

## CHANGES AND TRENDS OF CORN PRODUCTION IN ROMANIA

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### Abstract

The aim of this paper is to emphasize the main trends on the Romanian corn market. Corn market has a particular importance because of its contribution to feed people and livestock, on the one hand, and, on the other hand, ensure the income for the farmers from export. Using quantitative statistical methods, the paper proposes an economic analysis of corn market in the period 2010-2014. This analysis shows that Romania cultivates large areas with corn, ranking on the first place among European Union countries. Also, in Romania the corn has the highest average production comparatively with the other cereals. The corn remains a key element in Romanian agriculture structure, given that is more increasingly required for export in order to produce biofuels.

**Key words:** average production, corn, market, Romanian trade

## INTRODUCTION

The corn is a cereal used in human nutrition, animal feed and as raw material in various industries. It must also mention a number of features which demonstrate the importance of maize crop. Literature review presents essential features for corn such as: ecological plasticity, cultivating on surfaces and in different climatic conditions; it is resistant to drought and high temperatures; shows a small number of diseases and pests; capitalize on a high percentage of mineral fertilizers and organic ones; total mechanization of culture; shows a high coefficient of multiplication, achieving increased production (with 50% higher than other cereals); is a good plant for most crops. [10]

Because of its high yields, corn is cultivated for ensuring food security of growing population world wide. [5, 6]

Currently, corn holds first place worldwide among cultivated crops. According to official data published in 2014 were 178 million hectares cultivated with maize, while production achieved was 991 million tons. Approximately 60% of production is destined

for feed sector. Also, more than half of the corn surfaces are in China; U.S., Brazil and the EU-28. A significant amount of corn, namely 144 million tons is used for the production of bioethanol, which is a source of renewable energy and 100% bio. It is derived entirely from biological products and has a neutral impact on the environment. In 2014, in countries of European Union were cultivated with corn 9.5 million hectares. In Europe, the main producing countries in 2014 were: Ukraine (4.4 million ha); Russia (2.5 million hectares); Serbia (1.0 million hectares). Romania is a country with a tradition of producing maize both for the domestic market but also for export. Through the share on which it owns in land use, as well as the influence it has in relation to other agricultural or economic branches, corn is the basic crop of Romanian agriculture.[3, 15,16]

## MATERIALS AND METHODS

In order to analyze the corn market in Romania it was started from the evolution of corn in the Romanian agriculture. The analysis was made at the national level and at

the development regions from the period 2010-2014. It was into consideration relevant indicators such as surface, average and total production, average price, export and import. The statistical data used in this study were taken from the Ministry of Agriculture and Rural Development and National Institute of Statistics. To get an overview of the corn in Romanian agriculture were consulted more specialized materials.

## RESULTS AND DISCUSSIONS

In the period 2010-2014, the surface cultivated in Romania with corn was variable what getting to different production. At the national level and on development regions the evolution of corn surface is presented in Table 1. In 2014, the surface with corn represented 45.9% from total surface. At the national level, corn surface increased by 19.7% in 2014 compared with 2010. The lowest surface was recorded in 2010 (2,098,394 ha) and the largest one was in 2012 (2,730,157 ha). [2, 4]

Also, on the regions remains generally rising trend for the same area in 2014 compared to 2010. It finds one exception for Bucharest-Ilfov Region. In this region in 2014, corn cultivated recorded a decrease of 21.6% compared to 2010. The largest areas cultivated with corn are in: South East; South-Muntenia and North-East Region. In these regions the area cultivated with corn varies from 335,873 to 544,146 ha. In 2012, South - Muntenia, held a 19.9% from all area. The small areas are in in Bucharest-Ilfov Region, when the areas have from 7,305 to 12,501 ha. In 2012, this region has held a share of 0.26% of the total area cultivated at the national level. In 2014, Romania took first place in terms of area with maize. This advantage is not found in the production realized due to a lower yield. In 2014, European Union countries stood out as great cultivators of corn: France (1,771.7 ha); Hungary (1,185.0 ha); Italy (678.2 ha); Germany (481.3 ha). [12]

able 1. Corn surface in Romania and by Region (ha)

Specification	2010	2011	2012	2013	2014	2014/2010 (%)
Romania	2,098,394	2,589,667	2,730,157	2,518,268	2,512,809	119.7
NORTH-WEST Region	256,454	239,673	237,459	256,501	265,360	103.4
CENTER Region	131,575	144,772	160,100	149,846	153,338	116.5
NORTH-EAST Region	428,878	463,941	494,583	453,051	455,280	106.1
SOUTH-EAST Region	335,873	515,777	500,112	481,659	469,681	139.8
SOUTH-MUNTEANIA Region	391,651	479,875	544,146	484,636	462,541	118.1
BUCURESTI - ILFOV Region	12,501	8,663	7,305	10,387	9,804	78.4
SOUTH-WEST OLTEANIA Region	276,396	386,455	414,269	346,643	349,284	126.3
WEST Region	265,066	350,511	372,183	335,545	347,521	131.1

Source: [11]; own calculations

Corn production is very important in order to ensure demand for animal feed, but also for people consumption. Table 2 shows the total production of corn made at the national level and by region in 2010-2014. National production of corn increased from 9,042,032 tons (2010) to 11,988,553 tons (2014). In 2014 corn production in Romania increased by 32.5% compared to 2010. It finds that, in the analyzed period was achieved maximum

production in 2014. The lowest production was recorded in 2012 (5,953,352 tons). Low productions was obtained in 2012 were due to prolonged drought and also the lack of efficient irrigation. [7]

Significant productions are obtained in South Muntenia; North-East Region and in South East. At region level was increased corn production in 2014 comparatively with 2010. The largest corn production was 2,519,407

tons (2013) conducted in South Muntenia. Production in this region represents 22.2% of total corn production nationwide. In Bucharest-Ilfov Region is the lowest recorded production which varies between 12,555 tons (2012) and 52,475 tons (2014). Production of corn in the Bucuresti-Ilfov region represents 0.43% of the output nationwide in 2014. With

regard to the position held by Romania, the top corn producing countries, it is necessary to highlight that in 2014 was ranked second after France and on the following positions are Hungary (9,168.8 thousand tons), Italy (8,332.7 thousand tons); Germany (5,142.1 thousand tons); Spain (4,692.0 thousand tons); Poland (4,468.4 thousand tons).

Table 2. Corn production in Romania and by Regions (ton)

Specification	2010	2011	2012	2013	2014	2014/2010 (%)
Romania	9,042,032	11,717,591	5,953,352	11,305,095	11,988,553	132.5
NORTH-WEST Region	1,096,326	1,060,818	648,234	1,094,982	1,226,272	111.8
CENTER Region	582,564	675,837	406,965	644,116	789,254	135.4
NORTH-EAST Region	1,664,395	1,966,518	977,220	2,057,116	2,261,309	135.8
SOUTH-EAST Region	1,456,742	2,454,524	839,806	2,055,168	2,127,758	146.0
SOUTH-MUNTEANIA Region	1,794,856	2,381,534	1,388,692	2,519,407	2,449,250	136.4
BUCURESTI - ILFOV Region	49,754	38,721	12,555	48,989	52,475	105.4
SOUTH-WEST OLTEANIA Region	1,189,394	1,569,294	604,181	1,475,745	1,444,982	121.4
WEST Region	1,208,001	1,570,345	1,075,699	1,409,572	1,637,253	135.5

Source: [12]; own calculations

The average production is an important indicator for the farmer, because it leads directly to determining the profitability of crops. In order to increase profitability it is desirable that average production will be larger. Table 3 presents the evolution of yields for corn, at country level, but also in the regions development. In 2012, the average production was 2,180 kg / ha, approximately by three times lower than the average achieved at EU level of 6,150 kg / ha. [8, 13] In 2014, it recorded a growth of average production for corn by 10.6% compared to 2010, actually the best performance was achieved by Romania in 2014 (4,770 kg / hectare). For seven of the eight regions was an increase in yield for corn in 2014 compared to 2010, the only region not included in the previously enunciated trend is South-West Oltenia. In

this region the yield fell by 3.9% in 2014 compared to 2010. The best performance was recorded in Bucharest-Ilfov Region, in 2014 (5,352 kg / ha). This represents 87.0% of the average yield achieved at EU level in 2012. It is remarkable that in 2014 it recorded the best production of corn and best efficiency of the national level. These results could have been greater if farmers had access to an inflexibility of irrigation and appropriate technologies. According to the trade, the increase would have been even 30%. In European Union the best average production was in Spain (11,238 kg/hectar); Austria (10,792 kg/ha); Germania (10,684 kg/ha); Franta (10,383 kg/hectar); Italia (9,712 kg/hectar); Slovakia (7,931kg/hectar); Ungaria(7,737kg/hectar). [12]

Table 3. Corn average production in Romania and by region (kg/hectar)

Specification	2010	2011	2012	2013	2014	2014/2010 (%)
Romania	4,309	4,525	2,180	4,488	4,770	110.6
NORTH-WEST Region	4,275	4,425	2,730	4,269	4,621	108.0
CENTER Region	4,428	4,668	2,542	4,299	5,147	116.2
NORTH-EST Region	3,881	4,239	1,976	4,541	4,967	127.9
SOUTH-EAST Region	4,337	4,759	1,677	4,261	4,526	104.3
SOUTH MUNTEANIA Region	4,583	4,963	2,552	5,199	5,294	115.5
BUCURESTI – ILFOV Region	3,980	4,470	1,719	4,716	5,352	134.4
SOUTH-WEST OLTEANIA Region	4,303	4,061	1,458	4,257	4,137	96.1
WEST Region	4,557	4,480	2,890	4,201	4,711	103.3

Source: [11]; own calculations

According to official data published in Romania corn product benefit by various forms of support, such as direct payment schemes; national transitional and aid for the fuel consumed in agriculture. Table 4 presents the evolution of average purchase prices for corn in Romania, but also by region for 2010-2014. Nationally, in 2014, the price slightly compared to 2010. The highest price was recorded in 2012 (0.87 Euro / kg), while the lowest price was in 2010 (0.57 Euro / kg). The high prices in 2012 is explained by the fact

that this year was achieved the lowest production, given strong demand domestically. The development regions are found: a price increase in 2014 compared to 2010, for six regions and for the North-West and West region falling prices. This decrease in average purchase prices for grain maize is between 5.1%-6.8%. The price decline is mainly due to increasing production and declining consumer demand. Due to the low prices farmers from Romania made small profits, which reflect directly on investments.

Table 4. Corn average purchasing prices in Romania and by regions (lei/kg)

Specification	2010	2011	2012	2013	2014	2014/2010 (%)
Romania	0.57	0.79	0.87	0.74	0.61	107.0
NORTH-WEST	0.59	0.85	0.84	0.73	0.56	94.9
CENTER Region	0.59	0.94	0.95	0.93	0.62	105.0
NORTH-EAST Region	0.57	0.79	0.83	0.78	0.58	101.7
SOUTH-EAST Region	0.52	0.77	0.89	0.73	0.60	115.3
SOUTH-MUNTEANIA Region	0.64	0.82	0.98	0.85	0.67	104.6
BUCURESTI – ILFOV Region	0.54	0.78	0.85	0.68	0.67	124.0
SOUTH-WEST OLTEANIA Region	0.57	0.74	0.89	0.73	0.60	105.2
WEST Region	0.59	0.69	0.85	0.74	0.55	93.2

Source: [12]; own calculation

Production of corn in Romanian is directed to the domestic consumers and foreign markets. A positive aspect for the Romanian economy is the exports of corn are significantly higher than imports. Evolution of foreign trade, in the period 2010-2014, is presented in Table 5. In 2014, the amount of corn exported from

Romania increased by 80.5% compared to 2010. This was made possible thanks to increased production and increased demand on the foreign market. The quantity imported increased from 430,548.7 tons (2010) to 471,204.1 tons (2014). In 2014, imports increased by 9.4% compared to 2010.

Table 5. Foreign trade of corn in the period 2010-2014 (tons)

Specification	2010	2011	2012	2013	2014	2014/2010 (%)
Export	2,054,488.2	2,310,665.1	2,272,649.4	3,233,350.7	3,708,953.0	180.5
Import	430,548.7	373,881.2	698,581.3	284,155.7	471,204.1	109.4

Source: [14] ; own calculation

Table 6 presents exports and imports value for corn in Romania, in the period 2010-2014. Analysis of value of exports highlights a growing trend. It finds an increase of exports from 388,317.9 thousand Euro (2010) to

755,147.2 thousand Euro (2014). This increase in the value of exports is placed primarily on account of the considerable quantities of corn exported.

Table 6. Trade balance of corn, period 2010-2014 (thousands Euro)

Specification	2010	2011	2012	2013	2014	2014/2010 (%)
Export	388.317,9	578.710,3	596.517,6	730.995,2	755.147,2	194,4
Import	89.426,9	113.221,6	191.133,1	121.343,3	123.510,5	138,1

Source: [15]; own calculation

The value of imports increased from 89426.9 thousand Euro (2010) to 123,510.5 thousand Euro (2014). One can easily see that for the corn trade balance is positive for the entire analyzed period. According to official data, in 2011 Romania was ranked on the eighth place in the ranking of world exporters. Romania share, in the year 2011, world exports of corn was 2.44. Romania has exported the largest quantities of corn in Hungary; Spain; Egypt; Syria and Turkey. To exports Romania occupied a position 41 in 2011, with a 0.46% share in world imports of corn. [9]

## CONCLUSIONS

In conclusion, corn market in Romania is dynamic. The economic analysis of corn showed positive trends of all indicators. Hence, surface with corn increased in the period 2010-2014, with 19, 7%. This increasing leads to higher total production on nationally, but also on development Regions. Increased average production per hectare, as a result of management and technologies, what means a increasing of efficiency, but not equally with efficiency at EU level, because of differences between levels of average production. Also, noticed higher exports than import the entire period, a quantitative significant increase in exports, with 80.5% in 2014 compared to 2010 and increasing of imports in a small measure of just 9.4% in 2014 compared to the base year. Furthermore, noticed that increased exports value with 94.4% in 2014 compared to 2010. A positive balance of trade balance was registered for the

period 2010-2014 by 56.3%. The great importance of corn production to ensure rational nutrition can be noticed, especially the product contain in proteins, between 9.07%-13.64%. [1]

Future direction of corn markets should be directed towards encouraging the consumption and export, for which large quantities of domestic production are needed. In order to increase competitiveness of corn production are necessary investments in irrigation systems; application of new technologies; appropriate fertilization; reducing costs per hectare; a higher corn processing.

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