

# Agrozootechnical Indicators for Rural Development in Maramures County

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## Abstract

Researching the Romanian contemporary rural space requires the determination of certain criteria expressed as indicators, which capture the dynamics of such space, its strong points that can be developed, as well as its weak spots that can be corrected. In Maramures County, the rural environment faces a set of significant matters that require urgent settlement in order to fulfil the desire to obtain sustainable development. To this end, using classic investigation methods (observation, comparison, interrogation, bibliographic research), several indicators of the agricultural sector were determined and analyzed, whereas the dynamics of these indicators is related to the timeframe 2008-2013. The conclusion of this work can be successfully corroborated with other studies, in order to sketch a full picture of the economic, social and cultural mosaic existing at the level of Maramures County.

**Keywords:** Agriculture, Maramures County, rural development

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## 1. Introduction

The purpose of the rural development policy of the European Union is to settle the issues encountered in the rural areas and to raise the potential thereof. According to the National Strategic Plan for Rural Development for 2014-2020, the rural areas in Romania cover 87.1% of the country's territory, comprising 44.9% of the population on January 1, 2009 (9,663,516 individuals) and 46.11% on January 1, 2014 (9,198,308 individuals) [1]. Restructuring the agriculture and the revitalization of the rural economy may represent significant development levers. According to the National Strategic Plan for Rural Development for 2014-2020, the contribution brought by agriculture to the gross domestic product was always high [2, 3]. For instance, in 2006, the gross value added (GVA) of agriculture represented 1.2% of the GDP and 13.6% of the total GVA. Due to the

failure to use the agricultural resources entirely, the contribution of this sector remains low.

Restructuring agriculture shall have a particular impact upon the rural economy in Maramures County, considering that agriculture continues to be the most important activity in the rural area and therefore represents an essential income source for the households. In order to be able to develop the rural environment in this administrative-territorial unit it is required to start with the assessment of this region:

1. *The population from the rural environment in Maramures County is faced with a powerful demographic decrea.,.*

2. *The rate of the natural growth in the rural environment is negativ..*

3. *The average number of employees in the sector of agriculture and forestry is continuously droppin.*

4. *The average net salary in the agricultural sector is, since 1990, permanently inferior to the average net salary in Maramures County.*

5. *Only 2.5% of the total number of companies acting in Maramures County were a part of the agriculture, hunting and forestry sector (269*

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units) in 2007, most of them being rated as Small and Medium Enterprises. The percentage of the companies acting in the agricultural sector from the total number of enterprises acting throughout the county was, however, on a slight rise during the last few years, as in 2012 it was of 3.06% (288 units), which represents an increase of 1.1% in 5 years.

## 2. Materials and methods

The analyzed material comprises the entire area of Maramures County, specifically both the rural and urban areas, whereas this approach of the survey is required for identifying the needs and determining the relaunching strategies in regard of various sectors of agriculture. The results regarding the status of the land fund were subject to analysis and discussions according to the use manner, the

cultivated area to be exploited, the average production of the main agricultural cultures, the number of animals and their production, the production parameters of the agricultural branch per sector, existing in Maramures County. The survey is part of a more comprehensive work, where the results obtained in this document shall be used in order to outline the overview of sustainable development in Maramures County. The data used in the survey were obtained by inquiring the temporal series (2008-2013), made available by the National Statistics Institute [4, 5]

## 3. Results and discussion

The analysis of the areas forming the land fund according to the use manner shows that the areas designed for agriculture are slightly decreasing since 2004, and so is the arable land (table 1).

**Table 1.** The analysis of the land fund according to the use manner [5]

Land fund according to use manner	Years					
	2008	2009	2010	2011	2012	2013
	UM: Ha					
<b>Agriculture</b>	310297	309325	306192	305373	305528	305528
<b>Arable</b>	83795	83784	82855	81619	81657	81206
<b>Pastures</b>	99734	98765	96495	96634	96888	96888
<b>Meadows</b>	119935	119930	120260	120658	120528	120937
<b>Wineyard</b>	243	243	243	243	243	243
<b>Orchards</b>	6590	6603	6339	6219	6212	6254
<b>Total nonagricultural fields</b>	320139	321111	324244	325063	324908	324908
<b>Forests</b>	288758	288572	290236	290329	290041	290041
<b>With waters</b>	5130	5368	5380	5371	5387	5387
<b>With constructions</b>	11531	11574	12401	12721	12824	12827
<b>Communications pathways and railways</b>	6084	6235	6430	6373	6389	6389
<b>Unproductive and degradation fields</b>	8636	9362	9797	10269	10267	10264

The highest percentage is held by the non-agricultural areas and forests, which is contrary to the touristic potential of the region and to the use manner of the lands at County level.

The second rank is occupied by hayfields, grasslands and arable areas, whereas this shows the preoccupation of the population engaged in agriculture for the extensive land exploiting systems, which, if corroborated with the region's touristic potential, create the basics for sustainable

rural development and improved life quality in such areas.

The development of the infrastructure required for building communication channels is another important issue that shows the preoccupation of the authorities for the sustainable development of the region subject to analysis.

Based upon the analysis of the data available at the time of inquiry in regard of the timeframe 2008-2013 as produced by the National Statistics

Institute for Maramures County related to the land fund and its use manner, the following conclusions can be drawn: the total agricultural area is decreasing, 4796 ha being lost during the analyzed period; the arable land has lost in 5 years 2589 ha; grasslands have registered a significant area decrease during the period 2008-2010 (3239 ha), then a very slight increase, without reaching, however, the level from 2008.

Basically, in 5 years, 2846 ha were lost; hayfields have registered an area increase, gaining 1002 ha during the analyzed period; the area cultivated with grapevine has remained constant during the entire period; the area designed for orchards and tree farms has lost 336 ha; the forests and other areas planted with trees have gained in 5 years 1283 ha, as well as the areas with waters or ponds, which have an additional 257 ha (compared to 2008); the communication channels and railways have gained another 305 ha, and the areas covered by buildings, 1296 ha; non-productive or degraded lands have also gained some space, their area increasing by 1628 ha during the analyzed period. With regard to the cultivated area, the highest percentage of the cultures in terms of area is held by cereals for grains (corn beans keeping their top

position in the percentage of allotted areas), then potatoes and vegetables.

Nevertheless, the areas dedicated to such cultures were on the rise until 2009, then they registered a significant drop. For instance, the areas cultivated for exploiting purposes has lost between 2009 and 2011, 6872 ha; the area allotted for cereals for grains has lost between 2004 and 2013 16747 ha, whereof the area dedicated to corn beans, 5881 ha (2004-2011). Table 2 contains the average productions (kg/ha) of the main cultures in Maramures County during the period 2008-2013.

The productions of the main cultures in Maramures County, during the analyzed period, have registered increases, particularly in the case of individually exploited agricultural areas.

The highest productions from the analyzed timeframe were registered in 2013 regarding cereals for grains, including corn and in 2011 regarding potatoes.

As concerning the ownership type, the individually exploited agricultural areas hold an overwhelming percentage of the total exploited areas from the private sector (100%): 99.55% cereals for grains; 99.48% corn beans and 99.84% potatoes.

**Table 2.** Average productions\* (kg/ha) of the main cultures in Maramures County, during the period 2008-2013 [5]

Main cultures	Years					
	Year 2008	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013
	UM: Kg/ ha					
Cereals for grains	2718	2653	2936	3248	2461	3322
Corn beans	3099	3174	3627	3653	2705	3661
Potatoes – total	10586	12760	10856	13753	8549	11346

\*average production = the quantity of gross products (per culture) obtained on the cultivated area unit

Table 3 presents the status of the animal farms of economic interest, during the period 2008-2013, at the level of Maramures County. The fact that the number of animals is decreasing does not represent an isolated phenomenon in this county, but exists in the entire country. As a particularity, we might state that this descending trend is due, in the analyzed period, to the climatic conditions with very dry years (2009, 2010, 2011), as well as to the world financial crisis, which has directly or indirectly impacted also the zootechnics sector in our country.

The number of cattle, bubaline, pigs and horses have registered losses during the entire analyzed period, the number of sheep has dropped since 2008 until 2010, and then has increased, the number of goats was the only one that has registered increases during the entire period, the number of poultry has dropped until 2011 and then increased, while the bee families have significantly grown in 2010, then the growth was insignificant from one year to the other (a few hundreds of families).

**Table 3.** Number of animals in Maramures County, during the period 2008-2013 [5]

Animal categories	Years					
	Year 2008	Year 2009	Year 2010	Year 2011	Year 2012	Year 2013
<b>Cattle</b>	89162	87137	82227	81976	81856	80090
<b>Cows, buffalos and heifers</b>	64263	64210	62214	62105	61165	58337
<b>Pigs</b>	120641	118199	98616	96923	98736	95843
<b>Sheep</b>	186466	179102	155662	155383	162131	168866
<b>Goats</b>	13957	15037	16372	17328	19154	20116
<b>Horses</b>	16211	14586	11488	11240	11394	9870
<b>Poultry</b>	891747	975181	1010061	930114	967235	940917
<b>Bee families</b>	13987	13703	24396	23437	23174	23876

**Table 4.** Animal productions during the period 2007-2011 in Maramures County [5]

Categories of animal agricultural products	2007		2008		2009		2010		2011	
	total	private sector	total	private sector	total	private sector	total	private sector	total	private sector
<b>Meat - total (live T. W.)</b>	26346	26236	22714	22697	27961	27948	21260	21254	22702	22688
<b>Cattle meat (live T. W.)</b>	9015	8990	7481	7471	6618	6608	4972	4970	5071	5061
<b>Pig meat (live T. W.)</b>	12164	12079	10319	10312	15702	15699	10826	10822	12010	12006
<b>Sheep and goat meat (live T. W.)</b>	2161	2161	2254	2254	1833	1833	2154	2154	2037	2037
<b>Poultry meat (live T. W.)</b>	2996	2996	2657	2657	3799	3799	3304	3304	3580	3580
<b>Milk (+calves consumption) (thousand hl)</b>	2185	2185	1819	1819	1711	1711	1641	1640	1856	1856
<b>Wool production (tons)</b>	370	370	378	378	373	373	332	332	298	298
<b>Egg production (million pcs.)</b>	101	101	102	102	102	102	93	93	141	141
<b>Extracted honey production (tons)</b>	146	146	553	553	262	262	498	498	437	437

The analysis of the main animal productions in Maramures County during the period 2000-2003 and 2007-2011 (table 4), shows a growth of the production of cow and buffalo milk during the first period and a drop during the second period, except in 2011, when it starts to rise again; a decrease of wool production (is no longer industrially processed); a decrease of the weight of the animals when sacrificed during the first period and a decrease of the poultry egg production [4]. During the period 2007-2011, the total meat production (live weight in tons) has registered a

maximum value in 2009 (27961 t), suddenly dropping during the next period (to 22702 t). The cattle meat production has decreased from 9015 tons in 2007, to 5061 tons in 2011, having a minimum production in 2010 (4972 tons); the pig meat production has dropped in 2007-2008, then registered a production maximum in 2009 (15702 t), and then in 2010, it suddenly decreased to 10826 tons, while in 2011 it starts to slightly rise again (12010 tons). The sheep and goat meat production during the period 2007-2011 is maintained at a relatively constant level (between

2254 tons in 2008 and 2037 tons in 2011, except in 2009, when the production level was at a minimum (1883 tons) [4]. The honey production registered a significant increase in 2008 compared to 2007 (378.77% increase), while in 2009 it drops to 262 tons, only to raise again in 2010 and 2011 to 498 tons, namely 437 tons.

The indices of the agricultural branch production (volume indices) are calculated based upon the value of the production obtained in the previous year, expressed in the prices valid during the previous year (table 5).

**Table 5.** Indices of the agricultural branch production per sector [5]

Agricultural branches – new series	Year	Year	Year	Year	Year	Year
	2008	2009	2010	2011	2012	2013
	Percentage (%)					
Total	106.2	99.3	89.7	114.5	83.7	104.7
Vegetal	114.9	96.6	88.9	115.8	68.8	116.4
Animal	90.5	104.7	90.9	112.4	104.9	94.4

The indices of the agricultural branch production (volume indices) are calculated based upon the value of the production obtained in the previous year, expressed in the prices valid during the previous year (table 4). In table 22 and picture 10 we are able to see that the indices of the vegetal agricultural production expressed in percentages have dropped during the period 2008-2010, while in 2011 they reach a peak of 115.8%, and then in 2012 they drop again to 68.8% and then rise in 2013 to 116.4%, exceeding the value registered in 2011. The indices of the animal production register an increase during the period 2008-2009, while in 2010 they decrease (the economic crisis and the drought, plus the drop of the vegetal production) and rise again in 2011 (following the indices of the vegetal production) and then drop in 2012-2013 [4].

#### 4. Conclusions

Based upon the analysis of the data available at the time of inquiry in regard of the timeframe 2008-2013 as produced by the National Statistics Institute for Maramures County related to the land fund and its use manner, the following conclusions can be drawn: the total agricultural area is decreasing and during the period subject to analysis 4796 ha were lost.

Since 2004 and until 2011, the main percentage of the cultures in terms of areas is held by the cereals for grains (corn beans keeping their top position in the percentage of allotted areas), then potatoes and vegetables. Nevertheless, the areas dedicated to

such cultures were on the rise until 2009, then they registered a significant drop.

The analysis of the main animal productions in Maramures County during the period subject to analysis shows an increase of the cow and buffalo milk production and a decrease of the weight of animals when sacrificed during the first period, as well as a decrease of the poultry egg production.

The indices of the vegetal agricultural production expressed in percentages have dropped during the period 2008-2010, while in 2011 they have reached a peak of 115.8%, and then dropped again in 2012 to 68.8% only to rise in 2013 to 116.4%, exceeding the value registered in 2011. The indices of the animal production follow the trend of the vegetal production, whereas the dependence relationship between the two is well-known.

The sustainable rural development of Maramures County is possible by relaunching the agriculture, along with other significant branches at area level.

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