TRENDS CONCERNING AGRICULTURE REORGANISATION AND DEVELOPMENT IN BOTOŞANI COUNTY AFTER 1990

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Abstract

Botoşani County has a high agricultural potential, with an agricultural area of 78.8 % out of the total county area and an average agricultural land per capita at 0.98 hectares. The agriculture occupies an important place in the economy structure of Botoşani County. However, big changes have taken place since 1990, such as: recognition of the property rights by the Land Law of February 1991, which has determined the change of the property structure in favour of the private property. This phenomenon is also observed in the field of animal husbandry. Regarding the endowment with agricultural machinery, we can observe that land owners did not have sufficient financial resources to purchase different machinery, which influenced negatively the farming technology for plant cultivation and the animal husbandry sector.
Other relevant matters such as agricultural land division led to the apparition of a very high number of small plots territorially dispersed, which could not allow crop rotation and using high-tech technologies, with a high mechanization and automation of agricultural labour. All these aspects have had negative consequences on crop production level, which was unstable during last years, on crop structure, leading to the disappearance of some crop varieties from farmers' fields, which was mainly replaced by the maize culture and also to an insignificant number of agricultural associations and a decreasing number of farm animals. An important factor was the implementation of a system of subsidies for farmers after Romania's accession to the European Union, which has led to the agricultural production development and reorganisation in Botoşani County. Taking into account of all these aspects, the survey has been shown the most important changes produced in the agriculture of Botoşani County after 1990.

Key words: reorganisation, development, agriculture

After the Revolution of December 1989, the Romanian agriculture has been affected by the partition process of the agricultural land, in accordance with the provisions of the Law 18/1991 concerning the property land transfer from state ownership to private ownership. In December 2004, Romania benefited of European provisions regarding the rural environment within the frame of the agriculture negotiations with the European Union. Therefore, after Romania's entry into the European Union, the rural development started to restructure and diversify on 1 January 2007 and also the financial planning and management to simplify **(Otiman P.I., 2000).**

Putting into practice of the Common Agricultural Policy in Romania has imposed the ensuring of co-operation between the two pillars, as main requirement:

- **Ist Pillar** related to market policy must be based on rural development measures for obtaining a better agricultural production in concordance with the real demand and for ensuring producers earn bigger incomes;
- **IInd Pillar** related to rural development policy must ensure the support for agriculture reorganization in agreement with the environment and the Romanian rural space. The second Pillar is closely connected to the instruments and policies of the first Pillar.

The Reform of the Common Agricultural Policy of June 2003 and April 2004 introduced major changes on the rural development process. The main objective of the Strategic National Plan (PNS) is to promote a dynamic agricultural sector for an economic increase of the rural space. The strategy establishes the main directions for the development of agriculture and forestry sectors by taking into consideration the necessity of adapting the Romanian agro-alimentary sectors to the requirements of the European Union (Băcanu B., 1997; Chiran A. and others, 2007; Mitrache Şt., 2000; Niculescu Maria, Lavalette G., 1996). This model is closely linked to the economic and social policy of the European Union and it aims to harmonize the development levels between the regions of the European Union and between the

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rural and the urban areas. The National Strategic Plan (PNS) aims to accomplish the abovementioned objective by reducing the number of persons employed in agriculture. The main effect of these actions will consist in discharge of some plots which will lead to the fusion and the strengthening of farms. These facts will improve the efficiency of the Romanian agriculture, will promote the farmers' managerial abilities and will lead the agricultural activities to become profitable investments and integrated projects **(**Mitrache Şt., 2000; Otiman P.I., 2000). Both directions for the development of the agriculture will create favourable conditions for the economic growth, new jobs and improving the quality of life in rural areas. These directions must be reached only by respecting a sustainable use of natural resources, namely: maintaining the soil fertility for richer and more qualitative harvests and preserving the natural landscape in the mountain areas in future tourism development actions. It is absolutely necessary to accelerate the process of agriculture reorganisation and modernization to ensure an integrated and durable economic development of the rural space. All these aspects appear in the agriculture of Botoşani County (Tufescu V., 1977; Nimigean V., 1996).

MATERIAL AND METHOD

The survey concerns the agriculture of Botoşani County over the 1990-2011 period. Many indicators which were calculated, point out the most significant aspects of the last 20 years, such as: the structure of agricultural surface areas by land use category, owners and land exploitation forms, the cultivated surface of arable land by major crop types, the livestock animal by species, the average production per hectare and foddered animal, the crop yield and the total livestock production, the structure of the total agricultural yield. The analysis of indicators was based on the official data of Botoşani County and the authors used both absolute and relative data.

RESULTS AND DISCUSSIONS

Botoşani County in the north-east area of the country, at the borderline with Ukraine and the Republic of Moldova and it is bordered by Siret River in the west and Prut River in the east. Botoşani County has as neighbours the county of Iaşi in the south, the county of Suceava in the west, Ukraine in the north and the Republic of Moldova in the east (*fig. 1.*). Botoşani County has a high agricultural potential. The agricultural surface occupies 78.8 % of the total county's surface area, with an average agricultural surface of 0.98 hectares per inhabitant.

Figura 1 – Administrative and territorial position of Botoşani County

The specialty literature (Băcăuanu V., 1968 ; Nimigean V., 1996 ; Tufescu V., 1977)**,** emphasizes that the territory of Botoşani County has two relief contours, namely: **the Siret Hills and the north sector of the Moldavian Plain**.

The Higher Siret Hills of the western county's part belong to Suceava Plateau and they are formed by a succession of higher hilly massifs, such as: 477 m at the Bourul-Dersca Hill, 427 m at the Hăpăi Hill-Vârful Câmpului, 587 m at the Tudora Hill, which are divided by large and low saddles (280 m at Dersca and 270 m at Bucecea).

The Moldavian Plain occupies ¾ of the territory of Botoşani County and it is linked to the Siret Hills by a line which joins the localities Deleni, Nicolae Bălcescu, Copalău, Coşula, Cristeşti, Orăşeni, Cătămărăşti Valley, Ipoteşti, Brăeşti, Văculeşti, Pădureni and Pomîrla. This line dominates the east of Moldovian Plain, and it has an altitude over 300 meters.

The climatic features are differentiated as compared both to its two main geomorphological contours, forms of relief and exposure. The analysis of the evolution of agricultural surface areas in Botoşani County emphasizes some significant changes during the 1990-2011 period *(tab. 1.).* We note that the arable land and the natural pastures kept the same surfaces, the vineyards and the root-stock nurseries diminished over 56% and the orchards and the fruit tree nurseries diminished over 42%. The privately-owned land occupied the biggest surface area out of the total agricultural surface of Botoşani County (*fig. 1.*). The partition of agricultural property has lead to setting up of small agricultural farms, most of them being owned by aged persons. Another aspect refers to **the small number of producers' associations**, namely: only 42.4% of the agricultural surface being exploited by 506 associative structures, while 57.6% of the

agricultural land being exploited by 148659 small family farms, with an average surface of 1.52 hectares/farm (*tab. 2*).

Table 1

Evolution of agricultural surface areas in Botoşani County, by land use category over 1990-2011 period

Land use category	1990		2000		2007		2011		
	ha	% / agricultural land	ha	% / agricultural land	ha	% / agricultural land	ha	% / agricultural land	% / 1990
Total agricultural land, out of which:	387683	100.0	392728	100.0	393039	100.0	392788	100.0	101.3
-arable land	291038	75.0	297825	75.8	298774	76.0	298758	76.1	102.7
-natural pastures	74080	19.1	75657	19.3	75381	19.2	75146	19.1	101.4
-natural meadows	14226	3.7	14252	3.6	14635	3.7	14635	3.7	102.9
-vineyards and root-stock nurseries	3862	1.0	2032	0.5	1690	0.4	1690	0.4	43.8
- orchards and fruit tree nurseries	4477	1.2	2962	0.8	2559	0.7	2559	0.7	57.2

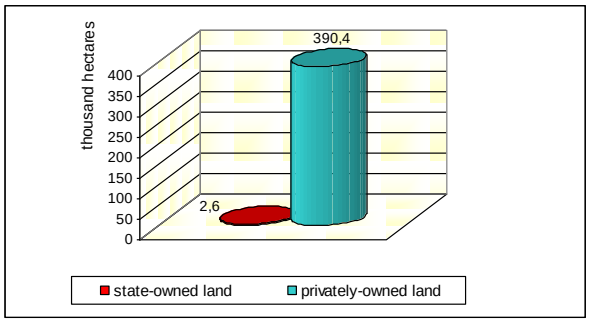

Figure 1 **Agricultural Property ownership**

The cereal grains occupied the biggest surface related to the structure of cultivated arable land over the studied period (*tab. 3*). **The evolution of the cultivated surface areas by major crop types** was non-uniform, with differences over the studied period. It is observed a significant decrease of surface areas cultivated to wheat and rye, barley and two-rows barley, leguminous grain crops, sugar beet, potatoes and other crops, while a big increase of cultivated surfaces was registered to oleaginous crops, oats, vegetables and grain maize, such as 31.0% the maize surfaces and 44.85% the sunflower surfaces.

Table 2

Land exploitation associative structures in Botoşani County

Crt.nr.	Specification	Number	Surface - ha -
1.	Agricutural societies	8	3434
2.	Commercial societies	99	43500
3.	Family Associations	110	7470
4.	Individual leaseholders	95	5600
5.	Research centres	1	1143
6.	Other forms of land exploitation	193	105589
7.	Total number of associative forms	**506**	**166736**
8.	% of the total agricultural land	-	42,4
9.	Small family farms	148659	226303

Source: Data processed after the records of Statistical Centre of Botoşani County

The surface areas to cereals occupied 2/3 of the total cultivated surface areas. The number of cultures decreased and the maize surface occupied 49% of the total cultivated surface areas until 2007. After Romania's entry into the European Union on January 2007, we note a reorganization of the cultivated surface areas so that the crop surfaces decreased at 50.6%, out of which the maize surfaces occupied only 36.4%, while the oleaginous crop surfaces reached 19.6% and the vegetable cultivation areas doubled.

Table 3

Cultivated surface areas of arable land by major crop types in Botoşani County over 1990-2011 period

Category of crops	1990		2000		2007		2011		
	ha	% of cultivated surface	ha	% of cultivated surface	ha	% of cultivated surface	ha	% of cultivated surface	%/ 1990
Total cultivated surface, - ha, out of which :	290569	100.0	266950	100.0	261984	100.0	283125	100.0	97.4
Cereal grains - ha, out of which:	167456	57.6	175981	65.9	143755	54.9	142658	50.4	85.2
-grain maize – ha	78363	27.0	130441	49.0	101172	38.6	103128	36.4	131.6
-wheat and rye – ha	74332	25.6	27235	10.2	23766	9.1	24265	8.6	32.6

-barley and two-rows barley – ha	11665	4.0	10857	4.1	6443	2.5	4976	1.8	42.7
-oats - ha	3096	1.0	7448	2.8	12374	4.7	10289	3.6	332.3
Leguminous prain crops - ha	3512	1.2	2406	0.9	2944	1.1	2646	0.9	75.3
Oleaginous crops – ha, of which :	13012	4.5	22175	8.3	53382	20.4	55565	19.6	427.0
- sunflower – ha	4970	1.7	19997	7.5	30401	11.6	22290	7.9	448.5
-other oleaginous crops – ha	8042	2.8	2178	0.8	22981	8.8	33275	11.7	413.8
Sugar beet – ha	9710	3.3	5516	2.1	2239	0.9	1645	0.6	16.9
Potatoes – ha	12695	4.4	8141	3.0	7152	2.7	8020	2.8	63.2
Vegetables – ha	4117	1.4	7033	2.6	9205	3.5	7862	2.8	191.0
Fodder crops – ha	68514	23.6	44315	16.6	43307	16.5	63971	22.6	93.4
Other crops - ha	11553	4.0	1384	0.5	-	-	758	0.3	6.6

Another indicator refers to **livestock**, which decreased especially before 2007. After Romania's entry into the European Union, it is observed a revitalization of the animal husbandry sector. As concerning the livestock situation over the 2009-2011 period as compared to 2009, it is observed that the number of goats and poultry increased, the number of bovines, sheep and bees slightly decreased (-4.1% - the number of bees and -7.8 % - the number of bovines), while the number of horses and pigs diminished significantly *(tab. 4).*

Table 4

Evolution of livestock farmed populations, by species of animals during 1990-2011period

Specification	2009	2010	2011	%/2009
Bovines – total	117044	116638	107876	92,2
Pigs – total	66191	65252	58509	88,4
Horses – total	40314	38170	26693	66,2
Goats – total	18433	19544	21724	117,9
Poultry – total	1838555	1902239	1845996	100,4
Sheep – total	329977	331777	313891	95,1
Bees – number of families	26265	26190	25200	95,9

Source: Data processed after the records of Statistical Centre of Botoşani County

The average crop yield per hectare presented an oscillating evolution as a result of the negative influence of climatic factors, the out-of-date and inefficient traditional technologies and an inadequate management *(tab. 5).* Most of crops registered a significant increase of average production per hectare in 2011 as compared to 2009, from 15.1% the sunflower until 82.9% the sugar beet. Small or decreasing productions were registered at barley, two-row barley and dehydrated onion.

The annual average milk production per foddered cow was still low during the studied period, oscillating between 3800 litres in 2009 and 3600 litres in 2011.

The average egg production per foddered laying hen decreased with 7.6% in 2011 as compared to the production from 2009. The average ewes milk production registered a slightly increase and the average wool production remained at the same level over the studied period *(tab. 6).* The total crop production registered a oscillating evolution from one year to another or from one period to another over the 1990-2011 period, as a result of changing the crop weight surface areas in the total cultivated arable land *(tab. 7).*

Table 5

Crop yield per hectare in Botoşani County over the 1990 – 2011 period

Specification	1990	2000	2007	2011	%/1990
Wheat and rye – Kg/ha	3068	1394	1809	3098	101,0
Barley and two-row barley – Kg/ha	3378	959	1075	1861	55,1
Grain maize – Kg/ha	2673	1829	2306	3695	138,2
Beans – Kg/ha	648	756	703	1100	169,8
Sunflower – Kg/ha	1251	957	896	1440	115,1
Sugar beet – Kg/ha	16291	14634	24526	29799	182,9
Autumn potatoes – Kg/ha	11779	12184	12052	17220	146,2
Tomatoes – total - Kg/ha	15413	11663	14868	15817	102,6
Dehydrated onion – total – Kg/ha	10183	8090	9880	8935	87,7
White cabbage – total - Kg/ha	17876	18760	18680	18359	102,7
Green mass lucerne – Kg/ha	14222	19819	16996	25535	179,5
Green mass trefoil - Kg/ha	11875	17479	13721	20738	174,6

Source: Data processed after the records of Statistical Centre of Botoşani County

Table 6

Average production per foddered animal in Botoşani County over the 1990-2011 period

Annual average production	2009	2010	2011	%/2009
Milk production from dairy cows – litres	3800	3700	3600	94,7
Ewes milk production – litres	67	70	70	104,5
Wool – kg	2,0	2,0	2,9	100,0
Laying hens' eggs – pieces	170	160	157	92,4

Source: Data processed after the records of Statistical Centre of Botoşani County

Table 7

Total production of grain crops in Botoşani County over the 1990 – 2011 period

Total production	1990	2000	2007	2011	%/1990
Total production of grain crops – tons, out of which:	481598	293869	298921	482574	100,2
-wheat and rye – tons	228033	37863	43002	75176	33,0
-barley and two-row barley – tons	39401	10414	6926	9260	23,5
-grain maize – tons	209466	238521	233352	381058	181,9
Beans – tons	2721	3215	2651	2503	92,0
Sunflower – tons	6219	19141	27225	32094	516,1
Sugar beet – tons	158188	80720	54914	49020	31,0
Potatoes –total - tons	148925	95611	88039	132740	89,1
Vegetables – total - tons	46254	71182	112043	90705	196,1
Perennial fodder crops – green mass tons	343298	402370	512981	981582	285,9
Annual fodder crops – green mass tons	178541	208611	120484	268910	150,6
Green fodder maize – green mass tons	177730	1221	41597	58192	32,7
Fodder root plants - tons	86303	54188	42779	29120	33,7

Source: Data processed after the records of Statistical Centre of Botoşani County

We note that in 2011 the total production of grain crops in Botoşani County was as follows, as compared to 1990: the sunflower production increased by 5.2 times, the total production of green mass perennial fodder crops increased by 2.9 times, the total production of vegetables increased by 1.9 times, the total production of grain maize increased by 1.8 times and the total production of green mass annual fodder crops increased by 1.5 times. On the other hand, the total production of barley and two-row barley diminished more than 4 times and the total production of wheat and rye, sugar beet, green fodder maize and fodder root plants decreased by 2/3. The total production of beans and potatoes decreased slightly. As it concerns the total vegetable crop production, we notice that tomato, cabbage and dehydrated onion productions have had the biggest weight (*tab. 8*).

Table 8

Total vegetable crop production in Botoşani County over the 1990 – 2011 period

Culture	UM	1990	2000	2007	2011	%/1990
Total tomato production	tons	10261	13097	15463	20641	201.2
Total dehydrated onion production	tons	7250	10024	11570	11365	156.8
Total cabbage production	tons	10697	23272	22099	25281	236.3

Source: Data processed after the records of Statistical Centre of Botoşani County

As a result of the increase of surfaces and average production per hectare, (excepting the average dehydrated onion production), the total cabbage and tomato productions doubled and the total dehydrated onion production increased by 1.5 times. The **total milk production from dairy cows and ewes** kept the same level over the studied period, while the **total production of bovine meat live weight and pork meat live weight** doubled (*tab. 9*). **The total egg production** oscillated between 172.3 million pieces in 2010 and 194.1 million pieces in 2009 as a result of breaking-up of the company S.C. Avicola S.A. Botoşani. The total honey production decreased until 2007 because of the inadequate sales mechanism. This situation appeared also because of the lack of a market to absorb the production surplus at prices which could ensure the economic efficiency. Related to animal husbandry, it has to be mentioned that there are few specialized livestock farms in Botoşani County. Many farming animals are raised in self-sufficiency family farms. Another aspect is related to the total livestock production, which is insufficient to cover the demand of milk and meat processing enterprises, to promote and sell by using specific marketing methods, as well as to enlarge the global market and to gain stable market segments. These parameters are under the genetic and technological progress registered in Western Europe.

Table 9

Livestock production realized in Botoşani County over the 2009 – 2011 period

Specification	2009	2010	2011	%/2009
Total milk production – mill. hl	1895,9	1835,3	1921,2	101,3
Bovine meat live weight – tons	16815	18094	36933	219,6
Pork meat live weight – tons	7064	6359	15222	215,5
Egg production – mill. pieces	194,1	172,3	190,0	97,9
Wool production – tons	674	608	574	85,2
Honey production – tons	309	398	234	75,7

Source: Data processed after the records of Statistical Centre of Botoşani County

CONCLUSIONS

The key problems of the agriculture in Botoşani County, refer mainly to:

- the big number of subsistence and semi-subsistence farms, which are not economically efficient and have an average surface area of only 1.7 hectares;
- the small productivity and poor quality of agricultural production, determined by the lack of financial resources, insufficient and inefficient use of available resources, lack of trained staff for using modern agricultural technologies, lack or insufficiency of managerial and marketing knowledge, as well as an unadequate technical infrastructure;
- the discrepancy between the amount imported and the amount exported of agricultural products; there are mainly registered export products that create an insignificant added value;
- the lack of a well-organised agricultural market network, which push the agricultural producers to sell themselves their products or to sell their products at small prices to agents; this situation leads to a high difference between the gross price of agricultural products sold by farmers to transformation entreprises and the price of finished products;
- the poor state of basic insfrastructure;
- the existence of large surface areas ($^1/_5$) seriously affected by natural risk factors, such as: floods, landslides, high level of seismicity, appearance of desert areas, low water resources.

Even Botoşani County holds a large surface of agricultural land, this resource cannot be fully exploited because of its poor productivity due to the following factors:

- the agricultural surfaces areas are exploited on small plots (1–3 hectares) due to the partitioned land fund, the change of the property structure in favour of the private property, as well as the low level of mechanization;
- the more aged labour force (over 28 % of rural population is aged 60 and over);
- the lack of financial capital for restructuring and modernization of agriculture;
- the soil instability and erosion especially because of an adequate use of crop technologies and non-application of agricultural and environment measures;
- the unfavourable climate conditions;
- the insufficient use of chemical and organic fertilizers.

Although many factors affected negatively the agriculture results in Botoşani County after 1990s, we note that big changes have been produced in agriculture restructuring and development after 2007. This phenomenon has appeared as a result of absorption of European funds and implementing of projects for agriculture and rural space development.

REFERENCES

Badea, L. and others, 1992 – *Geografia României. Regiunile Pericarpatice, vol. IV*, Publishing House of Romanian Academy, Bucureşti.

Băcanu, B., 1997 – *Management strategic*. Teora Publishing House, Bucureşti.

Băcăuanu, V., 1968 – *Câmpia Moldovei. Studiu geomorphologic*, Publishing House of R.S.R. Academy, Bucureşti.

Chiran, A. and others, 2004 – *Agromarketing,* Evrica Publishing House, Chişinău, Republica Moldova.

Chiran, A., Dima, Fl. M., Gîndu, Elena, 2007 - *Marketing în agricultură*, Alma Print Publishing House, Galaţi.

Ciurea, I.V., 1999 – *Managementul exploatațiilor agricole*, Agroprint Publishing House, Iaşi.

Constantin, M. and others, 2009 – *Marketingul producției agroalimentare*, AgroTehnica Publishing House, Bucureşti.

Mitrache, Şt., 2000 - *Dezvoltare durabilă rurală*, Planeta Publishing House, Bucureşti.

Niculescu, Maria, Lavalette G., 1999 – *Strategii de creştere,* Economica Publishing House, Bucureşti.

Nimigean, V., 1996 – *România – geografie umană*, Publishing House of "Alexandru Ioan Cuza" University, Iaşi.

Otiman, P.I., 2000 - *Restructurarea agriculturii şi dezvoltarea rurală a României în vederea aderării la UE*, Agroprint Publishing House, Timişoara.

Tufescu, V., 1977 – *Judeţul Botoşani,* Publishing House of R.S.R. Academy , Bucureşti.