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STUDY ON GRAIN MARKET IN THE WORLD

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Abstract

In the global economy, the market occupies a representative place because the grain is grown on a large area and it is important both to ensure food security and safety, but also for animal feed. In order to accomplish this study we have used certain indicators, of which the most representative are: acreage, production obtained, yield per hectare, food consumption, imports, exports and last but not least the price. World market of cereals has increased in the past decade due to increased consumption of cereals, especially in less developed countries economically. World grain market evolution in the analyzed period was disrupted on one side by the global economic crisis and on the other side by bad weather changes that occur on a global scale and have had a negative impact on acreage, production achieved, prices etc. According to forecasts the global market for cereals is expected to increase trade with cerereale, while diminishing stocks.

Key words**:** *cereals total production acreage, world market, imports, exports, prices*

INTRODUCTION

Cereals are important because they hold a significant place in human nutrition, provide the fodder for livestock and last but not least is a raw material for many industries value [2]. According to expert studies cereals are high in dextrose, showing the energy value of all plant products, supplying about 65% of your daily calories and 45% of protein [3]. Cereals are grown on large surface worldwide. According to data from FAO, the world's arable land, estimated at 1.4 to 1.6 billion hectares, over half is occupied by cereals.

In 1992, U.S. Departement of Agriculture created the food pyramid (Fig. 1), whose main purpose was to represent the share held by each food group in all foods eaten in a single day. According to this model, the grain is positioned at the bottom, with bread and pasta [1]. According to data provided by the UN, for every inhabitant of the planet are produced on average 152 kilograms of grain per year, which is 0.5 kg / day [14]. But although cereal production is practically sufficient globally, approximately 870 million people are malnourished. The main problem for now but for the next period is represented by global food security, given that population grows exponentially in certain regions of the globe, while resources diminish significantly.

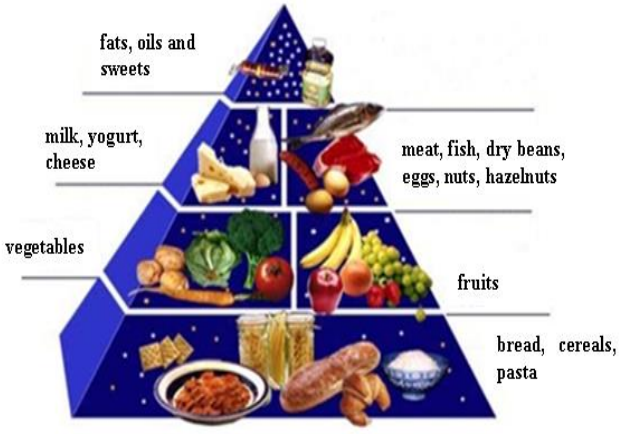

Fig. 1. Food Pyramid
Source: at the U.S. Departement of Agriculture

MATERIALS AND METHODS

In order to accomplish this study, it was consulted literature and were used statistics provided by the U.S. Department of Agriculture, Food and Agricultural Policy Research Institute, Eurostat and FAOSTAT. The paper presented and analyzed a number of global indicators, such as acreage, total

cereal production, the average yield per hectare of grain consumption, net exports and FOB prices. This research study has materialized world grain market for the period 2007-2011.

RESULTS AND DISCUSSIONS

Worldwide, grain market is an important segment of the food industry, providing a considerable part of the population needs food [5]. The most widely cultivated cereal in the world are wheat and corn, but do not ignore the importance of other cereal crops. The main crops cultivated areas had a fluctuating trend from one period to another [4]. This evolution is shown in Table 1 and Figure 2, where it can be seen that wheat acreage in 2011 recorded an increase of 2.6% compared to 2007 - the year considered. For the period analyzed, the lowest wheat acreage was 218,610.22 thousand hectares, in 2007, and most of 226,898.95 thousand hectares was recorded in 2009 [7].

Table 1. The surface evolution of the main cereal crops worldwide in 2007-2011 (thousand hectares)

Crops	2007	2009	2011	2011/2007 (%)
Wheat	218.610,22	226.898,95	224.353,08	102,6
Barley	57.486,34	55.646,69	52.501,41	91,3
Corn	161.842,17	157.568	165.236,98	102,09
Sorghum	42.863,54	40.613,74	43.938,62	102,5

Source: own calculation on the basis of data from following data bases: FAPRI, EUROSTAT, USDA, FAOSTAT (2007-2011) [8], [9], [10], [12]

Like observation for 2025 is forecast an area of 224,679.66 thousand hectares cultivated with wheat, which is basically an area almost equal to that recorded in 2011. For maize is an increase of 2.09% in 2011 compared to 2007. The lower corn acreage was recorded in 2009, being 157,568 hectares thousand and largest cultivated area was recorded in 2011, 165,236.98 thousand hectares. Surface projected for 2025 is 165,931.11 thousand hectares planted to corn.

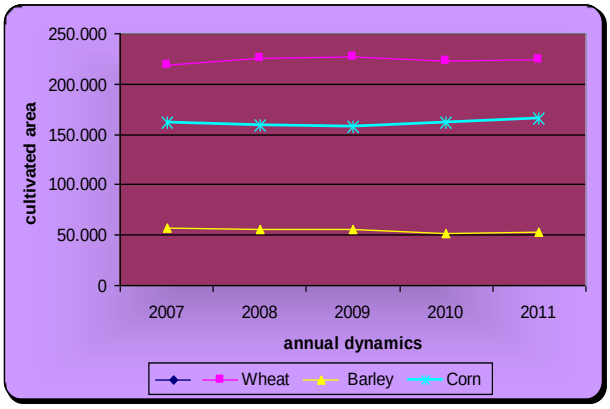

Fig. 2. Dynamics of surface evolution (thousand hectares)

Sorghum crop has registered an upward trend in 2011 compared to 2007, by 2.5%. Regarding this culture are predicted an increase in cultivated area, from Thousand 43,938.62 hectares in 2011, to 44,113.98 thousand hectares in 2025. Of the four species of crops analyzed, the barley acreage declined by 8.7% in 2011 compared to 2007. However, it provides an increase in area planted with barley in 2025, compared to 2011, but this increase does not equate acreage in 2007. Evolution of total grain production worldwide is presented in Table 2 and in Figure 3 are presented the dynamics of grain production worldwide, for the period 2007-2011. According to data from the Food and Agricultural Policy Research Institute, world production for major cereal crops registered an upward trend in 2011 compared to 2007.

Table 2. The evolution of grain production worldwide in 2007-2011 (thousand tons)

Crops	2007	2009	2011	2011/2007 (%)
Wheat	613.814,14	685.059,31	671.521,43	109,4
Barley	133.462,85	150.099,17	136.754,31	102,4
Sorghum	66.874,61	59.535,81	67.495,13	100,9
Corn	801.573,89	821.105,68	864.376,44	107,8

Source: own calculation on the basis of data from following data bases: FAPRI, EUROSTAT, USDA, FAOSTAT (2007-2011) [8], [9], [10], [12]

The largest increase was recorded in wheat by 9.4% compared to the reference year and the smallest increase was observed for sorghum production, value of 0.9%.

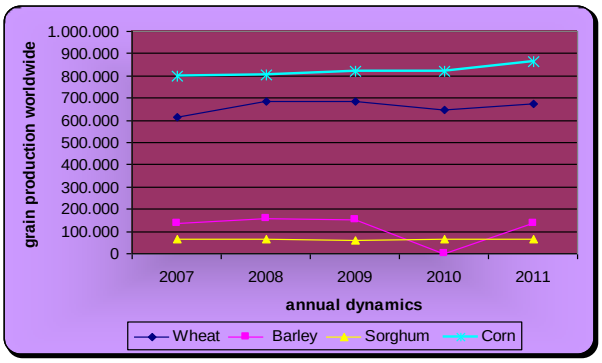

Fig. 3. Dynamics of grain production worldwide (thousand tons)

Estimates for 2025 indicate an increase of grain production for the main categories, namely:

-Wheat: production will increase from 671,521.43 thousand tons (corresponding to 2011) to 740,901.88 thousand tons;

-Corn: it will grow from 864,376.44 thousand tons (corresponding to 2011) to 1041015.55 thousand tons;

-Sorghum: will see an increase from 67,495.13 thousand tons (corresponding to 2011) to 79,123.45 Thousand tons;

-Barley: growth will be provided at 136,754.31 thousand tons (corresponding to 2011) to 165,542.01 thousand tons.

According to studies, the main factors that will underpin production growth are represented by favorable weather conditions and the efficient use of inputs.

In Table 3 are presented average yields for major cereals, recorded worldwide and in Figure 4 are presented the dynamics of the average production.

Analyzing the results, shows an increase in average yields per hectare in 2011 compared with 2007 crops of wheat, corn and barley. Regarding the sorghum crop is recorded a decrease of 1.3%. production per hectare achieved.

Table 3. The average production per hectare for major cereal crops in 2007-2011 (tons per hectare)

Crops	2007	2008	2009	2010	2011	2011/2007 (%)
Wheat	2,81	3,04	3,02	2,9	2,99	106,4
Barley	2,32	2,78	2,7	2,42	2,6	112,0
Sorghum	1,56	1,53	1,47	1,58	1,54	98,7
Corn	4,95	5,05	5,21	5,11	5,23	105,6

Source: own calculation on the basis of data from following data bases: FAPRI, EUROSTAT, USDA, FAOSTAT (2007-2011) [8], [9], [10], [12]

For barley crop has registered the highest average production per hectare increased by 12% in 2011 compared to 2007.

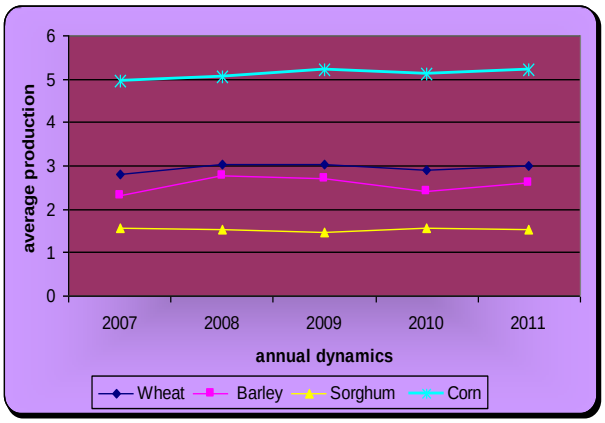

Fig. 4. Dynamics of the average production (tons per hectare)

According to data provided by FAPRI and USDA for 2025 is forecast following average yields for crops analyzed:

-Wheat: 3.03 tons per hectare, compared with 2.99 tons per hectare (2011);

-Corn: 6.27 tons per hectare, compared with 5.23 tons per hectare (2011);

-Barley: 3.03 tons per hectare, compared to 2.6 tons per hectare (2011);

-Sorghum: 1.79 tons per hectare, compared with 1.54 tons per hectare (2011).

For all crops is estimated to average yield increase will be due to the application of modern production technologies.

Total consumption of grain for the world is presented in Table 4. Reveals a differentiated evolution of global grain consumption for the period. Thus, wheat consumption is an increase of 8.4% in season 2011/2012 season to the 2008/2009 and for cultivation of corn this increase is 12.08%. These increases are due to the change of food consumption pattern of the population and world population growth, and reducing revenues during the economic crisis. In this situation, people turned to food with affordable prices. Were recorded decreases in consumption of barley (-5.6%) in 2011/2012 versus 2008/2009 season, and in terms of the consumption of sorghum decreased by 12.6% in season 2011/2012 season against reference.

Table 4. The evolution of total grain consumption worldwide in 2007-2011 (thousand tons)

Crops	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	2011/2012 / 2008/2009 (%)
Wheat	643.500	653.858	655.107	698.033	108,4
Barley	143.932	144.743	135.856	135.944	94,4
Corn	784.504	825.527	850.313	879.338	112,08
Sorghum	64.262	56.650	60.812	56.185	87,4

Source: own calculation on the basis of data from following data bases: FAPRI, EUROSTAT, USDA, FAOSTAT (2007-2011) [8], [9], [10], [12]

Were recorded decreases in consumption of barley (-5.6%) in 2011/2012 versus 2008/2009 season, and in terms of the consumption of sorghum decreased by 12.6% in season 2011/2012 season against reference.
For the period analyzed in this study, we can see a constant ascending trend in grain production used for human consumption (approximately 2kg/cap capita - from 152.3 kg / capita in 2007 to 154.1 kg / capita in 2011). Interestingly, the growth rate of production of cereals used for human consumption was however not correlated with the growth rate of human population density. We can explain this by the fact that consumer behavior is inextricably linked to disposable income, on the one hand, and systemic relationship between needs, consumer traditions, the usefulness of economic assets, education and psychological profile of the consumer, on the other. Basically, the market economy emphasizes the role as promoter of consumer demand economic goods and its main outlet [6].
Grain trade occupies an important place in the global market and its evolution is presented in Table 5.
In the period under review there were significant changes to the structure and size of the grain trade.
From Table 5 result that there is a positive development of net exports of wheat and barley, and maize and sorghum to register a downward trend. Wheat exports increased by 21.9% and barley rose by 2.9% in 2011 compared to 2007.

Table 5. The evolution of world trade in cereals in 2007-2011 (thousand tons) – Net export

Crops	2007	2009	2011	2011/2007 (%)
Wheat	83.907,77	102,015.87	102.351,19	121,9
Barley	15.371,07	17.997,58	15.819,08	102,9
Corn	92.984,97	82.420,97	84.066,34	90,4
Sorghum	9.376,34	6.099,86	6.391,85	68,1

Source: own calculation on the basis of data from following data bases: FAPRI, EUROSTAT, USDA, FAOSTAT (2007-2011) [8], [9], [10], [12]

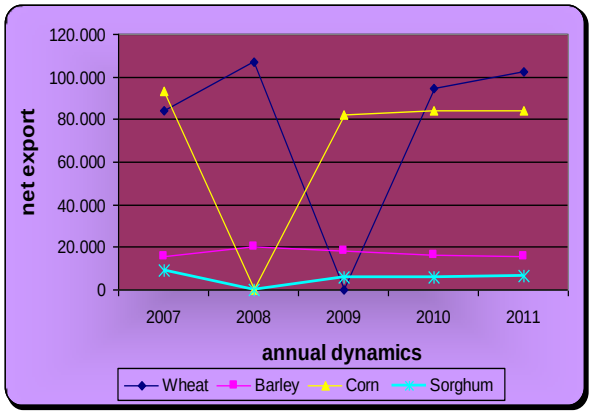

Fig. 5. Dynamics of world trade in cereals (thousand tons)

Global grain trade rebounded after the decline of 1999-2002. Estimates for 2025 indicate an increase in exports for all cereals analyzed from 2011. Currently, U.S. is the largest grain exporter in the world, managed to cover half of the total consumption of corn, about one fifth of the total consumption of wheat and nearly one third of the soy consumption (culture was not analyzed in this study).
Due to the size of U.S. grain exports negative changes are noted when world market cereal production is in decline. Most affected are the prices on the world market, in case the U.S. grain production drops due to bad weather conditions. In terms of world trade in cereals for season 2012/2013 is expected to decrease by 6% to 296 million tons [12].
Cereal prices registered as international market and the major scholarships in 2007-2011 varied depending on the category of cereals (table 6). Thus, for the barley was an increase of 2.3% in 2011 compared to 2007. The highest price was recorded in 2007, when

it reached 340.02 U.S. dollars/tonne [10]. For 2025 is estimated to decrease the price to $ 198.49/tonne. In the case of wheat, sorghum and maize prices have registered a downward trend in 2011 compared with 2007 (fig. 6).

Table 6. The evolution of prices for major cereals, registered in the international market ($/tonne)

Crops	2007	2008	2009	2010	2011	2011/ 2007 (%)
Wheat	340,02	292	213	239,4	270,44	79,5
Barley	200,11	160,14	142,75	165,62	204,75	102,3
Sorghum	216,27	158,29	170,64	215,83	191,87	88,7
Corn	217,71	172,3	162,98	205,9	183,17	85,1

Source: own calculation on the basis of data from following data bases: FAPRI, EUROSTAT, USDA, FAOSTAT (2007-2011) [8], [9], [10], [12]

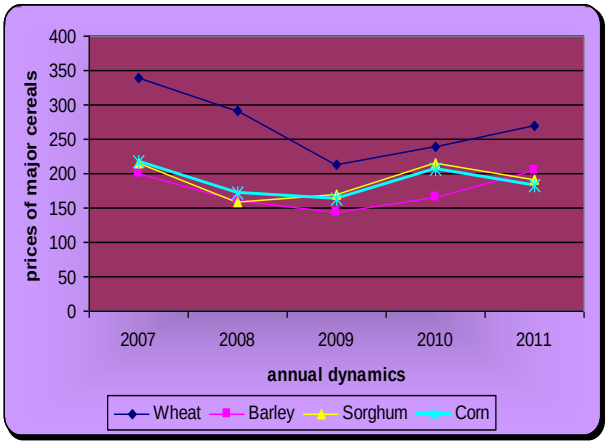

Fig. 6. Dynamics of of prices in 2007-2011 ($/tonne)

This situation is due to the reduction in global stocks, adverse weather conditions resulting in reduced production of grain.

The most significant reduction was found in wheat prices, with 20.5% in 2011 compared to 2007. According to estimates, the price of wheat is going to be reduced in 2025, from $ 260.37 / tonne, compared with a price of $ 270.44 / tonne recorded in 2011. Lower price for wheat is based on the decrease in global demand for grain crop. For maize and sorghum is expected to grow by 4.4% and 29.6% in 2025 compared to 2011.

CONCLUSIONS

Global grain supply came to meet world consumption growth, mainly due to human consumption growth (excess of approx. 250-300 million tons). Study global grain market in 2007-2011 identified several specific issues, such as:

-main areas planted with grain crops have changed from year to year, depending on the species and market evolution; is expected to increase grain acreage in 2025 compared with 2011;

-world grain production has registered an upward trend in 2011 compared to 2007, this favorable trend is mainly correlated with productivity growth, achieving agricultural works best when the application in production activity of new scientific discovery etc.

-the average production per hectare in 2011 compared to 2007 crops of wheat, corn and barley registered a positive evolution, culture sorghum production recorded a decrease in realized per hectare, up 1.3%;

-the total consumption of cereals recorded a different cereal crops, such as: increases for wheat and corn, respectively reductions for barley and sorghum crops;

-wheat and barley exports registered an upward tedinta compared to corn and sorghum exports recorded a downward trend;

-positive trend of net exports of wheat and barley, respectively negative evolution for maize and sorghum;

-grain prices on the international market fluctuated depending on the category of cereals, climatic conditions, the evolution of the global crisis, the stock levels, the demand for human consumption and for livestock consumption, but not least, the wheat market and the evolution of U.S.

Grain market will occupy a central place in the global economy as it contributes directly to food security of the world population, given that, on the one hand there is an rapid population growth in some regions of the world, on the other hand diminish the available resources and their price increases.

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