

Elena SIMA

*Institute of Agricultural Economics, Romanian Academy
elena.sima2008@yahoo.com*

THE ROMANIAN CEREAL PRODUCTION AT REGIONAL LEVEL

ABSTRACT

The paper presents the development of the cereal sector at regional level and the variation in time of the land areas under cereals, of the cereal production and of the average yields. The evaluation reveals quite a good position for the Romanian cereals. Although representing one of the most important groups of agricultural products in our country, cereal production has a non-uniform evolution throughout the years, the weather conditions, the seed quality and the non-respect of cropping technologies resulting in average yields much below those in the European Union.

In order to delimit the place and role of the cereal sector at the level of each of the “eight development regions”, statistical data were taken into account, referring to the cultivated area and the crop production. Their analysis enables to shape the possibilities for re-orienting the national support to increase the efficiency of those cereal crops for which there is a growing demand at the European and world level.

Key words: cereal, cultivated area, production, regional analysis.

JEL Classification: Q10, Q19.

1. INTRODUCTION

The grain mix in Romania’s agricultural sector is mainly determined by the environmental factors, by tradition and by the agrarian structures. The organization and the development stage of the cereal market represents an important factor for the rural development of our country, in the context in which the harmonious development of a country can never be the result of dispersed initiatives. Thus, as part of an enlarged EU, Romania must contribute with genuine quality cereals to the cereal market, which should comply with the changing conditions. At the same time, the Romanian farmers will have to face, both on the agri-food markets in Romania and in the other EU Member States, the competition from the part of other farmers who practice a performant agriculture from the point of view of the endowment with production factors, allocation and productivity of resources, the competition being extremely tough under product price/quality ratio.

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After 2000, the cereals were cultivated, averagely, on 67.8% of the country's arable area. In each of the eight Development Regions, agriculture has been and it will still be dominated by the cereal cultivation; this situation is determined not only by the relief, climate and soil quality, but also by the population's self-sufficiency needs in the territory. In this context, the paper presents an analysis of the evolutions of the land areas cultivated with cereals, of the production obtained and of the average yields for wheat, rye, barley and two-row barley and maize, in the period 2000-2006, by the eight development regions: South-Muntenia, South-East, South-West Oltenia, North-East, West, North-West, Center and Bucharest-Ilfov.

2. MATERIAL AND METHOD

In order to delimit the place and role of the cereal sector, within the regional and national market, the statistical data were taken into consideration referring to the cultivated area and to the average yields and total production for the main grain cereals: wheat, rye, barley and two-row barley and maize. The period investigated in this study is 2000–2006, taking into account the data from Romania's Statistical Yearbook for the eight Development Regions (South-Muntenia, South-East, South-West Oltenia, North-East, West, North-West, Center, Bucharest-Ilfov). The regional approach to the cereal market permits the the analysis of the Romanian cereal market potential and the promotion of a social and economic policy, which should help to bridge up the regional agri-rural gaps through the diversification of the rural local/regional economies and the investigation of the possibilities for reorienting the national support to increase the efficiency of those cereal crops for which there is growing demand on the domestic and world markets.

3. RESULTS AND DISCUSSIONS

The cereal-based character of the Romanian agriculture (the cereals being cultivated on the whole territory of the country) is determined not only by the population's self-sufficiency need in the territory (under the conditions in which the yearly supply of cereals avoids the wholesale market chain, and the so-called self-consumption of individual farmers is mainly an intermediary feed consumption, as these farmers own about 80% of the animal herds expressed in large livestock units); it is also determined by the good environment conditions (relatively good relief, weather and soil conditions for the growth and development of these crops).

The geographical location, the air circulation, the radiating and thermal energy resources make Romania be included in the great climate belt in the continental temperate zone from the Northern hemisphere where the most productive agricultural regions are located. According to the specialty studies, cereals are cultivated on the whole territory of the country on variable areas.

Table 1
The dynamics of the main cereal grains in the period 2000–2006

	Main cereals	2000	2001	2002	2003	2004	2005	2006
Cultivated areas (mii ha)	Wheat	1940	2546	2297	1735	2296	2476	2013
	Rye	14	12	12	13	22	21	17
	Barley*	412	529	579	330	425	485	332
	Maize	3049	2974	2895	3200	3274	2628	2520
	TOTAL	5655	6295	6038	5542	6265	5866	5114
Average yields (kg/ha)	Wheat	2286	3038	1924	1429	3403	2965	2746
	Rye	1549	2326	1636	1356	2511	2371	2072
	Barley*	2105	2988	2005	1641	3312	2227	2331
	Maize	1603	3066	2902	2993	4441	3952	3565
Total production (mii to)	Wheat	4434,4	7735,1	4421,0	2479,1	7812,4	7340,7	5526,2
	Rye	21,8	28,6	20,1	17,4	55,0	49,0	35,7
	Barley*	867,0	1580,0	1160,4	540,8	1406,0	1079,1	772,9
	Maize	4897,6	9119,2	8399,8	9577,0	14541,6	10388,5	8984,7
	TOTAL	10477,5	18870,9	14356,5	12790,3	24403,0	19345,5	15759,3

* Barley and two-rows barley.

Source: "Romania's Statistical Yearbook", NIS, 2007.

Romania' land area under cereals is distributed by the eight Development Regions (South-Muntenia, South-East, South-West Oltenia, North-East, West, North-West, Center, Bucharest-Ilfov) depending on the specific soil and weather factors of each region, as well depending on the farmers' option (Figure 1).

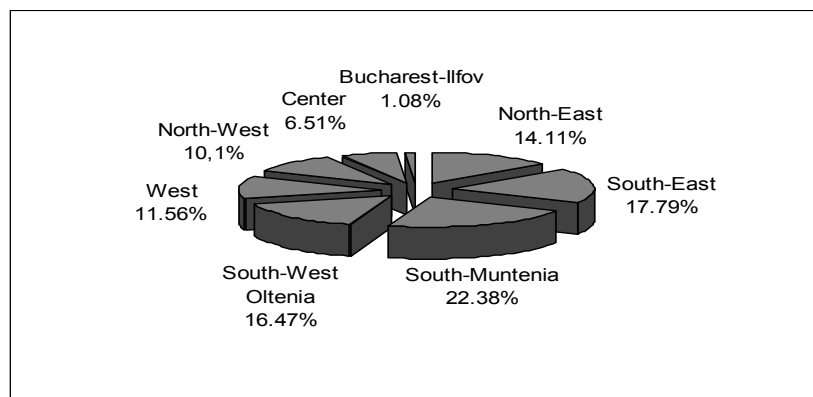


Figure 1. The distribution of land areas under cereals by development regions.

In the investigated period (2000–2006), the South-Muntenia development region cultivated the largest land areas with grain cereals (over 20% of the national area cultivated with cereals), the South-East development region area got close to 20%, the South West Oltenia region exceeded 15% of the total area cultivated with grain cereals in 2004, 2005 and 2006, the North-East region held about 14%, the

West region exceeded 10%, the North-West region held 10%, the Center development region exceeded 5%, and Bucharest-Ilfov cultivated only 2% of the total area cultivated with grain cereals in Romania (Figure 2).

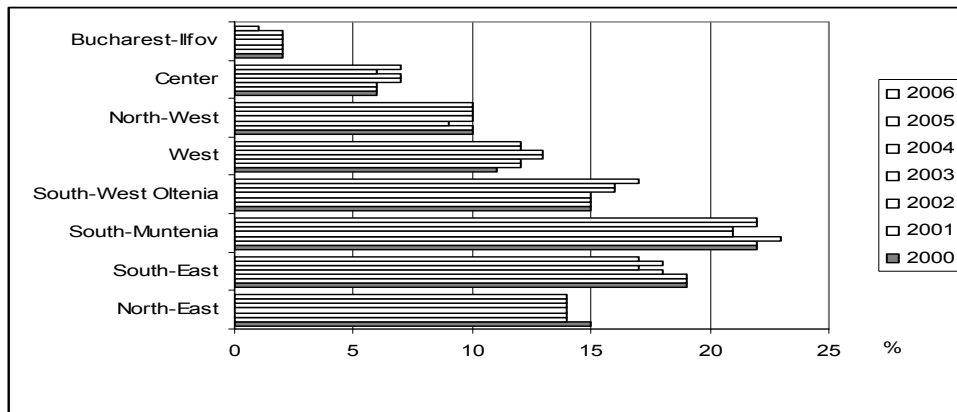


Figure 2. The share of the regional area in total area under cereals.

By regions, **wheat** (an important baking cereal) is cultivated under most different soil and weather conditions, the wheat production being quite satisfactory yields. In the period 2000-2006, over 25% of the total wheat area of Romania was cultivated in South-Muntenia, which obtained over 25% of the total wheat production of Romania (Figure 3).

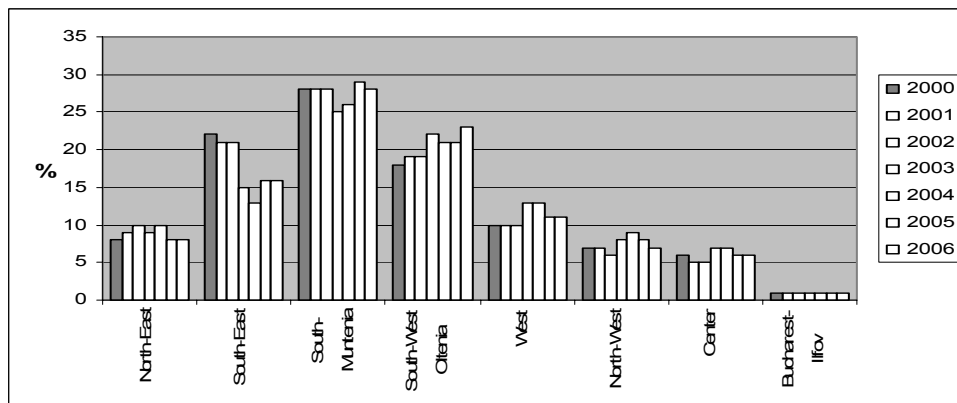


Figure 3. The share of wheat regional areas in total wheat area.

The evolution of total area under wheat reflects the producers' reaction to domestic and world market price; at the same time, it reveals that after a favorable year for wheat, significant smaller areas were cultivated with this crop.

In the investigated period, the wheat harvest experienced different annual variations from one region to another (Figure 4), as follows:

- in the year 2002 the total wheat production was lower in the development region South-West Oltenia, as well as in the development region South-Muntenia;
- in the year 2003, the drought negatively affected the wheat production, mainly in the development regions North-East, South-East and South-Muntenia; yet in the other regions, quite good wheat productions were obtained, with an obvious increase in the development region West, where the wheat production accounted for 28% of the total wheat production of Romania;
- in the last three years of the investigated period, the total production did not experience such great variations, mainly in South-Muntenia and South-West Oltenia.

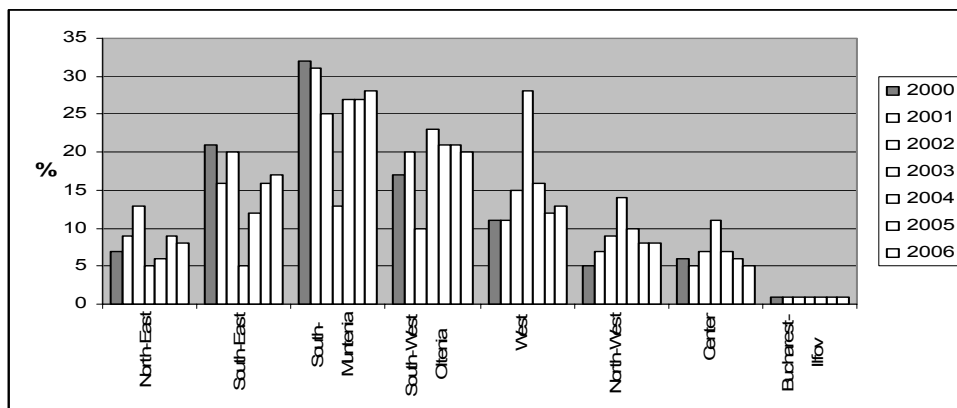


Figure 4. The share of wheat regional production in total production.

The graphic representation of the statistical data on the dynamics of *the average wheat yields* by Development Regions in the period 2000–2006 (Figure 5) reveals the following: average yields under 3500 kg/ha with great annual and regional variations; the smallest yield (490 kg/ha) in the South-East development region in 2003; the highest yield (4000 kg/ha) was obtained in the West development region in 2004; the best and most uniform yields (over 3000kg/ha) were obtained in the West development region; in the last three years of the investigated period, the average wheat yields were relatively good (over 2000 kg/ha).

The best average yields were obtained in the West development region. Nevertheless, the annual variations were smaller not only in the west development Region, but also in the development regions North-West and Center (Figure 5).

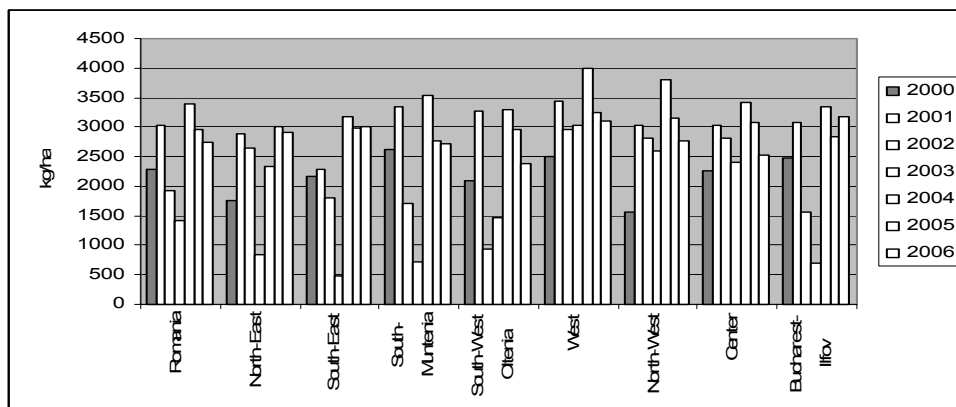


Figure 5. The dynamics of the average wheat yields.

Rye is a small grain cereal, with a nutritive value approximately the same as that of wheat, to which we could add: the high capacity of putting into value the less productive soils, the property of very well putting into value the water reserve of the soil, as the twinning takes place mainly in autumn (the twinning node being closer to the soil surface than that of wheat), the prolonging of the straw takes place very early in spring, at a very high rate, being different, from this point of view, from the winter wheat and barley.

By regions, this crop is cultivated mainly in the following development regions: North-East (that cultivates over 25% of total Romania's area, with small annual variations), South-West Oltenia (where the areas under rye feature variations from one year to another, ranging from 15% to 35% of total area), North-West (where the area in the year 2000 was down to almost 10% of the total area) and Center, where the area under rye in the year 2006 was down by almost 50% compared to that in 2001 (Figure 6).

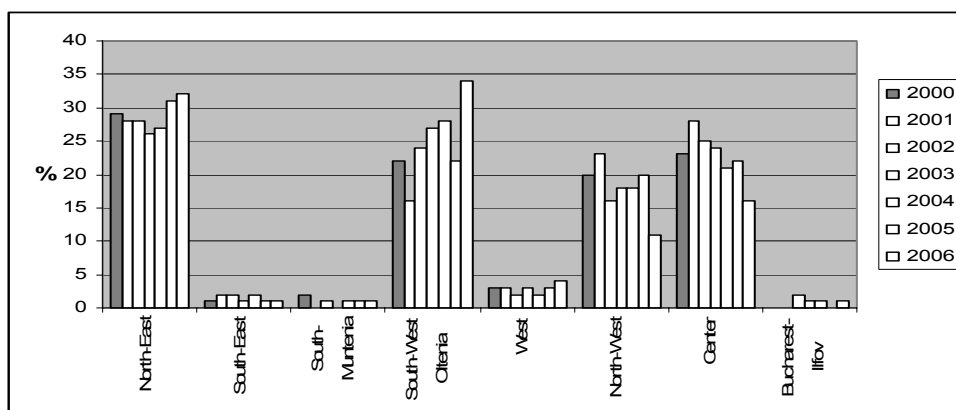


Figure 6. The dynamics of the regional areas in total area under rye.

In the period 2000–2006, the total rye production obtained in the four developing regions featured annual variations, depending on the agricultural and weather conditions, as well as by the technical conditions. Thus, in the year 2002, in South-West Oltenia, the total eye production represented less than 5% of the total rye production in Romania. The North-West development rstands out by relatively constant annual productions, while in the Center development region we can find a strong production decrease in the last three years of the investigated period (Figure 7).

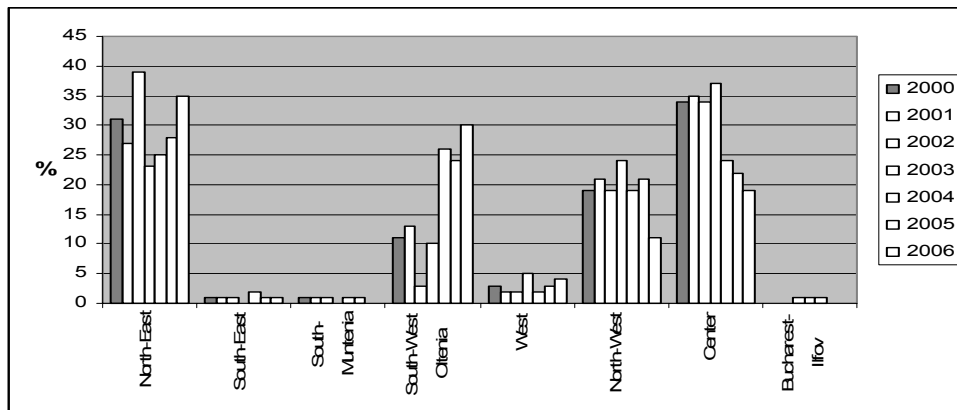


Figure 7. The dynamics of the regional rye production in total production.

The average rye yields were over 2500kg/ha in the regions where the cultivated areas were not significant, such as: South Muntenia in 2004, 2005, 2006, West in 2004 and Bucharest-Ilfov in 2001 (Figure 8).

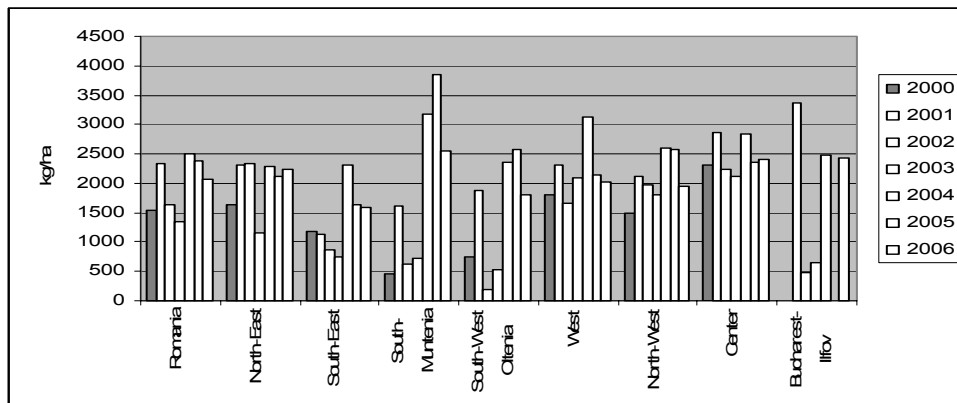


Figure 8. The dynamics of the average rye yields.

Barley and two-row barley are cultivated in Romania on areas exceeding 300 thousand hectares at national level. Out of this area, over 15% is cultivated in the development regions South-East, South-Muntenia and West. The best barley and two-row barley production was obtained in the West development region in 2003, representing 36% of the total production obtained at national level in the respective year. *The dynamics of the average barley and two-row barley yields* is characterized by obvious variations in all the development regions.

The area under barley, cultivated mainly as fodder, was down due to the decrease in the number of livestock units, to small farmers' orientation towards crops with mixed destination (human food and animal feed) etc. The area under two-row barley featured a constant evolution, due to the development of beer industry and malt industry.

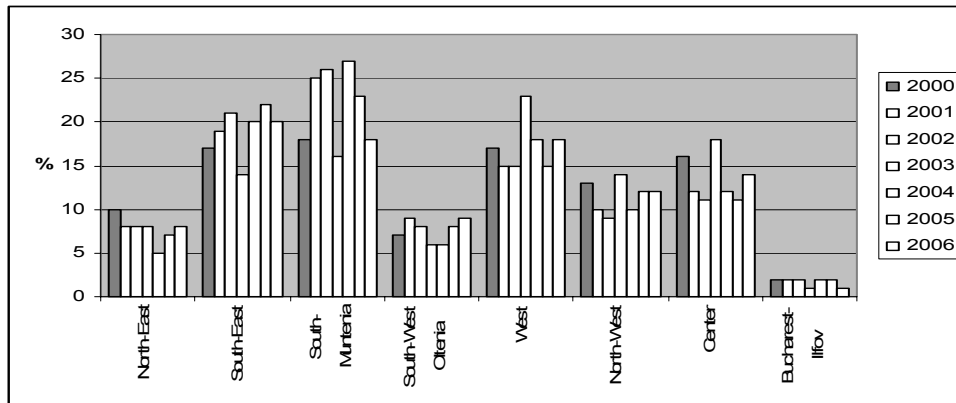


Figure 9. The dynamics of the regional areas in total barley and two-row barley area.

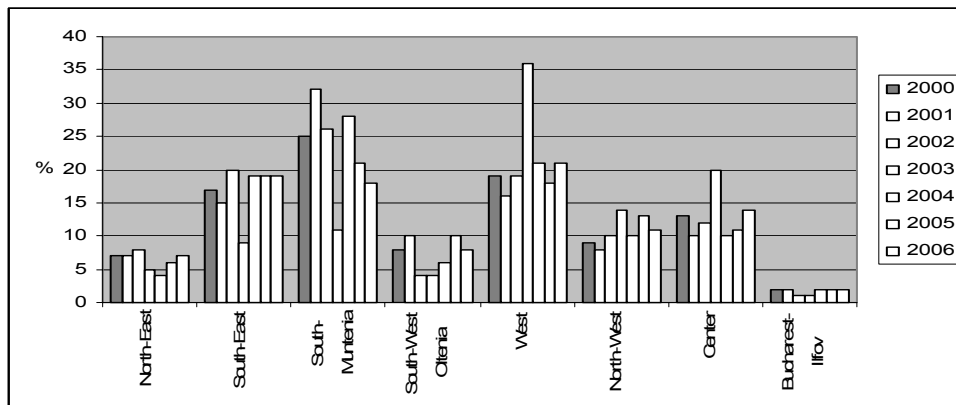


Figure 10. The share of regional barley and two-row barley production in total production.

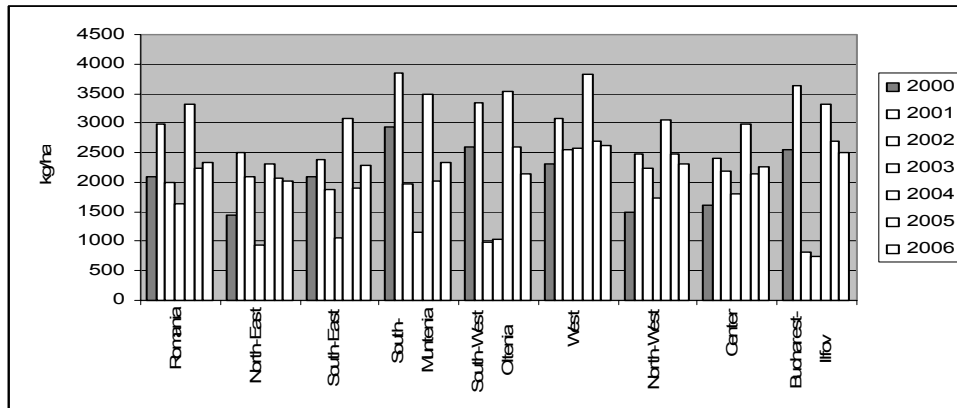


Figure 11. The dynamics of the average barley and two-row barley yields.

Maize is the most important fodder crop, its share in the cultivated area increasing due to certain crop management characteristics and special biological features, such as: resistance to drought, with few diseases and pests, cultivated on very different land areas, and under different weather conditions, suitable to monoculture, it leaves the soil free of weeds, it is a good precursor for many crops, even for the winter wheat; it also puts very well into value the organic and mineral fertilizers, it very strongly reacts to irrigation, it can be planted in successive crops, either for grains or for green fodder or silage, it has a very high reproduction coefficient.

In the investigated period, the development regions North-East, South-East and South-Muntenia cultivated with maize for grains from 15% to 20% of the total area under maize of our country (Figure 12).

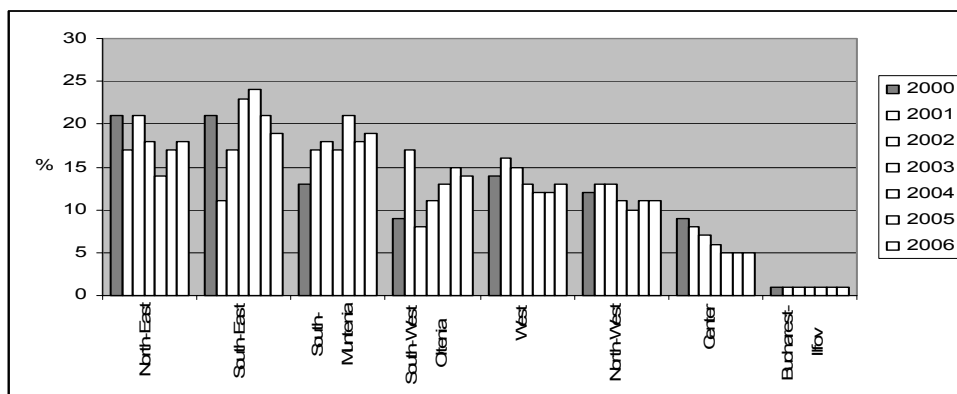


Figure 12. The dynamics of the share of regional areas in total maize area.

The obtained production experienced annual variations, as well as in the case of other investigated crops, the best being obtained in the South-East development region in the years 2003 (making up for the losses in small grains) and 2004, in the North-East development region and in South-Muntenia (Figure 13).

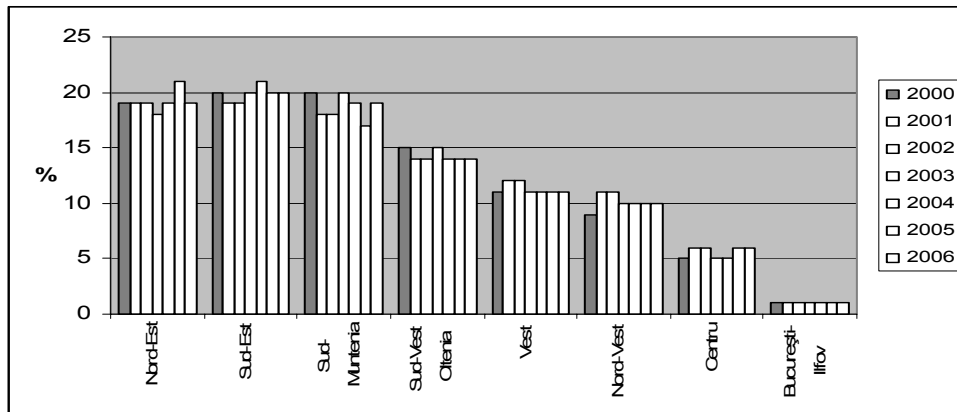


Figure 13. The dynamics of the share of maize regional production in total production.

The average maize yields at national level ranged from minimum 1603 kg/ha in 2000 to maximum 4441 kg/ha in 2004. The lowest yields obtained in the year 2000 were in the development regions Bucharest-Ilfov (540 kg/ha) and South-West Oltenia (890kg/ha). In 2004 the average maize production exceeded 4000kg/ha at national level and it was close to 5000 kg/ha in the following development regions: South-East, South-Muntenia and West, reaching 5580kg/ha in Bucharest-Ilfov (Figure 14).

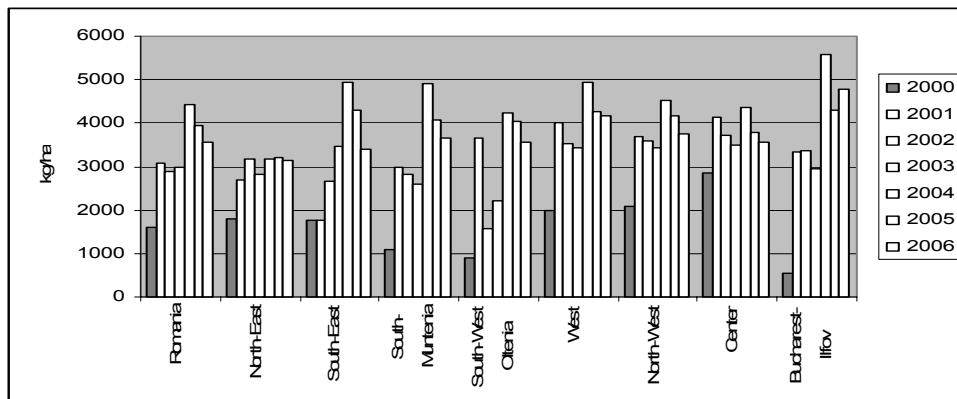


Figure 14. The dynamics of maize average yields.

The present relation between the two crops, i.e., wheat and maize, by ownership forms and farm type, reveals that maize has again got priority at economic and social level, though it has a more intensive cultivation technology than that of small grains; in the specialists' opinion, it is cultivated not taking into consideration its suitability zones and in a non-ecologic manner on more than one-third of the arable area.

The farmers' preference for maize is also well-motivated nowadays; in the first place, maize has a larger utilization scope (human consumption, animal feed and alcohol industry); in the second place, maize has a more accessible technology (from the organizational and financial point of view) for the peasants, from the very beginning, i.e. crop establishment.

At the same time, the importance of maize and the Romanian peasant's preference for this crop is revealed by the following: most of labor force from agriculture, both in terms of volume and labor distribution all over the year is used for this crop; for small-sized peasant household farms, it is a crop that satisfies more needs than other agricultural products.

4. CONCLUSIONS

The share in the total arable land, the production structure and the average yields mainly emphasize the social and economic function of two crops: *wheat* – always considered a “noble” cereal, in demand at export and *maize* – a human food and mainly animal feed, always cultivated on larger areas than wheat.

Other cultivated cereals, important for Romanian agriculture are: *winter barley* – cultivated almost for fodder purposes; *two-row barley* – used almost in exclusivity as raw material in the beer and malt industry and *oats* – cultivated for horse feed; although in the period of socialist agriculture the role of horses as main draft animals in agriculture diminished, oats cultivation was mainly maintained in the cold and humid zone of the country, leaving room for industrial crops in particular, which were more labor intensive. On much smaller areas the following cereals are cultivated: *rye* (a small grain cereal, with a nutritive value approximately the same with that of wheat), *sorghum*, *millet* and *rice*.

According to the specialty studies, cereals are cultivated on the whole territory of the country on variable areas. Cereals are “efficient” in Romania because they are necessary, because the national food security cannot be conceived without them.

Unfortunately, land fragmentation, with all its negative technological consequences, adversely impacts cereal production, which is influenced rather by weather factors than by the effect of coherent technological strategies.

The development regions are differentiated by the available natural and human resources, by the weather conditions, by the water courses and relief, by the nature of the main economic activities etc.

In Romania's agriculture, the main cultivated crops were and will still be the cereals; this is a combined result of the environmental factors, tradition and agrarian structures.

The analysis is performed only for the segment of agricultural production, as the regional statistical data do not refer to costs, prices and trade.

In the period 2000–2006, the dynamics of the domestic cereal production at regional level reveals the following:

- the “granary” of the country is located in the South Muntenia development region, which cultivates over 25% of the total wheat area of Romania, and obtained over 25% of the total wheat production of Romania;
- the rye, which has a nutritive value similar to that of wheat, being cultivated mainly in four Development Regions (North-East, South-West Oltenia, North-West and Center), yet having the highest average yields (over 2500 kg/ha in the South-Muntenia development region);
- the barley and two-row barley are cultivated on rather significant areas in the following development regions: South-Muntenia, South-East and West (over 15% of the national area), the best yields being obtained in the development regions West and South Muntenia;
- the maize is the crop in which the cultivated area does not vary too much from one year to another by regions; the development regions South-East, North-East and South Muntenia cultivate over 15% of the national area, while the development regions West, North-West and Center obtained the highest average yields.

The farm products generally represent raw material for the processing industry.

The type of analysis provides useful information for attracting European structural funds, solutions for the improvement of the economic operators' activity from agriculture and processing industry, as well as some solutions leading to the elimination of the existing distortions on the regional markets of these products.

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