 0.64 is registered, which determines a significant degree of concentration on a certain category of products, a phenomenon that could be anticipated considering the high value of the Cereals chapter, the export concentrating -is on this category. Analyzing the import, the situation is different, a concentration coefficient of 0.25 is registered, thus, it can be appreciated that there is no concentration on a certain product.

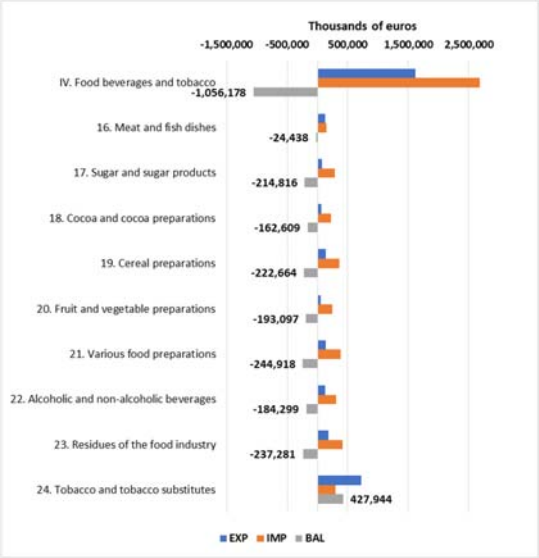

Figure no. 11. Balance of payments for the Food, Beverage and Tobacco section and for the related chapters

Source: own calculations

Analyzing the last section, that of Food, beverages and tobacco, but also of the chapters that are included in this section, we can see the following. At the level of the whole section, on average, in the period 2010-2020, there is a deficit of 1.056 billion euros per year. Most of the chapters participate in this deficit, with the exception of Tobacco and tobacco substitutes, a chapter whose balance is positive, respectively 428 million euros. At the chapter level, the largest deficit is recorded in the category Miscellaneous food preparations, with an average value of 245 million euros per year.

Determining the degree of concentration for export and import, using the Gini coefficient, the following were found. For the export of these products included in this category, there is a coefficient of 0.38, which determines a certain degree of concentration, with an average intensity, on a certain category of products, a phenomenon that could be anticipated given the high value of Tobacco and tobacco substitutes, with exports focusing on this category. Analyzing the import, the situation is different, there is a concentration coefficient of 0.09, very close to zero value, so it can be seen that there is no concentration for these products, as can be seen from the figure, the imports being at similar values between they, evenly distributed for each product category.

Given the final purpose of this research, namely the identification of measures to increase the international competitiveness of the horticultural chain, the situation will be presented below, detailed for each year and the dynamics of exports, imports and balance of payments for the main categories of the chain, respectively fruit. and vegetables.

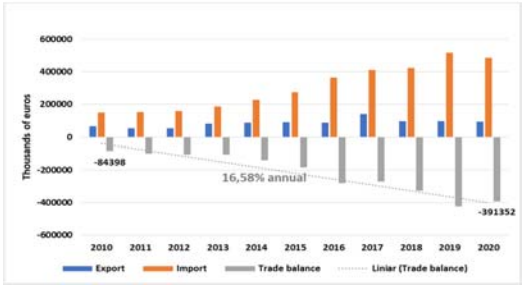

Figure no. 12. Analysis of the dynamics of exports, imports and the balance of the balance for the vegetables chapter

Source: own calculations

With regard to this category of vegetables, it can be seen that the value of exports is much lower than the value of imports, with the seasonality of this sector making its mark the most. The value of vegetable exports varied in the period 2010-2020 between 52 million euros and about 140 million euros. On average, every year, Romania exported vegetables worth 85.5 million euros, with a variation from it of 28%.

Regarding the value of imports, the lowest imports were about 150 million euros, and the highest value was 517 million euros. On average, Romania imported vegetables worth 305 million euros annually, with a variation of 46%. On average, the value of imports was 3.56 times higher than that of exports.

Regarding the evolution of the trade balance, it was increasing, in the sense that the deficit increased constantly, from -84 million euros to -391 million euros, registering an annual increase of 16.58%.

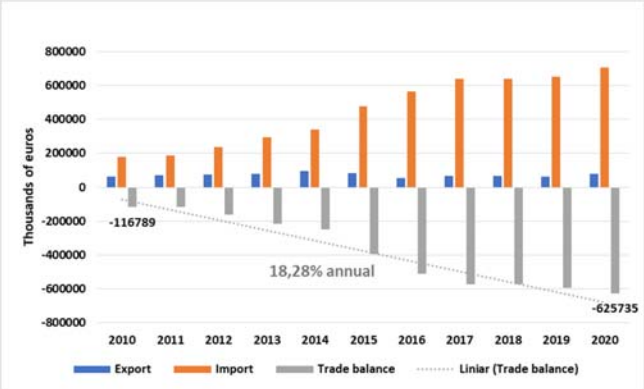

Figure no. 12. Analysis of the dynamics of exports, imports and the balance of the balance for the fruit chapter

Source: own calculations

With regard to this category of fruit, it can be seen that the value of exports is much lower than the value of imports, with the seasonality of this sector making its mark the most. The value of fruit exports varied between EUR 54 million and EUR 95 million between 2010 and 2020. On average, every year, Romania exported fruits worth 71.8 million euros, with a variation from it of 16%.

Regarding the value of imports, the lowest imports were about 179 million euros, and the highest value was 705 million euros. On average, Romania imported fruits worth 446 million euros annually, with a variation of 46%. On average, the value of imports was 6.21 times higher than that of exports.

Regarding the evolution of the trade balance, it was increasing, in the sense that the deficit increased constantly, from the value of -116 million euros to -625 million euros, registering an annual increase of 18.28%.

Conclusions

The vegetable and fruit sector includes the activities of production, harvesting, sorting, storage, transport, processing and sale. The economic agents in the vegetable and fruit chain are agricultural producers, collection units, processors, retailers, consumers.

This sector has a high variability of production due to dependence on the climate factor, low yields, high seasonality and perishability, zoning, as well as problems related to the collection, distribution and sale of products. From the trade balance analysis, there is a marked increase in the deficit, both for vegetables and fruits.

In order to increase fruit yields, public authorities have allocated significant sums, both from European non-reimbursable funds and from the state budget, for the financial support of producers and

processors. The financial support was aimed at restructuring and increasing the competitiveness of this sector, characterized by a significant decline, as well as a dependence on imports to meet the consumption needs of the population. Also, the investments in physical assets, through this program, also aimed at increasing the cultivated area, at the same time as increasing the yields.

Regarding the investments made in the area of processing and marketing of these products, the investments aimed at setting up, expanding or modernizing the processing, collection, storage units, in order to develop short chains for a superior use of these products. Last but not least, a significant financial allocation was intended to encourage the association of agricultural producers. However, the horticultural sector still has significant gaps compared to the other Member States of the European Union, such as a large trade deficit, which still needs special attention.

Acknowledgment

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References

Alexandri, C., 2001. *Securitate şi echilibru alimentar în România*. Bucharest: GEEA Publishing House.

Comisia Prezidenţială Pentru Politici Publice De Dezvoltare A Agriculturii, 2013. *Cadrul Național Strategic pentru Dezvoltare Durabilă a Sectorului Agroalimentar și a Spațiului Rural în perioada 2014 – 2020 – 2030, 2013*. [pdf] Available at: <https://agroromania.manager.ro/docs/cadrulnationalstrategicrural.pdf> [Accessed 17 February 2021].

Garcia- Winder, M., Riveros, H., Pavez, I., Rodriguez, D., Lam, F., Arias, J., Herrera, D., Garcia-Winder, M., Riveros, H., Pavez, I., Rodriguez, D., Lam, F., Arias, J. and Herrera, D., 2009. Agrifood Chains: A Tool for Strengthening the Institutional Framework of the Agricultural and Rural Sector. [online] https://doi.org/10.22004/AG.ECON.188590.

Ion A.R., 2017. *Securitate și siguranță alimentară*. Bucharest: ASE Publishing House.

Marin, A., Ion, A.R., Chetroiu, R. and Iurchevici L., 2017. *Proiectarea și experimentarea de modele de dezvoltare a lanțurilor scurte de valorificare a producției de fructi*. Bucharest: ASE Publishing House.

Pătărlăgeanu, S.R., Miclea, A., Sacală, M.D., Teodor, C., Dinu, M., Pișta lu, M., Constantin, M. and Lazăr V., 2020. *Balanța comercială a României cu produse agroalimentare în perioada 2015 – 2020*. Buharest: ASE Publishing House.

Săvoiu, G., Iorga Simăn, I. and Crăciuneanu, V., 2012. Fenomenul de concentrare - diversificare în globalizarea contemporană. *Revista Română de Statistică*, 4, pp.5-15.

The Buchareste University of Economic Studies, 2020. *Necesitate și posibilități de creare și dezvoltare a centrelor de achiziții, prelucrare, ambalare și livrare a produselor agroalimentare.* Institutional project.