



Munich Personal RePEc Archive

Analysis of statistical indicators for output areas, in Sud-Vest Oltenia during 2000-2013

Vlad, Mihaela Cristina and Cujbescu, Dan

Research Institute for Agricultural Economics and Rural
Development, National Research - Development Institute For
Machines And Installations Designed To Agriculture And Food
Industry

20 November 2015

Online at <https://mpra.ub.uni-muenchen.de/69342/>
MPRA Paper No. 69342, posted 08 Feb 2016 14:42 UTC

ANALYSIS OF STATISTICAL INDICATORS FOR OUTPUT AREAS, IN SUD-VEST OLTENIA DURING 2000-2013

VLAD CRISTINA MIHAELA¹, DAN CUJBESCU²

Summary: *this article examines the Region South-West Oltenia development acreage main vegetable crops in the period 2000-2013, bearing in mind the current situation of Romanian agriculture is the direct result of a specific rural way of life, requiring intervention not so much by the Common Agricultural Policy measures such as economic, fiscal, social policy, etc. Thus, based on data processed by the National Statistics Institute, TEMPO-Online time series, and their interpretation by methods of statistical analysis were able to highlight the fluctuations that have occurred during this period.*

Keywords: *agriculture, countryside, farmland.*

INTRODUCTION

South-West Oltenia is one of the eight development regions of Romania. The region comprises the counties of Dolj, Gorj, Mehedinti, Olt and Valcea, a total of 40 cities and towns, 408 communes and 2070 villages. The relief has a relatively balanced distribution, including mountains, plains, hills and plateaus. In the north of Oltenia, the relief has mountains and hills (the Carpathians and sub-Carpathians), predominantly forests and grasslands. The plain area is specialized mainly in the cultivation of cereals[3].

This region is marked by its dependence on agriculture, this took the form of a subsistence agriculture practiced by aging rural population and the urban people redundant. Making a significant contribution to the regional gross domestic product and low productivity, this economic sector is characterized by fragmentation and lack of land and modern production methods.

MATERIAL AND METHOD

The analysis at the Development Region South-West Oltenia, were used the following statistical indicators: arithmetic; surface structure; average annual rate of growth; standard deviation, standard deviation.

In statistics and probability theory, the standard deviation of a random variable is a measure of the dispersion of its values around one considered medium.

Xo be random variable with mean value μ :

$$E[X] = \mu$$

Here, the operator E indicates the average (estimated) of X. When X is the standard deviation of the size

$$\sigma = \sqrt{E[(X - \mu)^2]}.$$

The standard deviation σ is the square root of the mean value of $(X - \mu)^2$.

Average annual growth areas is the indicator current year - last year the indicator) / previous year the indicator. The percentage increase in areas planted express the extent that extend from one year to another.

Statistical indicators included the main cereals and technical plants that have over 90% of the cultivated area. Year period 2000-2013 was analyzed, and this a 2009-2013 subperiod to capture the recent phenomena of agriculture of the region, and a key role in drawing up plans for production agriculture.

¹ Dr.ec. Vlad Mihaela Cristina, Research Institute for Agricultural Economics and Rural Development, cristina.vlad@iceadr.ro

² Drd.ing. Cujbescu Dan, National Research - Development Institute For Machines And Installations Designed To Agriculture And Food Industry, dcujbescu@yahoo.com

RESULTS AND DISCUSSION

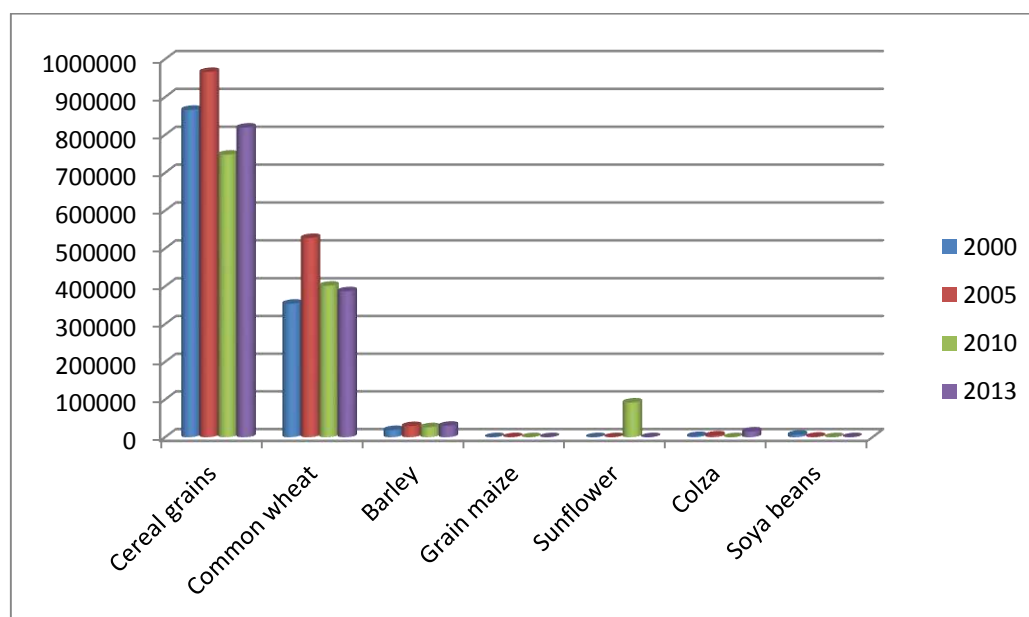
The climate zone South-West Oltenia is temperate continental characterized by monthly average air temperatures are between 11.3 ° C to 10.9 ° C. Caracal and Slatina and average rainfall ranges from <500 mm in the south-west county Up to 600 mm in settlements in the northern tip of the Getic plateau[1]. This climate is favorable for cereal grains which held over 75% of the county's agricultural suptafața (table 1). Among cereals, wheat crop was grown on 354,026 ha (30.9%) in 2000, and 401 562 ha (36.3%) in 2013. The corn crop occupied an area of 465 536 ha (40, 6%) in 2000 and 346 643 ha (32.5%) in 2013. The two crops, wheat and corn, held 68.8% of the agricultural area of the region [1].

Reflecting the importance of cereals, the ship began work on a building called investment "Scholarship grain Corabia", which will operate an administrative office, a laboratory for quality grain with specific active trading activity on the stock market development and certification laboratory for quality grain. A share in agriculture Assn Development Region South-West Oltenia has crops and oil or sunflower and rapeseed. Sunflower crop was cultivated on 69,743 ha (6%) in 2005 and came to be cultivated on 132,247 ha (12.4%) in 2013. The culture of rape had oscillations of acreage from 2896 ha (0.3%) in 2000 to 15,089 ha (1.4%) in 2013. vegetable crops shows a small increase from 34 151 hectares surface (3%) in 2000 to 40 090 ha (3.8%) in 2013. As a matter decreases in feed areas from 85 679 ha (7.5%) in 2000-51432 ha (4.8%) in 2013. Also dropped surfaces to soybeans, tobacco , potatoes, orchards and crops in the greenhouse.

From the analysis of the acreage statistics (Table 1, Table 2, Figure 1), we find that the cereal grain cultivated area of 860 535 ha was, with an average rate of -0.43% decrease over the period 2000-2013, decreasing diminished in the last 5 years -0.17%. The coefficient of variation of cereal grain acreage was 8.9% during 2000-2013 and fell to 3.9% in 2007-2013. Calculating acreage limits for a confidence interval of 90% probability (10% risk), they were 896 843 ha and 860 534 ha, which is 36 309 ha.

As a synthetic indicator has been calculated the share it is this difference compared to the average recorded for this period. This difference between limitete areas is 4.2% of the average. Comparing it with the 5.3% result for the period 2007-2013, that in the latter period oscillations were higher areas compared to the first period.

Figure 1 Areas planted (ha) the main crops during 2000-2013



Processed NIS, TEMPO-Online time series, Farming 2000-2013

Table 1 Size and structure of the main crops cultivated during the period 2000-2013 in the South-West Oltenia

No.	The main crops	2000		2005		2010		2013	
		ha	%	ha	%	ha	%	ha	%
1	Total	1145416	100.0	1154445	100.0	1023571	100.0	1066502	100.0
2	Cereal grains	866 170	75.6	966 202	83.7	747 767	73.1	819 151	76.8
3	Rye	3105	0.3	4624	0.4	3976	0.4	3106	0.3
4	Common wheat	354 026	30.9	527 690	45.7	401 562	39.2	386 918	36.3
5	Barley	18,948	1.7	29,435	2.5	26,371	2.6	30,304	2.8
6	Barley	14701	1.3	18005	1.6	19061	1.9	19,068	1.8
7	Grain maize	465 536	40.6	375 425	32.5	276 396	27.0	346 643	32.5
9	Peas	1174	0.1	310	0.0	1242	0.1	3206	0.3
10	Beans	2467	0.2	2099	0.2	1706	0.2	1268	0.1
11	Oil plants dc:	119 388	10.4	75,491	6.5	156 486	15.3	148 133	13.9
12	Sunflower	109 207	9.5	69,743	6.0	92057	9.0	132 247	12.4
13	Colza	2896	0.3	4474	0.4	63,395	6.2	15089	1.4
14	Soya beans	6463	0.6	1127	0.1	151	0.0	80	0.0
15	Tobacco	5361	0.5	1473	0.1	20	0.0	143	0.0
16	Plt med. Aromatic	384	0.0	32	0.0	3098	0.3	38	0.0
17	Potatoes - total	16802	1.5	16616	1.4	18135	1.8	14090	1.3
18	Vegetables - total	34,151	3.0	41,032	3.6	46,565	4.5	40,318	3.8
19	Vegetables degree. famil			15043	1.3	13255	1.3	12092	1.1
21	Arable fodders	85,679	7.5	62,178	5.4	60337	5.9	51,432	4.8
24	Strawberry plantation	213	0.0	306	0.0	316	0.0	322	0.0
25	Fruit orchards	41,861	3.7	40,450	3.5	23,676	2.3	27121	2.5
26	Area greenhouses	202	0.0	83	0.0	75	0.0	35	0.0
27	Arable land idle	89,155	7.8	54,585	4.7	206 281	20.2	94,924	8.9

Processed NIS TEMPO-Online time series, Farming 2000-2013

A significant percentage have surfaces *idle land CAA*. 94 924 ha (8.9%) in 2013.

Table 2 Statistics of areas planted with major crops, during 2000-2013, in Sud-Vest Oltenia

No	The main crops	UM	2000	2005	2010	2013	Arithmetic mean	Standard deviation (ha)	Factor variation (0)	Square mean (6x)	Maximum (Med j+177 * 6 x)	Minimum limit (Med j 177 * 6x)	Absolute difference	% of the average
1	Cereal grain	ha	866 170	966 202	747 767	819 151	860 535	76,711	8.9	20502	896 843	860 534	36309.0	4.2
		%		0.97	0.91	1.04	-0.43	x	x	x	x	x	x	x
2	Common wheat	ha	354 026	527 690	401 562	386 918	409 240	60,762	14.8	16239	437 999	409 239	28760.0	7.0
		%		1.07	1.05	1.24	0.69	x	x	x	x	x	X	x
3	Barley	ha	18,948	29,435	26,371	30,304	21,746	6705	30.8	1792	24,919	21,746	3173.0	14.6
		%		1.62	1.20	1.50	3.68	x	x	x	x	x	x	x
4	Oats	ha	14701	18005	19061	19,068	18361	2480	13.5	663	19535	18361	1174.0	6.4
		%		1.03	0.92	0.92	2.02	x	x	x	x	x	x	x
5	Grain maize	ha	465 536	375 425	276 396	346 643	392 454	52,851	13.5	14125	417 469	392 454	25015.0	6.4
		%		0.82	0.72	0.84	-2.24	x	x	x	x	x	x	x
6	Sunflower	ha	109 207	69,743	92057	132 247	90,896	20001	22.0	5346	100 363	90,896	9467.0	10.4
		%		0.77	1.35	1.15	1.48	x	x	x	x	x	x	x
7	Colza	ha	2896	4474	63,395	15089	18,841	17869	94.8	4776	27298	18,841	8457.0	44.9
		%		1.01	1.78	0.97	13.54	x	x	x	x	x	x	x
8	Soya beans	ha	6463	1127	151	80	1330	2109	158.6	564	2328	1329	999.0	75.1
		%		0.19	4.44	0.50	-28.67	x	x	x	x	x	x	x

Processed NIS, TEMPO-Online time series, Farming 2000-2013

The wheat crop (Table 2, Table 3.), The area presents a growth rate for the period 2000 to 2013, 0.69% versus 0.41% for the period 2009-2013 ajugându to the cultivation area 386 918 ha in 2013. deviation of 90% probability limits of 28760 ha is (7% of the average) for the period 2000-2013 and 49 198 ha (13.4% of the average) for 2007-2013.

Barley crops (Table Table 2, Table 3), the area presents a growth rate during 2000-2013, 3.68% versus 8.38% for the period 2009-2013, ajugându to the cultivated area of 30 804 ha in 2013. deviation of 90% probability limits it is 3173 ha (14.6% of the average) for the period 2000-2013 and 8115 ha (36.2% of the average) for 2007-2013.

Table 3 Surface statistical indicators main crops in 2009-2013, in Sud-Vest Oltenia

Nr	The main crops	UM	2009	2010	2011	2012	2013	Media / rhythm	Standard deviation (ha)	Variation coefficient (%)	Standard deviation(6x)	Maximum limit(Medj+1,77*6x)	Minimum limit(Medj-1,77*6x)	Absolute difference	% of the average
1	Cereals grain	ha	824757	747767	791649	789012	819151	794467	30600	39	13685	815404	773529	41875	53
		%		091	106	100	104	-017	X	X	X	X	X	X	X
2	Common wheat	ha	380636	401562	349954	311263	386918	366067	35951	98	16078	390665	341467	49198	134
		%		1.055	0.871	0.889	1.243	041	X	X	X	X	X	X	X
3	Barley	ha	21961	26371	14584	20166	30304	22677	6003	265	2685	26784	18569	8215	362
		%		12.008.105	05.530.317	1.382.748	1.502.727	838	X	X	X	X	X	X	X
4	Oatmeal	ha	20804	19061	19596	20759	19068	19858	871	44	390	20453	19261	1192	60
		%		0.916.218	10.280.678	1.059.349	0.918.541	-215	X	X	X	X	X	X	X
5	Maize	ha	382342	276396	386455	414269	346643	361221	53162	147	23775	397596	324845	72751	201
		%		072	140	107	084	-242	X	X	X	X	X	X	X
6	Sunflower	ha	68404	92057	102380	115414	132247	102100	24096	236	10776	118587	85613	32974	323
		%		13.457.839	1.112.137	112.731	1.145.849	1.792	X	X	X	X	X	X	X
7	Rape	ha	35594	63395	36227	15539	15089	33169	19790	597	8850	46709	19627	27082	816
		%		1.781	0.571	0.429	0.971	-1.931	X	X	X	X	X	X	X
8	Soybean	ha	34	151	60	161	80	97	56	578	25	135	58	77	792
		%		444	040	268	050	2.385	X	X	X	X	X	X	X

Processed NIS TEMPO-Online time series, Farming 2000-2013

Oat crops (Table 2, Table 3), the area presents a growth rate for the period from 2000 to 2013, 2.02% versus -2.15% for the period 2009-2013 ajugându to the cultivation area 19 068 ha in 2013. deviation of 90% probability limits is 1174 ha (14.6% of the average) for the period 2000-2013 and 1192 ha (6% of the average) for 2007-2013.

The maize grain (Table 2, Table 3), the surface shows a growth rate for the period 2000-2013, of -2.24%, -2.42% compared to 2009-2013, ajugându to the cultivated area of 346 643 ha in 2013 . Deviation from the limits of the 90% probability of 25015 ha (6.4% of the average) for the period 2000-2013 and 72751 ha (20.1% of the average) for 2007-2013.

The sunflower crop (Table 2, Table 3), the area presents a growth rate for the period 2000 to 2013, 1.48% versus 17.92% for the period 2009-2013 ajugându to the cultivated area of 132 247 ha in 2013. The deviation of the limits of probability 90% is 9467 ha (10.4% of the average) for the period 2000-2013 and 32 974 ha (32.3% of the average) for 2007-2013.

Rape crops (Table 2, Table 3), the area presents a growth rate for the period 2000 to 2013, 13.54% -19.31% compared to 2009-2013, ajugându to the cultivated area of 15089 ha in 2013.

deviation of 90% probability limits is 8457 ha (44.9% of the average) for the period 2000-2013 and 27082 ha (81.6% of the average) for 2007-2013.

Soybean crops (Table 2, Table 3), the area presents a growth rate for the period 2000-2013, of -28.67% versus 23.85% for the period 2009-2013 ajugându to the cultivated area of 80 ha in 2013.

Deviation of 90% probability limits is 999 ha (75.1% of the average) for the period 2000-2013 and 77 ha (79.2% of the average) for 2007-2013.

CONCLUSIONS

In last twenty years, the farm sector from subsistence and semi-subsistence, because of its size major, was the target of many policy measures aimed to restructure, but those measures have had the desired effects: achieving better productivity and higher efficiency[2].

This situation it is due to various reasons such as reluctance towards the phenomenon owners associations; continuously changing legal and fiscal systems that have created an environment of distrust and uncertainty, lack of capital necessary to ensure good development, low level of domestic agricultural subsidies, functional problems in creating distribution channels in rural areas, etc..

Due to a large number of small farms, real possibilities of restructuring of these are quite low, especially considering that the number of farms considered in recent years to support in order to transform them into commercial farms, only included farms subsistence between 2 and 8 ESU (about 350 thousand farms over 5 hectares - about 9% of the total) and that only about 1.1 million farms were eligible for support under SAPS scheme (direct payments). Ineligibility of nearly 2 million farms support measures changes in the structure of rural population (aging), lack of agricultural infrastructure, technical jobs, etc, remain real problems that require structural changes in all economic, legislative and social aspects Romanian countryside.

In conclusion it should be considered first that the current situation of Romanian agriculture is the direct result of a specific rural way of life that requires interventions not so Common Agricultural Policy, as by economic, fiscal, social policy, etc.

As highlighted above, significant oscillations were cultivated areas, especially if we take into account all the support measures in the last twenty years to create a modern commercial agriculture. Even today over 99% of farms are subsistence and semi-subsistence farms (almost 94% of less than 2 ESU). Given that the RDP support measures to increase the competitiveness and diversification are primarily directed at 2-8 ESU farms, the great problem of Romanian agriculture is that over 3.6 million farms with less than 2 ESU (91 % of total holdings), and only about 1 million of them receive support through the SAPS (single area payment scheme) or PNDC (complementary national direct payments). To quantify the real impact of the support but CAP subsistence agriculture and implications for sector restructuring, research within this work requires a review on the basis of the next agricultural census. This will allow us to quantify, even if not directly impact agricultural policy measures in 2007-2013. Only in this way through a post accession, we see real change in the sector.

REFERENCES

1. Agriculture Olt county, RecoltaEu, <http://www.recolta.eu/arhiva/agricultura-judetului-olt-9330.html>
2. Iorga A., Toma E., 2013, *Assessing self-consumption importance on the income in rural areas*, Scientific Papers Series "Management, Economic Engineering in Agriculture and Rural Development", Vol. 13 (2):185-188, PRINT ISSN 2284-7995, accessible online http://managementjournal.usamv.ro/pdf/vol.XIII_2/Art30.pdf, index CABI, EBSCO, DOAJ, Ulrich, Google Scholar, Copernicus
3. Mark N., Meghișan M., 2011 South West Oltenia - Natural and Human Potential Development - Changes in the Number and Structure of Active And Inactive Population, Romanian Statistical Review nr. 5/2011, www.revistadestatistica.ro/articole/2011/art5_ro_rrs%205_2011.pdf