

STUDY ON THE PRODUCTION AND COMMERCIALIZATION OF SUGAR BEET AT NATIONAL LEVEL AND BY REGION OF DEVELOPMENT IN ROMANIA

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Abstract

This paper examines the evolution of the production and marketing sector of sugar beet in Romania, since 2007 until now. The main indicators analyzed are: the area cultivated with sugar beet; sugar beet production; average production per hectare of sugar beet; the average acquisition price for sugar beet and sugar beet imports. The statistics which were the basis of the survey were taken from the National Institute of Statistics and FAOSTAT. This study highlights especially the quantitative changes recorded in the production and marketing of sugar beet. This sector has a particular importance, as it provides the raw material for sugar production for human consumption. Romania has favorable conditions for sugar beet production and is foreseen an increase in acreage starting with 2017, when the quota will be removed and the sugar market will be liberalized.

Key words: *sugar beet, sugar beet production, average acquisition price, development regions*

INTRODUCTION

Sugar beet is mainly grown for the roots which through processing generate two product categories: sugar (main product); the pulp and molasses (by-products). Romania has three agro-ecological zones for the cultivation of sugar beet: Central Zone, West and South Plains and Moldavia. Unlike other crops, sugar beet cultivation requires certain conditions, especially on soils, such as: soils with high fertility; soils with increased water retention capacity; well-structured soils; soils rich in humus. Industry experts recommend the following types of soils for sugar beet: chernozem soils; alluvial sandy loam; red brown soil of woods. Regarding groundwater, it is recommended a depth of 2-4 m. An important element is the ph, which is indicated to be between 6.5-8.0. Sugar beet culture is important because, it ensures favorable conditions in order to: keeping water in the soil; practicing crop rotation; improving natural soil fertility, etc. [11]
Before 1990, in Romania were cultivated large areas of sugar beet (100,000 ha). Sugar beet production achieved before 1990 was 6.7

million tons. The sugar beet production achieved nationwide, provides the raw material for more than 30 sugar production factories. The sugar obtained provides the necessary for domestic consumption. After 1990, we witnessed a decrease of cultivated agricultural areas, of productions achieved and quality. [1]

Currently, sugar beet acreage decreased considerably compared to 1989 but a surface increase is predicted after 2017 [15].

In this context, the paper aimed to analyze the dynamics of the production and marketing sector of sugar beet in Romania in the period 2007-2015 using the following indicators: the area cultivated with sugar beet, sugar beet production, average production per hectare of sugar beet, the average acquisition price for sugar beet and sugar beet imports.

MATERIALS AND METHODS

For the study were taken and processed statistics from the National Institute of Statistics and FAOSTAT. The analysis of the production and marketing sector of sugar beet was based on a range of specific indicators,

such as area cultivated with sugar beet; total production of sugar beet; average production per hectare of sugar beet; the average acquisition price for sugar beet and quantitative and valuable imports of sugar beet. In order to achieve a more realistic analysis of the production and marketing sector of sugar beet nationally and by region of development were consulted numerous specialty materials.

RESULTS AND DISCUSSIONS

In Romania, the vegetable sector in the period 2007-2015, was marked by a series of major changes that have made their mark directly on the evolution of agriculture in our country. [4] In Table 1 is evidenced the area cultivated with sugar beet nationally and by region of development in 2007-2015. Currently, in Romania sugar beet crops occupy 9.17% of the surface registered in 1989. [7] Nationally, in 2015, the area cultivated with

sugar beet dropped by 7.5% compared to 2007. From the data presented, we can easily observe that in 2014 in Romania was the largest area cultivated with sugar beet (31,280 ha), from the analyzed period. In the European Union, in 2014 were planted with sugar beet 1,550,000 ha and Romania held a share of 2.01% of the area cultivated. [8]

At the level of development regions, the largest surfaces planted with sugar beet can be found in the Central Region and in the North-East Region. The largest acreage in the Central Region was 12,003 ha (2014), and for the North-East Region was 10,253 ha (2012). In the South-East Region were cultivated the lowest sugar beet areas. They ranged between 147 ha - 801 ha. In 2008, in the South East Region was registered the smallest acreage of sugar beet (147 ha). In 2015 sugar beet acreage in this region fell by 42.2%. In the Western Region is observed a substantial increase from 461 ha (2007) to 2,965 ha (2015).

Table 1. Surface with sugar beet in the main development regions in Romania (ha)

Specification	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015/2007 (%)
Romania	28,730	20,445	21,329	22,029	18,816	27,303	28,144	31,280	26,591	92.5
NORTH-WEST Region	7,069	5,332	5,668	4,922	3,029	4,492	4,212	5,637	5,282	74.7
CENTRAL Region	9,477	6,857	7,696	9,384	8,833	9,316	11,697	12,003	9,139	96.4
NORTH-EAST Region	11,154	7,463	7319	7156	5909	10253	9143	10009	9057	81.1
SOUTH-EAST Region	256	147	-	-	228	796	801	493	148	57.8
WEST Region	461	643	641	562	790	2436	2291	3084	2965	643.1

Source: [6] ; own calculations

According to official data, currently in Neamt county the area cultivated with sugar beet has a share of 40.0% of the area cultivated with beet in Romania. Currently, in Romania, the average area operated in a sugar beet farm reached 24 hectares, more than twice the average recorded in the European Union, which is 10 ha.

Since 2016, in Romania, 250 hectares were cultivated with ecological beets by Agrana Romania. For 2017, it is foreseen a doubling of the area planted with ecological sugar beet [2, 12].

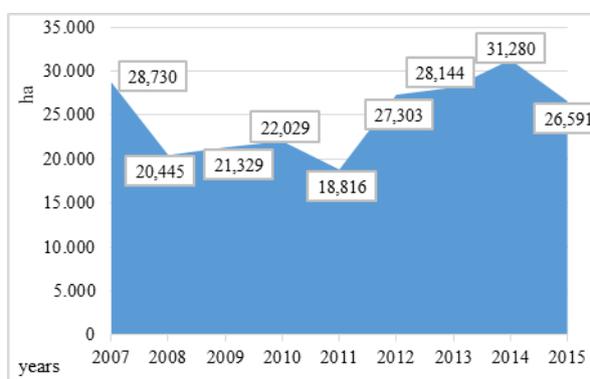


Fig.1. The dynamics of the surface with sugar beet in Romania

Source: [6]

The achieved production of sugar beet is important because it influences the production of sugar made nationwide. The evolution of sugar beet production nationally and in the main producing regions is presented in Table 2. Nationally, in 2007-2015, it is revealed an oscillation of the sugar beet production (fig. 2). Nationwide the production of sugar beet grew in 2015 by 38.9% compared to 2007. This increase is mainly due to the average yield per hectare. However, in 2015, were achieved lower productions compared with

2014, due to drought which negatively impacted the agricultural production. In 2014, it was achieved the highest production of sugar beet (1,398.5 thousand tons) during the analyzed period. The production achieved in 2014 is 35.8% higher than the production in 2013. In 2014, some counties have contributed substantially to the achievement of sugar beet production, such as: Covasna (14.0%); Neamț (12.2%); Mureș (11.9%); Brașov (11.5%) and Satu Mare (10.2%). [9, 14]

Table 2. Production of sugar beet achieved in the main producing regions of Romania (thousand tons)

Specification	2007	2008	2009	2010	2011	2012	2013	2014	2015
Romania	748.8	706.6	816.8	837.8	660.4	719.7	1,029.2	1,398.5	1,040.6
NORTH-WEST Region	234.6	221.5	249.3	255.3	121.5	130.0	150.0	238.3	204.5
CENTRAL Region	275.5	232.1	318.3	313.7	304.6	253.8	459.8	587.1	385.9
NORTH-EAST Region	226.9	221.7	225.5	243.5	183.3	237.3	310.3	384.1	318.1
SOUTH-EAST Region	1.3	6.6	-	-	11.3	24.4	30.8	21.6	5.9
WEST Region	6.1	24.4	23.3	25.2	39.3	73.9	78.0	166.8	126.0

Source: [6]

The Central Region ranks first in terms of achieved production of sugar beet. This was determined by the large areas attracted in culture and by the high average production per hectare. In the Central Region the highest production was registered in 2014 (587,100 tons). The smallest production of sugar beet production in this region was 232,100 tons (2008). In 2015, sugar beet production in the Central Region recorded an increase of 40% compared to 2007. In the North West Region, in 2015, was encountered a decrease in production of sugar beet by 12.9%. This was mainly due to reduction of sugar beet acreage. As expected, very small productions were recorded in the West Region and in South-East Region.

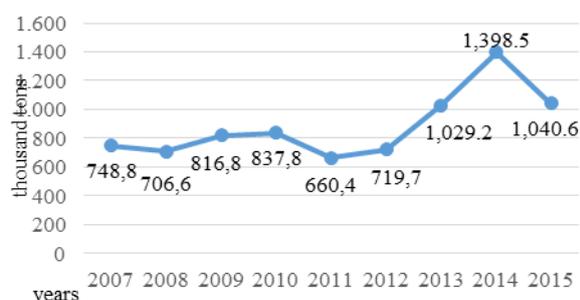


Fig. 2. The dynamics of sugar beet production in Romania

Source: [6]

In 2015, the sugar beet production in the Central Region recorded an increase of 40% compared to 2007. In the North West Region, in 2015, was recorded a decrease in production of sugar beet by 12.9%. This was mainly due to the reduction of sugar beet acreage. As expected, very small productions were recorded in the West Region and in the South-East Region. The sugar beet production achieved nationwide, is taken up and processed by the four sugar factories, namely: Roman, Ludus, Oradea and Bod. [14]

The average production per hectare of sugar beet has a major importance, in terms of total production achieved nationwide. In the data presented, we see that, the average production per hectare has fluctuated from year to year (Table 3 and Fig. 3). In Romania, in 2015, the average production per hectare of sugar beet, has registered an increase of 50.1% compared to 2007. The highest yield per hectare in Romania, was registered in 2014 (44,711 kg/ha). This average of sugar beet production achieved in 2014 is below the average in the European Union (74 tons per hectare). In 2014, England has achieved the highest average production of 96 tons per hectare. [8] According to official data published in 2014, has been registered the highest production per

hectare of sugar beet in our country's history. It must be specified that, in 2014, some counties in Romania have achieved higher average production of sugar beet compared with the average achieved nationwide. Most representative of these counties are: Arad (+36.1%); Mureş (+22.1%); Galaţi (+20.8%); Sibiu (+11.1%) and Neamţ (+7.2%). [9]
 At the level of development regions, in 2015,

were recorded increases compared with 2007. The highest average production per hectare of sugar beet has been recorded in 2015 in the West Region (42,510 kg/ha). The smallest average production per hectare in 2015, was achieved in North-East Region (35,130 kg/ha).

Table 3. Average production per hectare of sugar beet achieved in the main producing regions of Romania (kg/ha)

Specification	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015/2007 (%)
Romania	26,065	34,564	38,296	38,036	35,103	26,363	36,569	44,711	39,135	150.1
NORTH-WEST Region	33,196	41,559	43,995	51,871	40,131	28,961	35,631	42,276	38,727	116.6
CENTRAL Region	29,077	33,854	41,372	33,434	34,495	27,254	39,316	48,921	42,232	145.2
NORTH-EAST Region	20,345	29,714	30,819	34,038	31,026	23,153	33,940	38,378	35,130	172.6
SOUTH-EAST Region	5,379	44,898	-	-	49,706	30,661	38,527	43,982	39,953	742.7
WEST Region	13,241	38,087	36,476	44,859	49,829	30,337	34,085	54,093	42,510	321.0

Source: [6]; own calculations

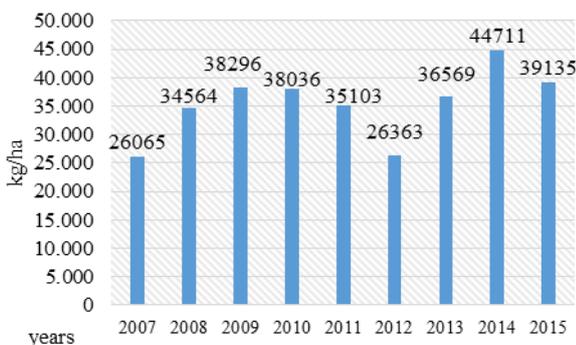


Fig. 3. The dynamics of average production of sugar beet per hectare nationally and by region of development (kg/ha)

Source: [6]

Production costs per hectare for the sugar beet depend on a number of factors:

- Production technology used;
- The cost of production factors;
- The cost of labor;
- Average productivity level. [5]

The average acquisition price for the sugar beet nationally and by region of development

is presented in Table 4 and Fig. 4. In Romania, the average acquisition price for the sugar beet, in 2007-2009, has been framed on an uptrend. In 2010, we are witnessing a price decrease compared to 2009, by 7.7%. In 2011, there was an increase, compared to 2010, with 41.6%. Between 2011-2017, the average acquisition price for the sugar beet remained constant (0.17 Euro/kg). In 2014, it is registered a price decrease compared to 2013 (- 5.9%). In the interval, 2014-2015, the price remained stable at 0.16 Lei/kg. Nationally, in 2015, there was an increase in the average price of acquisition, with 77.7% compared to 2007. At the level of development regions in 2015 compared to 2007, there were increases in the average purchase price for the sugar beet between 33.3%-150%. The largest increase has been registered in the North-East Region, from 0.08 Lei/kg (2007) to 0.2 Lei/kg (2015).

Table 4. The average acquisition price for the sugar beet by development regions in Romania (RON/kg)

Specification	2007	2008	2009	2010	2011	2012	2013	2014	2015	2015/2007 (%)
Romania	0.09	0.11	0.13	0.12	0.17	0.17	0.17	0.16	0.16	177.7
NORTH-WEST Region	0.09	0.11	0.12	0.12	0.16	0.15	0.16	0.13	0.12	133.3
CENTRAL Region	0.09	0.11	0.13	0.12	0.18	0.18	0.17	0.15	0.13	144.4
NORTH-EAST Region	0.08	0.08	0.13	0.1	0.17	0.17	0.18	0.19	0.2	250.0

Source: [6]; own calculations

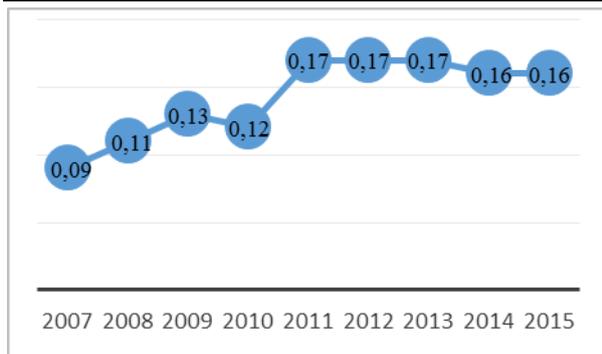


Fig. 4. Dynamics of average purchase prices for the sugar beet in Romania (RON/kg)
 Source: [6]

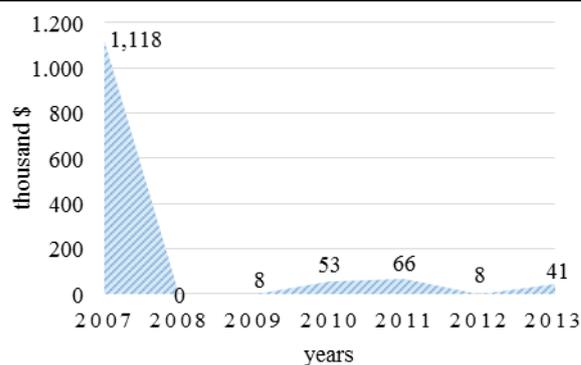


Fig. 6. Dynamics of valuable imports of sugar beet in Romania
 Source: [10]

Quantitative and valuable imports of sugar beet, in the 2007-2013 period had dealt with different developments from one year to another (Figure 5 and 6). The largest imported amount was 2,670 tons (2007). In 2008, according to official data, there were no imports of sugar beet. In 2013, the quantitative imports of sugar beet decreased heavily, reaching 111 tons. This situation demonstrates that, Romania produces enough sugar beet, in order to obtain sugar for consumption.



Fig. 5. Dynamics of quantitative imports of sugar beet in Romania
 Source:[10]

Regarding the imports value of sugar beet in Romania for the period 2007-2013, it emerges, fluctuated from time to time. The most substantial imports value were recorded in 2007 (1,118 thousand \$). The lowest imports value was recorded in 2009 and 2012 (8.0 thousand). In 2013, imports were very low value (41.0 thousand \$), compared to 2007.

In Romania, the cultivation of sugar beet is supported through various forms of assistance, such as: the single area payment scheme, payment for young farmers, payment for agricultural practices beneficial for the climate and to the environment "greening payment", redistributive payment, simplified scheme for small farmers, coupled support scheme, transitional national aids, within the budgetary provisions allocated to MARD. [13].

In order to increase competitiveness of the productive and marketing sector of sugar beet, specialists in the field recommend the following:

- Use of monogerm varieties;
- Use of treated and pelleted seed;
- Reducing the use of pesticides according to EU regulations;
- The concentration of cultivated areas around the sugar factories, etc. [15]

CONCLUSIONS

After analyzing the production and marketing sector of sugar beet in Romania resulted the following:

- The area cultivated with sugar beet nationwide has decreased in 2015 (- 7.5%) compared to 2007 and at the regional development level has progressed differentiated from one year to another;
- Total production of sugar beet increased from 748 800 tons (2007) to 1040.6 thousand tons (2015). 2014 has been marked by the achievement of the largest production of sugar beet (1,398.5 thousand tons) in the analyzed

period;

-The average production per hectare of sugar beet has registered an increase in 2015 (+50.1%) compared to 2007. In 2014, it recorded the highest average production per hectare of sugar beet, of 44,711 kg / Ha. This average production achieved per hectare is below the average achieved at EU level. In terms of average production per hectare of sugar beet, at the level of development regions, in 2015, we had: the most significant production (42,510 kg/ha) in the Western Region and the lowest production (35,130 kg/ha) in North-East Region;

-Average acquisition price for the sugar beet increased in 2015 (+77.7%) compared with 2007;

-Quantitative and valuable imports have evolved differently from one period to another.

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