Analysis economic indicators main crops in the South-West Oltenia

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THE MAIN CROPS ECONOMIC INDICATORS ANALYSIS IN THE SOUTH-WEST OLTENIA REGION

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Executive Summary: *The agriculture is an important resource for South West Oltenia, with over 1 million hectares used for the cultivation of cereals (mainly maize and wheat), oil plants (especially sunflower), vegetables (tomatoes, cabbage, onions) and fruits (apples, watermelons, melons, grapes), potatoes, sugar beet, good quality wine production. In this study are analyzed indicators on the evolution of cultivated surfaces, yields and prices for main crops: the average annual rate of growth, deviations in absolute size. The research method used is quantitative analysis of statistical data series in 2007-2013. Using regression function we obtained trends of the indicators used.*

Keywords: *production, prices, dynamics*.

INTRODUCTION

The South-West Oltenia Region falls in the Romanian Danube area, with an area of 29,212 km2, representing 12.3% of the total area of the country.

The main economic branch of the South-West Oltenia region is the agriculture, favored by the large area of agricultural land, favorable climatic conditions and high quality soil.

In the southern the cereal crops occupy large areas in particular in Olt and Mehedinti County and in South.

MATERIAL AND METHOD

The paper highlights the evolution of data using the indicators studied by analyzing evolutions and increases in the period during each year.

Analysis of the dynamics.

Example: the dynamics of cultivated areas (SC)

Fixed-base indices: ISC = (SNA / SC0) * 100

The formulas used to calculate these indicators are:

For arithmetic mean = $\overline{x} = \frac{\sum xi}{n}$;

Where : Xi = average production values on a number of years;

n = the number of years taken into account

The annual growth rate = $r2007 - 2013 = \sqrt[6]{\prod (p1/ p0)} - 1$;

where: r2007-2013 = annual rate;

Пp1 / po = concatenation indicators of growth;

The trends analyzed in the statistical series which were calculated by the method of the quadratic regression equation of the form:

F (t) = a + bt + CT2, which is the average annual trend and t is the year.

RESULTS AND DISCUSSION

The data analyzed in Table 1, it is found that the total cultivated area in 2007-2013 has seen an upward trend with an annual growth rate of 1.4%.

Of the crops studied, the only culture that, in the period under review, the cultivated area with sunflower crop is growing continuously, which in 2013 doubles the number of hectares planted with an annual growth rate of 11.8% .

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Table 1 The main crops cultivated areas evolution in South West Oltenia Region, 2007-2013

The main crops	2007	2008	2009	2010	2011	2012	2013	Media	Average rate	Annual rate
	Ha	Ha	Ha	Ha	Ha	Ha	Ha	Ha	%	%
Total	981,675	1031765	1033718	1023571	1050067	1038754	1066502	1032293.1	105.2	1.4
Wheat	394,067	379,227	381,769	403,705	350,049	311,349	387,170	372,476.6	94.5	-0.3
Maize	355,093	382,103	382,342	276,396	386,455	414,269	346,643	363,328.7	102.3	-0.4
Sunflowers	67665	80267	68404	92057	102,380	115,414	132,247	94062	139.1	11.8

Source : own calculations after data from Romanian Statistical Yearbook, 2007-2013 data series, INS

In terms of area planted with wheat, it knows a peak in 2010, with 403,705 ha, but decreases until 2013 to 387,170 ha, with an annual rate of 0.3% in the period. The maize cultivated area, face the same situation as the wheat in 2013 decreased by 2.38% compared to the reference year 2007, with an annual rate of -0.4%.

Fig.1. The main crops cultivated areas evolution in South West Oltenia Region, 2007-2013
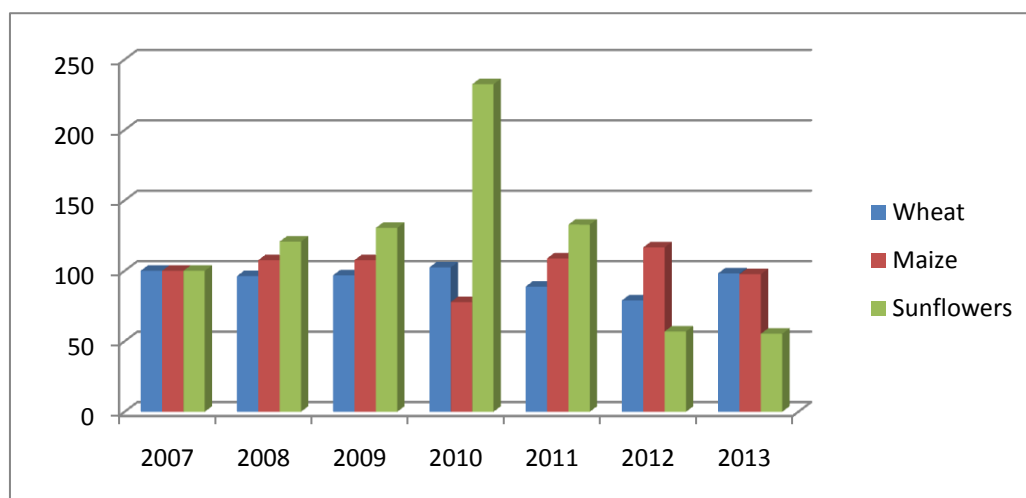
Analysing the production of the main crops in 2007-2013, we find that all cultures studied have experienced an increase in production.

Table no.2 The main crops total production evolution in the South-West Oltenia Region, 2007-2013

The main crops	2007	2008	2009	2010	2011	2012	2013	Media	Rhythm med %	Annual rate %
	Tone	Tone	Tone	Tone	Tone	Tone	Tone	Tone		
Wheat	310,892	1157996	995,112	1000332	1126897	745,916	1096190	919,047.9	295.6	23.4
Maize	315,235	1086449	1453235	1189394	1569294	604,181	1475745	1099076.1	348.6	29.3
Sunflowers	26887	113,718	110,639	160,944	178,239	137,726	237,429	137,940.3	513.04	43.8

Source: Own calculations after data from Romanian Statistical Yearbook, 2007-2013 data series, INS

In 2013 the wheat crop production is 252.6% higher than the year taken as reference 2007, the maize crop with 368.14% and the highest growth recorded is for sunflower crop of 783.06%.

Fig.2 The main crops total production evolution in the South-West Oltenia Region, 2007-2013
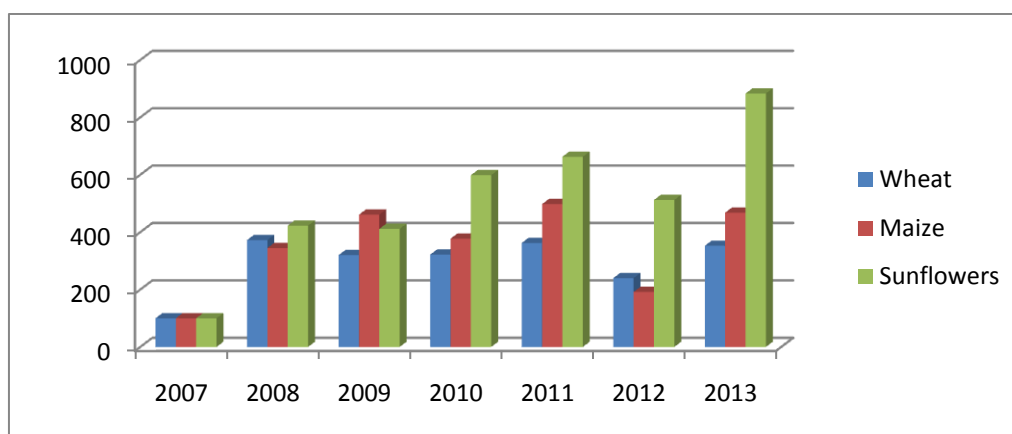
The selling price of wheat in South West Oltenia, in the analyzed period, is between 0.49 lei / kg in 2009 and 0.9 lei / kg in 2011 and 2012. In 2014 increases by 17.19 % compared to 2007.

The maize grain price sale knows a peak in 2012 of 0.89 lei / kg, but by 2014 dropped to 0.64 lei / kg, 2.3% lower than the year taken as reference 2007.

The sunflower crop sales price in 2007 was 0.82 lei / kg, grows by the year 2012 to 1.79 lei / kg, but by 2014 dropped to 0.97 lei / kg, 53 91% compared to 2012.

Table no. 3 The sale prices evolution of the main crops in South West Oltenia Region, the period from 2007 to 2014 and extrapolation to 2015

Crops	UM	2007	2008	2009	2010	2011	2012	2013	2014	2015	Rhythm Med %	Annual rate %
Wheat	Lei / kg	0.64	0.7	0.49	0.56	0.9	0.9	0.87	0.75	x	113.48	2.29
	Lei / kg	*0.59*	*0.63*	*0.67*	*0.71*	*0.75*	*0.79*	*0.82*	*0.85*	***0.88***	x	x
Maize	Lei / kg	0.65	0.71	0.42	0.57	0.74	0.89	0.73	0.64	x	102.79	-0.33
	Lei / kg	*0.60*	*0.62*	*0.64*	*0.66*	*0.68*	*0.70*	*0.72*	*0.73*	***0.75***	x	x
Sunflowers	Lei / kg	0.82	1.25	0.89	1.32	1.61	1.79	1.67	0.97	x	157.24	2.35
	Lei / kg	*0.73*	*1.06*	*1.31*	*1.47*	*1.54*	*1.53*	*1.43*	*1.24*	***0.97***	x	x

Source: Own calculations after data from Romanian Statistical Yearbook, 2007-2013 data series, INS

For wheat crop it was calculated the quadratic regression, resulting the function F (t) =0.540179 + 0.047083t-0.00101t2, the selling prices are rising and the trend extrapolation for 2015 is indicating a selling price of around 0.88 lei / kg.
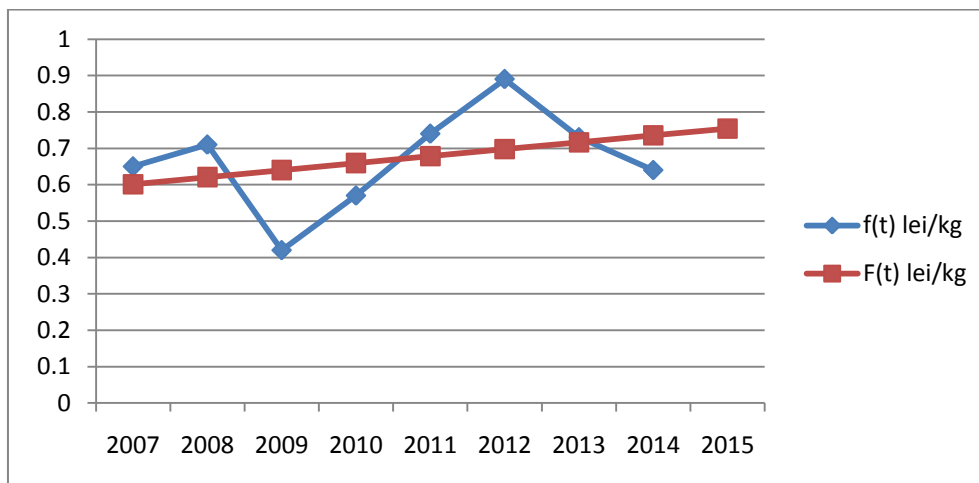
Fig. 3 The extrapolation using the quadratic regressionfor the wheat crop selling prices in South West Oltenia Region, the period 2007-2015
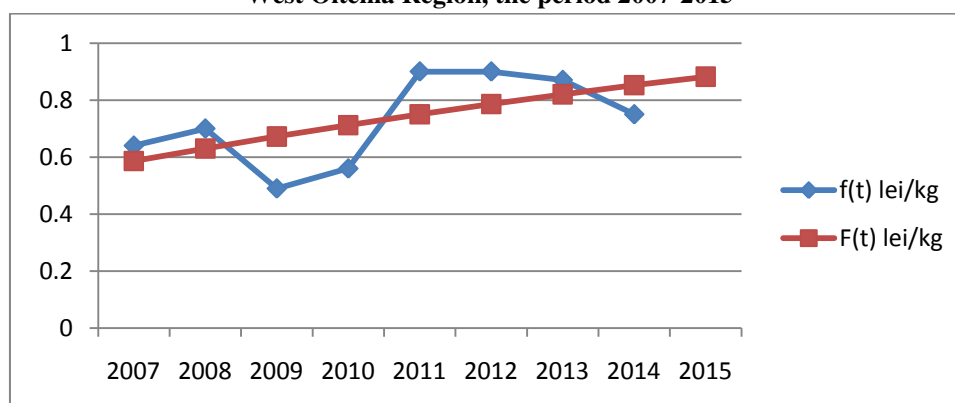
$$F(t) = 0.540179 + 0.047083t - 0.00101t2$$

For the maize crop , the trend was calculated by using the quadratic regression, resulting the function F (t) =**0.581607143 + 0.019702381t-0.000059t2**, the sale prices trend is upward and the extrapolation for 2015 indicates a selling price of around 0.75 lei / kg.

Fig 4 The extrapolation using the quadratic regression for the maize crop selling prices in South West Oltenia Region, the period 2007-2015

$$F(t) = 0.581607143 + 0.019702381t - 0.000059t2$$

For the sunflower crop it was calculated the trend using the quadratic regression, resulting the function F (t) =**0.312767857 + 0.462410714t-0.043303571t2**, with downward trend in sales prices, and the extrapolation for 2015 indicating a selling price located around 0.97 lei/ kg.

Fig.5 The extrapolation using the quadratic regression for the sunflower crop selling prices in South West Oltenia Region, the period 2007-2015
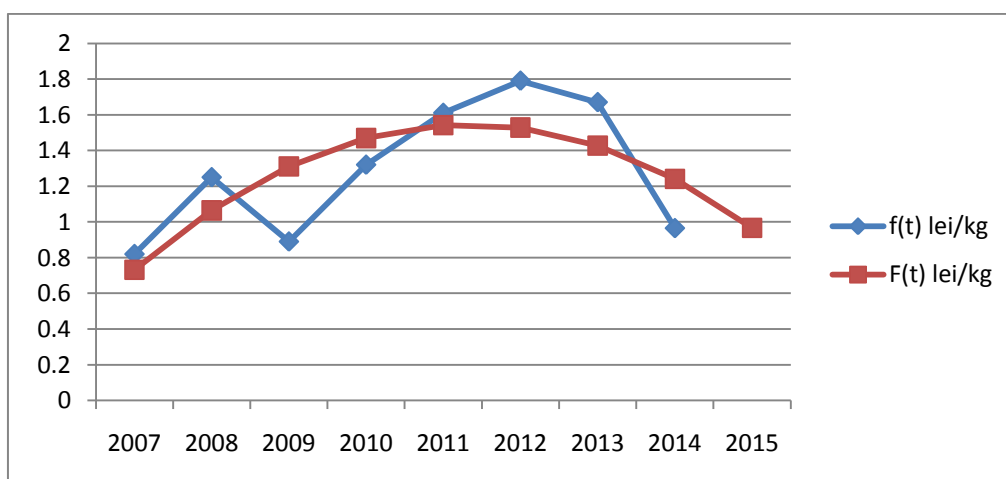
$$F(t) = 0.312767857 + 0.462410714t - 0.043303571t2$$

CONCLUSIONS

The data studied in this paper shows that the main crops cultivated areas in the period under review, decrease, the only culture that doubles its surface being the sunflower crop.

The productions are growing in this period, although the cultivated areas are significantly reduced. The largest increase is recorded for the sunflower crop of 783.06%.

Using the method of the quadratic regression equation was calculated trend in sales prices in 2015 for the main crops, as follows: -For the wheat crop we see an upward trend, with a retail price of around 0.88 lei / kg, - the culture of maize is increasing also , and the extrapolation for year 2015 is indicating a selling price around 0.75 lei / kg and the sunflower crop trend is downward , the selling price hovering around the value 0,97lei / kg.

Considering the current state and prospects of agriculture in the South-West Oltenia Region we have identified a problem that affects the future and sustainable development of the region, which can be solved with a long-term vision, strategies, objectives, priorities and concrete and correlated projects.

REFERENCES

1. Manea Draghici, Raluca Necula, 2014 Course Notes, modeling and simulation of agricultural systems
2. https://statistici.insse.ro/shop/
3. http://performeri.ccib.ro/intranetNEWS/infoFILES/infoNEWS/File/Oportunitati-SVOltenia.pdf