

THE IMPACT OF DROUGHT ON YIELD POSITION OF THE GROUP OF ENTERPRISES FROM AGRICULTURE SECTOR¹

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Summary

Starting from the fact that the amount and distribution of precipitations and the intensity of drought, considering the condition and extant of the use of irrigation systems, result in relatively low and unstable level of crop yields, the starting hypothesis of the research is that the agro meteorological trends in the period 2007-2010 influenced the yield position of the analyzed agricultural sector of Serbia. The aim of the paper is to determine the level of impact of agro meteorological trends on yield position of the group of business entities in the prevailing market conditions. The subject of the research refers to the analysis of the operation of the Serbian agricultural sector under the following activity code 011-cultivation of crops, plants and gardening. As the main source of data, the paper uses the summary financial statements of a group of business entities from agricultural sector under the activity code 011 and agro meteorological data for the period 2007-2010. By using the qualitative and quantitative methods of financial statement analysis and the synthesis of research results, the conclusion has been made that agro meteorological conditions in the observed period of time and under the existing market conditions had a significant impact on the worsening of yield position of the Serbian agricultural sector under survey.

Key words: *drought, agro meteorological conditions, irrigation, agricultural sector, yield position*

JEL: *Q12, Q14, M41, G33*

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Introduction

Bearing in mind that for numerous reasons Serbian agriculture is now in very difficult position starting from weak technical and technological equipment, lack of favorable conditions in attracting sources of financing, prices disparity, lack of consistent development strategy and excessive import protection, in the paper are emphasized the influences of adverse weather conditions and insufficient irrigation system exploitation. Agro meteorological extremes and unequal precipitation distribution in Serbia, in combination with droughts of different intensity as well as the fact that draught is more and more common appearance as a consequence had need for analysis of influence of agro meteorological conditions on agricultural sector profitability.

For the purpose of analyzing the impact of agro meteorological trends on yield position of the agricultural sector, two main sources of data were used. The first data source refers to the summary financial statements (mainly balance sheet and income statement) of agricultural sector under the activity code 011-cultivation of crops, plants and gardening for the 2007-2010 period. The use of summary financial statements means that only performance indicators of enterprises that are legally required to prepare financial statements were taken into consideration in the analysis. However, it is necessary to point out that in Serbia there is a significant number of family farms and small agricultural entities whose operating results are not included in the analysis, but they contribute to a large extent to the level of development of the entire sector. The second source of data refers to the results of humidity analysis prepared by the Republic Hydro Meteorological Service of Serbia⁴ based on the six-month standardized precipitation index (SPI-6).

In order to assess yield position of the agricultural sector under survey, the qualitative and quantitative methods of financial statement analysis were used⁵, as well as classical data collection and analysis methods, description method and synthesis method. From the qualitative methods, the decomposition method by subject and time was used. The subject breakdown was applied in the analysis of the structure of synthetic accounts of financial statements, while the breakdown by time was used when financing sources were divided by maturity, i.e. when assets were divided by the period of time in which they are deemed to be used or owned.⁶ The measurement method was used to determine the quantitative elements of the complex subject of analysis. After qualitative and quantitative characteristics of the subject of analysis had been determined, the method of comparison over time and with rule was used. The comparison over time was performed by monitoring the movement of the

4 Godišnja agrometeorološka analiza (više godina), Republic Hydro-meteorological Service of Serbia, available from: <http://www.hidmet.gov.rs/ciril/meteorologija/agro.php>, [Accessed 15/10/11]

5 Rodić, J., Vukelić, G., Andrić, M. (2007): *Teorija, politika i analiza bilansa*, Faculty of Agriculture, Belgrade, p. 131.

6 Đuričin, S. (2012): *Anliza poslovanja i mogućnosti izlaska preduzeća iz zone gubitka*, Institute of Economic Sciences, Belgrade, p. 60.

yield position indicators of the subject of analysis in the number of successive periods i.e. in the 2007-2010 period of time. The method of comparison with the rule was applied in the assessment of the research results which were compared with values and measurements ratios previously determined by the rule. Regarding the classical data collection methods, the content analysis method was used which based on the relevant literature provided the data necessary to verify the hypotheses. The description method was used mostly when explaining the results of the research and when arguing the current market conditions in the Republic of Serbia. By combining the facts that had been reached using above mentioned methods in single logical unit, the conclusions on the level of impact of agro meteorological trends on yield position of Serbian agricultural sector under survey were drawn.

In order to evaluate level of agro meteorological conditions impact on agricultural financial performances it is:⁷ performed decomposed gross financial result analysis, given breakdown of structure and allocation of total and operating revenues, defined main profitability indicators, business risk drivers and elasticity in the sense of achieving neutral financial result from operating activities as well as total financial result. To achieve additional indicators it is also performed analysis of some financial position indicators such as liquidity analysis and business entities position on sale and procurement markets. Four year period analysis of climate conditions in Serbia indicate frequent occurrence of agro meteorological extremes with the absence of leading business in normal humidity conditions. Existing agro meteorological conditions resulted with the lower quality and quantity of yields for certain crop plants and had negative effects on financial results of the observed agricultural sector. It is noticed very low level of disposable irrigation system capacities exploitation and suggested necessity of its enlargement as well as more intensive exploitation.

Agricultural sector entities business position is additionally exacerbated by the effects of world economic crisis. Due to reduction of financial resources for developing programs, financial efficiency of agricultural producers deteriorated, which caused decrease in number of agricultural machines and employees.⁸ Due to the crisis, capital raising terms and financing current production were less favorable. Lower yields as a result of current circumstances on the market, unrealistic low price parity, under the current climate conditions caused the absence of positive agricultural sector financial results. Consequently, in the paper are presented main courses of action needed in order to improve business performances of analyzed sector and agriculture sector in general, emphasizing the importance of Government support and providing the access to the alternative sources of financing.

7 Đuričin, S. (2009): *Mogućnosti izlaska preduzeća iz zone gubitka*, Accounting 11-12, Association of Accountants and Auditors of Serbia, Belgrade, p. 31.

8 Bubić, J., Hajnrih, J. (2012): *The analyses business performances of agricultural enterprises in Vojvodina during the current crisis*, Economics of Agriculture, Vol. 59, No. 2, Institute of Agricultural Economics, Belgrade, p. 185.

Agro meteorological conditions in Serbia in period 2007-2010

The unequal distribution, in space and time, of the rain- fall in Serbia causes frequent occurrence of agro meteorological extremes. Natural conditions in our country are such that there are large areas that are saturated with water, and surface water is lacking.⁹ According to the Republic Hydro Meteorological Service data for period 2007-2008 was characterized by warmer weather than usual and very unbalanced precipitations. Analysis of humidity conditions prepared on the basis of six month standardized precipitation index (SPI-6) indicates the high temperatures and huge precipitation deficit in the summer months that had adverse impact on current crop yields. In the growing season from October 2006 to March 2007, major part of the country was characterized by normal humidity conditions. For the eastern part of Serbia, it was characteristic occurrence of drought, also noticed in the area of Loznica, Požega and on the far north. In growing season April-September 2007, northern part of the country was characterized by normal humidity conditions, while major part of the western, central and eastern Serbia were under the influence of drought. Moderate drought is also noticed in the area of Vršac and Veliko Gradište, while Niš and Negotin were affected by severe drought.

Changing agro meteorological conditions caused worse agricultural production in the period from October 2007 until September 2008. Growing season from October 2007 until March 2008 is characterized by widespread occurrence of precipitation from low to extreme increase of humidity while only the areas of Kikinda, Sjenica and Vranje had normal humidity. On the other hand, in growing season April-September 2008 moderately increased humidity kept in the small area of far north, while moderate droughts were present in broad areas of Zrenjanin, Veliko Gradište, Smederevska Palanka and Valjevo. Drought affected territory were located in the areas of Bečej, Beograd, Požega and Čuprija, while Vršac was exposed to severe drought.

Unlike the period 2007-2008, for production year 2009-2010 lower quantity and quality of yields of certain agricultural crops were mainly the effect of increased humidity. Precipitation inflow was up to 40% higher comparing to the average and the thermal conditions were very low. The highest humidity degree was recorded in a broad part of Vojvodina and Western Serbia, while drought affected were southwest and eastern parts of the country. More precisely, in growing season from October 2008 to March 2009, normal humidity conditions were recorded in the north, parts of Central and Western Serbia, while slightly increased, moderately increased and severe humidity affected south and southeast regions of the country. In growing season from April to September 2009 normal humidity conditions were characteristic of the areas of Palić, Kikinda, Zrenjanin and parts of South and Southeast Serbia. Moderate drought affected the area of Loznica, Sombor and Bečej, while Central Serbia was affected by drought and Sremska Mitrovica by severe drought. For the growing season October 2009-March 2010, it was characteristic occurrence of extremely high humidity in Central and parts of

9 Rajic, Z., Novakovic, V., Gligoric, M., Lacnjevac, C., Grujic, R., Zivkovic, D. (2012): *Effects of aeration on groundwater quality for irrigation*, Economics of Agriculture, Vol. 59, No. 3, Institute of Agricultural Economics, Belgrade, p. 523.

Eastern Serbia, while the rest of the country was under the influence of strong or extreme humidity. In period April 2010-September 2010 extraordinary and extreme humidity affected northern part of the country while Belgrade, Smederevska Palanka and Loznica areas were under the influence of moderate or even a bit of increased humidity. Rest of the country was characterized by normal humidity conditions with the exception of Negotin and Sjenica where drought was recorded.

The analysis of agro meteorological conditions in the period from 2007 to 2010 indicates the fact that although the presence of extreme humidity conditions, drought was not absent any of the observed years. That is why its consequences and examination of irrigation system application require special attention.

Irrigation system in Serbia

Serbia lacks good results in the field of plant production under the natural climate conditions and irrigation system application is of the crucial importance for the yield growth. In drought years yields decrease comparing to favourable ones from 30% to 50%, and in extremely drought from 80% up to 100%¹⁰. Low exploitation level of existing irrigation systems is mainly consequence of adverse agriculture position and lack of financial assets for irrigation system machines maintenance. In a recent period only 0.5% of the total used agricultural land was irrigated that is significantly below the world average of 17% of total arable land. Insufficient use of existing systems and lack of investments in reconstruction and development of new irrigation systems significantly threatens competitiveness of Serbian agricultural sector, considering year drought losses, estimation is below cost of new system construction and the fact is that their more intensive exploitation is necessary.

Intensifying production through the irrigation as an influence has improving agricultural production structure, ways of farming and more intensive livestock production as well as competitiveness and agricultural export growth. In the conditions of intensive exploitation of plants and water potential productivity, irrigation is very important factor¹¹. Drought intensity in the 2007 caused the largest amount of total water used for irrigation. In the following period, irrigation water usage significantly decreased while in total observed period water usage for irrigation is mostly used from watercourses.

10 *Strategija upravljanja vodama i ublažavanje suša u poljoprivredi zemalja zapadnog Balkana* (2004-2007), Institute for water management Jaroslav Černi, Belgrade, available from: http://www.jcerni.org/index.php?option=com_content&view=category&layout=blog&id=80&Itemid=280&lang=sr [Accessed 28/11/11]

11 Sredojević, Z., Gajić, B., Živković, D. (2006): *Ekonomski parametri optimalne strukture proizvodnje u uslovima navodnjavanja*, Ekonomika poljoprivrede, br. 3/2006, Društvo agrarnih ekonomista SCG, Savez poljoprivrednih inženjera i tehničara Jugoslavije, IEP, Beograd, p. 800

Constructed systems cover about 115 thousands hectares which represent 2-3% of total agricultural land suitable for irrigation¹². In Serbia it is irrigated 27,000 hectares of total arable land, mainly by sprinkling process. Only 30% of the total land covered by irrigation systems is irrigated whereas number of buildings and irrigation equipment supply is insufficient, especially in areas where watercourses exist.

Table 1. Irrigation in the period 2007-2010

Explanation	2007.	2008.	2009.	2010.
Total water used for irrigation (in 000 m³)	92,391	48,409	43,477	65,450
Groundwater	914	2,045	1,280	1,420
Watercourse	86,802	43,333	38,602	62,762
Lakes and accumulation	4,675	3,031	3,595	1,268
Total used agricultural land (in 000 ha)	-	5,055	5,058	5,051
Total irrigated land (in ha)	25,763	26,260	30,576	25,128
Surface method	3,067	1,571	1,507	1,261
Sprinkling	22,061	24,172	28,585	22,442
Dripping	635	517	484	1,425
Total exploited agricultural land covered by irrigation systems (in ha)	-	-	88,964	88,089
Refers to irrigated land (in ha)	-	-	30,576	25,128
Buildings and irrigation equipment				
Number of aggregates for sprinkling	498	449	480	375
River channels – total (in km)	460	1,258	2,297	658
Pipelines – total (in km)	919	1,110	1,739	930

Source: Statistical Office of the Republic of Serbia

Irrigated land in the total observed period is about at the same level although agro meteorological conditions differ. Therefore in the period of intensive drought in the last two observed years, which were characterized by the occurrence of extreme humidity, almost the same land area was irrigated mostly by artificial rain method which points out to the inconsistent exploitation of irrigation systems in Serbia.

Yield position analysis

Low accumulative capacity of the observed agricultural sector is a consequence of the lack of suitable financing system. Mentioned has negative impact both on the exploitation level of the production resources and already impoverished technical and technological system. Impossibility of maintaining basic reproduction level and productivity decline caused faster growth of expenditures comparing to the revenues and risk of capital decrease occurrence.

¹² *Strategija razvoja poljoprivrede Srbije*, Government of the Republic of Serbia, Official Gazette 78/05, p. 36.

Under the current market conditions financial result in agriculture sector is additionally threatened by adverse agro meteorological conditions and low exploitation not only new but also the old irrigation systems and methods.

In the analysis of yield position and evaluation of agro meteorological conditions impact on the business result it is used time analysis that provides possibility to identify the moment of genesis and reasons for the negative business result as well as its future trend.

Table 2. Structure of financial result

No	Position	Sum				Structure			
		2007	2008	2009	2010	2007	2008	2009	2010
1.	Operating result	141,072	3,215,644	-1,919,591	5,064,854	41.75	-190.70	13.97	-88.96
2.	Financial result from financing activities	-2,315,829	-4,563,700	-8,344,685	-7,489,049	-685.33	270.64	60.73	131.54
3.	Financial result from regular activities	-2,174,757	-1,348,056	-10,264,276	-2,424,195	-643.58	79.94	74.70	42.58
4.	Financial result from other activities	2,512,671	-338,219	-3,475,609	-3,269,272	743.58	20.06	25.30	57.42
5.	Total Gross financial result	337,914	-1,686,275	-13,739,885	-5,693,467	100.00	100.00	100.00	100.00

Source: Authors own calculation

Unsuccessful business of the agricultural sector entities that relate to Growing crops, plants and gardening is reflected in the negative result from the regular activities. Realized losses from the regular activities are with the exception of 2009 consequence of negative financial result from the financing activities. Operating result was growing but not enough since loss from the financing activities was still increasing.

Agro meteorological extremes had as a consequence in 2009 lower yield and a worse crop quality that with the impact of world economic crisis significantly threatened financial result of the analysed agricultural sector. The negative effects of the economic crisis resulted in a reduction in profits of agricultural enterprises, significant decline in the purchasing power of consumers of agricultural products and inflow of foreign direct investment in this sector.¹³ Negative gross financial result is a consequence of the outstanding negative result from the regular activities threatened mainly by the growing loss in the part of financing but also by the realized operating result.

13 Bubić, J., Hajnrih, J. (2012): *The analyses business performances of agricultural enterprises in Vojvodina during the current crisis*, Economics of Agriculture, Vol. 59, No. 2, Institute of Agricultural Economics, Belgrade, p. 185.

Typical total revenue structure with the operating revenues share more than 90% is deteriorated by the relatively high proportion of the financing and other revenues. Also, bad allocation of the total revenues with the large share of the financial and other expenditures caused the occurrence of the negative gross and net financial result in the period 2008-2010. High costs of financing that in average affect operating revenues by 5% are the consequence of the currently high interest rates as well as existing ownership structure that moved in favour of greater leverage. Since there are no accumulation possibilities under the business with operating losses, share of the costs of financing in the total revenue structure, under the current adverse conditions on the capital market, can be considered as high. Moreover, other expenditures share in total revenues amounting to 6% in the average indicate possibility that high degree of assets could be disposed, poor management, debtor illiquidity, but also a damage caused by natural disasters and analysed agro meteorological extremes.

Table 3. Total revenue structure and allocation (in %)

No	Position	2007	2008	2009	2010
1.	Operating revenues	91.86	92.93	92.54	93.27
2.	Financial revenues	1.95	1.90	2.07	1.79
3.	Other revenues	6.19	5.18	5.38	4.93
4.	Total revenues	100.00	100.00	100.00	100.00
5.	Operating expenditures	91.75	90.82	93.55	90.50
6.	Financial expenditures	3.79	4.88	6.45	5.90
7.	Other expenditures	4.19	5.40	7.20	6.72
8.	Total expenditures	99.73	101.10	107.21	103.12
9.	Gross profit	0.27	0.00	0.00	0.00
10.	Gross loss	0.00	1.10	7.21	3.12
11.	Net income from the suspended operations	0.01	0.00	0.18	0.03
12.	Net income from the suspended operations	0.06	0.02	0.20	0.13
13.	Income before tax	0.22	0.00	0.00	0.00
14.	Loss before tax	0.00	1.12	7.23	3.22
15.	Tax expenditures- current period	0.10	0.11	0.08	0.10
16.	Deferred tax expenditures	0.06	0.43	0.05	0.04
17.	Deferred tax revenues	0.55	0.28	0.19	0.43
18.	Personal salary paid to the employer	0.04	0.00	0.01	0.00
19.	Net profit	0.58	0.00	0.00	0.00
20.	Net loss	0.00	1.39	7.17	2.93

Source: Authors own calculation

Sector has typical operating revenues structure with the more than 90% revenue from sales share. Decreasing share of other revenues in the total operating revenues is partly consequence of decrease of very important revenues that relate to premium incomes, subventions and regress. Above mentioned is an evidence for low level of investments and inadequate support for the development of agriculture sector. Structure of the operating revenues allocation indicates that huge share of operating revenues covers variable costs,

with the average amount about 75%, while the rest cover relatively high costs of salaries, that did not move in line with rise and decline of inflation and operating revenues, depreciation, accruals and other operating revenues.

High share of land in total fixed assets influences low costs of depreciation that are in the observed period slightly decreased as a result of other fixed assets number decline.

Table 4. Structure and allocation of operating revenues (in %)

No	Position	2007	2008	2009	2010
1.	Sales revenue	90.71	92.10	93.58	95.00
2.	Revenue from use of own products and merchandise	4.46	4.14	5.12	3.12
3.	Inventories value increase	5.28	5.26	4.05	3.84
4.	Inventories value decrease	2.31	3.20	4.38	3.46
5.	Other operating revenues	1.86	1.70	1.63	1.51
6.	Operating revenues	100.00	100.00	100.00	100.00
7.	Costs of goods sold	47.39	46.89	47.05	57.43
8.	Costs of material	27.40	28.76	30.65	21.72
9.	Costs of salaries, compensations and other personal expenditures	11.65	9.82	10.52	7.30
10.	Depreciation and accruals	3.72	3.38	3.89	2.84
11.	Other operating expenditures	9.72	8.89	8.98	7.79
12.	Operating expenditures	99.88	97.74	101.09	97.08
13.	Operating profit	0.12	2.26	0.00	2.92
14.	Operating loss	0.00	0.00	1.09	0.00

Source: Authors own calculation

Operating costs increase that was sharper comparing to the operating revenues in 2009 resulted with occurrence of negative operating result that is partly the effect of the world economic crisis.

Table 5. Business profitability and bankruptcy risk analysis (in %)

No	Position	2007	2008	2009	2010
1.	ROA	0.35	-0.90	-3.99	-1.94
2.	ROE	0.79	-2.07	-9.51	-5.14
3.	EBIT (operating revenues)	0.12	2.26	-1.09	2.98
4.	Z-score - Bankruptcy risk analysis	1.1293	1.2165	1.0397	1.2050

Source: Authors own calculation

Bad structure and allocation of operating revenues caused business to be barely profitable in 2007 and non-profitable in period 2008-2010. Return on Assets (ROA) decrease indicates lower efficiency in agriculture sector that could be the influence of inadequately performed planning process as well as control of business activities. Outstanding low and negative value of Return on Equity (ROE) shows weaker competitiveness of products, services and whole sector. Beside low calculated ROE, it can be noted that loss in assets that lowers

nominal equity value. For the optimistic prognosis it can be mentioned the fact that in the total analysed period it is achieved enough amount of non-distributed profit to cover the current loss resulting the equity to be in the safe zone.

Inefficient and not profitable business caused the need for the bankruptcy risk analysis whose results are in favour the fact that sector faced high bankruptcy risk in 2009 while in other years bankruptcy probability was about 50%. Business on the edge of existence indicates the need for more intensive planning and control activities as well as investments in building and use of irrigation systems for production characterized by agro meteorological extremes such as drought that was present in every analysed year.

Table 6. Risk of achieving financial result and break-even point

No	Position	2007	2008	2009	2010
1.	Operating revenues	115,296,597	142,188,439	176,443,660	170,192,710
2.	Variable costs	96,081,864	118,201,446	150,856,237	144,890,638
3.	Contribution margin (1-2)	19,214,733	23,986,993	25,587,423	25,302,072
4.	Fixed and dominantly fixed costs	19,073,661	20,771,349	27,507,014	20,237,218
5.	Net costs of financing	2,315,829	4,563,700	8,344,685	7,489,049
6.	Operating result (3-4)	141,072	3,215,644	-1,919,591	5,064,854
7.	Gross financial result from regular activities (6-5)	-2,174,757	-1,348,056	-10,264,276	-2,424,195
8.	Business risk factor (3/6)	136.21	7.46	-13.33	5.00
9.	Financial risk factor (6/7)	-0.06	-2.39	0.19	-2.09
10.	Total risk factor (8x9)	-8.84	-17.79	-2.49	-10.44
11.	Percentage of contribution margin in operating revenues (3/1)x100	16.67	16.87	14.50	14.87
12.	Operating revenues required for neutral financial result (4/1)x100	114,450,105	123,126,967	189,680,619	136,124,305
13.	Operating revenues required for gross financial result (4+5)/11)x100	128,346,067	150,179,352	247,223,217	186,498,897
14.	Percentage of operating revenues usage to achieve neutral operating result (12/1)x100	99.27	86.59	107.50	79.98
15.	Coefficient of elasticity for achieving neutral operating result ((1-12)/1)x100	0.73	13.41	-7.50	20.02
16.	Percentage of operating revenues usage to achieve neutral gross financial result (13/1) x100	111.32	105.62	140.11	109.58
17.	Coefficient of elasticity to achieve neutral gross financial result (1-13)/1x100	-11.32	-5.62	-40.11	-9.58

Source: Authors own calculation

High leverage indicates enlarged risk that positive operating result will not be realized in 2007 and a result was actually low that year as an evidence for this statement. In the following year, business risk factor was significantly lower causing the operating result

to have strong rise. Negative business risk factor in 2009 is a consequence of operating loss and impossibility to cover fixed expenditures from the achieved operating revenues, while in 2010 lower business risk make the achieved operating result to be the highest in the observed period.

Negative financial risk indicator refers to the high level of uncertainty concerning gross financial result¹⁴ and it is constant for the whole analysed period. Dramatically unfavourable financial risk is an evidence for high amount of operating profit to cover interest fixed expenditures.

Negative amount of combined (complex) leverage refer to high company exposure to the total risk where the net income is in direct interdependence with the volume of sales and revenues from sale achieved. These revenues were, in the relatively stable global parity of sale and purchase prices period, mostly dependent on production achieved in unstable agro meteorological conditions.

Table 7. Global parity of sale and purchase prices (purchase price = 1)

Year	2007	2008	2009	2010
Global parity	1.2385	1.2365	1.2014	1.2034

Source: Authors own calculation

Operating revenues percentage needed to realize neutral operating profit or gross financial result, is very high and in the most cases beyond 100% referring to operating loss or negative gross financial result respectively. Negative elasticity coefficient of the neutral operating profit in 2009 is a proof of the operating loss occurrence, while its negative value concerning gross financial result confirms the losses from the regular activities.

Unprofitable business is followed by the constant illiquidity. In the whole analysed period it is noted that exists illiquidity of first, second and third level.

Table 8. Liquidity assessment

No	Position	2007	2008	2009	2010
1.	Cash and cash equivalents	4,327,430	2,480,360	3,289,876	3,521,582
2.	Total liquid assets	52,003,371	65,701,683	100,979,503	84,208,009
3.	Total working capital	84,578,477	102,338,731	145,306,341	124,455,205
4.	Short term liabilities	95,003,837	106,645,810	155,102,894	142,156,639
5.	First liquidity level (1/4)	0.05	0.02	0.02	0.02
6.	Second liquidity level (2/4)	0.55	0.62	0.65	0.59
7.	Third liquidity level (3/4)	0.89	0.96	0.94	0.88

Source: Authors own calculation

¹⁴ In this case, result from regular activities since other revenues and expenditures were not the subject of the risk analysis of achieving financial result and profitability break even point.

Illiquid business is partly a consequence of the very low inventories turnover ratio and weak sector position in purchase and sale markets. Number of receivable days is less than the payable days referring to better position on the sales market. Although considering the fact that in the observed period it took 137 days for the receivables payment and 241 days to pay liabilities in the average, whole sector is characterized by poor position on both sales and purchases market.

Table 9. Purchase and sale market

No	Position	2007	2008	2009	2010
1.	Receivable days	128	131	159	131
2.	Payables days	264	227	238	235
3.	Inventory days	138	124	118	109

Source: Authors own calculation

Interconnection between profitability and financial position determined unsuccessful business of the sector considering all financial result and liquidity indicators. That is a starting solution in attempts to overcome the crisis and imposes the need for subsidizing companies in agriculture sector. Breaking the monopolies and establishment of the real prices parity with the adequate knowledge and experience primarily in the field of choosing the best varieties, ways of tillage and in building and exploitation of the irrigation systems would lead to yield rise, better financial result and accumulation.

Conclusion

By research results synthesis, it was concluded that agro meteorological trends in the 2007-2010 period of time, under prevailing market conditions, had a significant impact on the worsening of yield position of the agricultural sector in Serbia under the activity code 011-cultivation of crops, plants and gardening. Throughout the entire period under survey, the sector recorded negative operating result which is mainly due to high losses in the field of finance, as well as very low operating results. Since the relatively stable global sales and purchase parity price was determined, the achieved operating result was largely depended on the amount of yield which recorded low values due to frequent occurrence of agro meteorological extremes.

Agro meteorological extremes and inconsistent exploitation of irrigation systems have influenced the growth of risk of achieving a positive gross financial result. Investments in new and consistent exploitation of existing irrigation systems would contribute to the growth of yield, which would cause an increase in the value of sales, and through them, in operating result. An increase in the operating result would cause a reduction of risk of achieving a negative gross financial result thus minimizing or eliminating the probability of bankruptcy and improving the prospects of the development of agricultural sector.

In order to strengthen the agricultural sector, its competitiveness and exports it is necessary to adopt and implement the long-term plan in the field of combat drought and other agro

meteorological extremes followed by improvements in the breeding of varieties resistant to the ruling climate conditions in Serbia. The insolvent operations and high level of financial expenses are reducing an enterprise's possibility to re-borrow. For that reason, more intensive subsidizing of agricultural production is necessary, as well as improvements in the market operating chain which is of crucial importance for the reconstruction of existing and installation of new irrigation systems' capacities.

Literature

1. Bubić, J., Hajnrih, J. (2012): *The analyses business performances of agricultural enterprises in Vojvodina during the current crisis*, Economics of Agriculture, Vol. 59, No. 2, Institute of Agricultural Economics, Belgrade, p. 185.
2. Đuričin, S. (2009): *Mogućnosti izlaska preduzeća iz zone gubitka*, Accounting, no. 11-12, Association of Accountants and Auditors of Serbia, Belgrade, p. 30-39.
3. Đuričin, S. (2012): *Analiza poslovanja i mogućnosti izlaska preduzeća iz zone gubitka*, Institute of Economic Sciences, Belgrade.
4. *Godišnja agrometeorološka analiza*, Republic Hydrometeorological Service of Serbia, available from: <http://www.hidmet.gov.rs/ciril/meteorologija/agro.php> [Accessed 15.10.2011]
5. Rajić, Z., Novaković, V., Gligorić, M., Lacnjevac, C., Grujić, R., Živković, D. (2012): *Effects of aeration on groundwater quality for irrigation*, Economics of Agriculture, Vol. 59, No. 3, Institute of Agricultural Economics, Belgrade, p. 523.
6. Rodić, J., Vukelić, G., Andrić, M. (2007): *Teorija, politika i analiza bilansa*, Faculty of Agriculture, Belgrade.
7. Sredojević, Z., Gajić, B., Živković, D. (2006): *Ekonomski parametri optimalne strukture proizvodnje u uslovima navodnjavanja*, Ekonomika poljoprivrede, br. 3/2006, Društvo agrarnih ekonomista SCG, Savez poljoprivrednih inženjera i tehničara Jugoslavije, IEP, Beograd, p. 799-807.
8. *Strategija razvoja poljoprivrede Srbije*, Government of the Republic of Serbia, Official Gazette no. 78/05, p. 36.
9. *Strategija upravljanja vodama i ublažavanje suša u poljoprivredi zemalja zapadnog Balkana (2004-2007)*, Institute for water management Jaroslav Černi, Belgrade, available from: http://www.jcerni.org/index.php?option=com_content&view=category&layout=blog&id=80&Itemid=280&lang=sr [Accessed 28.11.2011]

UTICAJ SUŠE NA PRINOSNI POLOŽAJ GRUPE PREDUZEĆA IZ POLJOPRIVREDNOG SEKTORA

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Rezime

Polazeći od činjenice da količina i raspodela padavina, odnosno intenzitet suše, s obzirom na stanje i obim upotrebe sistema za navodnjavanje, imaju za posledicu relativno nizak i nestabilan prinos useva, polazna hipoteza istraživanja je da su agrometeorološka kretanja u periodu 2007-2010. godine uticala na prinosni položaj analiziranog sektora poljoprivrede Srbije. Cilj rada je da se u vladajućim tržišnim uslovima utvrdi stepen uticaja agrometeoroloških kretanja na prinosni položaj grupe privrednih subjekata. Predmet istraživanja je analiza poslovanja poljoprivrednog sektora Srbije pod šifrom delatnosti 011 – gajenje useva, zasada i baštovanstvo. Osnovni izvor podataka su zbirni finansijski izveštaji grupe privrednih subjekata poljoprivrednog sektora pod šifrom delatnosti 011 i agrometeorološki podaci za period 2007-2010. godine. Primenom metoda kvalitativne i kvantitativne analize finansijskih izveštaja i sintezom dobijenih rezultata istraživanja došlo se do zaključka da su u analiziranom periodu agrometeorološka kretanja, pri vladajućim tržišnim uslovima, značajno uticala na pogoršanje prinosnog položaja posmatranog poljoprivrednog sektora Srbije.

Ključne reči: suša, agrometeorološki uslovi, navodnjavanje, poljoprivredni sektor, prinosni položaj

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