ECONOMIC ANALYSIS OF SUNFLOWER PRODUCTION ON FAMILY FARMS IN THE REPUBLIC OF SERBIA

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Abstract: *Serbian agricultural producers are currently facing with a large number of challenges which have significant influence on their business activities. Continuous monitoring and evaluation of existing family farms business activities is the only way to improve their profitability and enhancing competitiveness in such conditions. Bearing this in mind, the objective of this research is to emphasize an importance of the economic analysis of sunflower production on family farms and to contribute successfully to the formulation of the answers on questions is the sunflower production profitable and under what conditions. In order to have complete insight into investigated problem subject, investigations were carried out on selected family farms. Collected data were processed using calculation procedure for the purpose of determination of main economical indicators of the success of sunflower production. Based on realized financial results it can be concluded that with the selling price of 185 EUR t^{-1} , only family farms which have achieved yield of over 3.71 t ha^{-1} with adequate level of investments are profitable. Since realized average yield of sunflower on family farms in Republic of Serbia in year 2009 was 2.03 t ha^{-1} and level of investment necessary for realization of this yield, it is clear that majority of family farms have had loss in sunflower production. The results of this study suggest that the economic status of the sunflower production depends of the yield and achieved sales price, as well as of the amount of applied production factors and price level for their acquisition.*

Key words: *economic analysis, profitability, sunflower, family farms*

INTRODUCTION

Sunflower production in Republic of Serbia is very important, and under the influence of current situation in economical and social environment subject to certain changes. Harvested sunflower surfaces in the last 10 years (from year 2000 to 2009) varied from minimum of 146,415 ha in year 2000 to maximum 199,361 ha in 2003. The greatest part of the production is realized on family farms (almost 66.8% of total harvested surfaces under sunflower in the observed period were within family farms) (Figure 1).

The average area under sunflower in the observed period is approximately 173,186.9 ha. That puts the Republic of Serbia among the countries where sunflowers grown on the surface more than 100,000 ha. There are 20 such countries in the world and they found 94% of the total world area under sunflower (Bošnjak Danica and Jovanović, M., 2003).

Dramatic changes which occurred on the market are only one in the series of challenges with which agricultural producers are faced in the last production year. Namely, in conditions of the decrease of prices of primary agricultural products and increase of prices of production inputs in agriculture, business operations of family farms is seriously endangered, and the only way to improve the profitability and competitiveness in such conditions is continuous monitoring and assessment of achieved results. However, in great number of data, mutual influences and often lack of assessment criteria or measures, getting to know the reality is often very long and hard work.
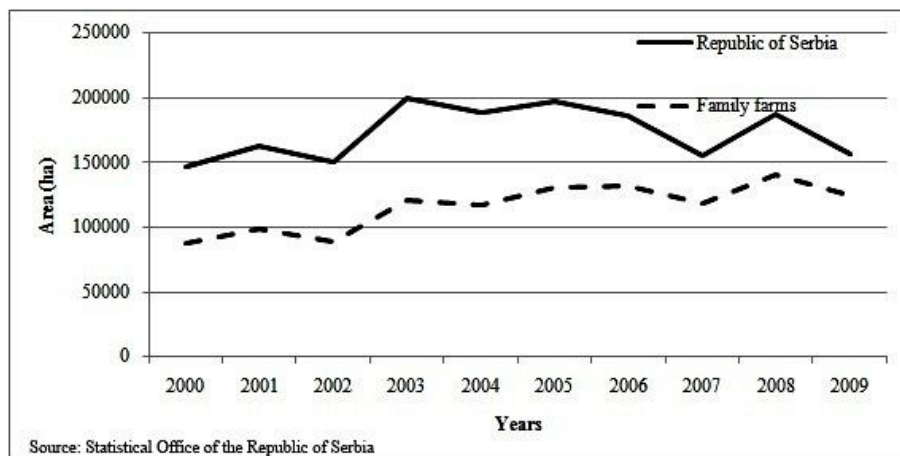
Figure 1: Trends relating to harvested sunflower surfaces in Republic of Serbia in period
from 2000 to 2009

As stated by MUĆAN AND ŽIVKOVIĆ (2006), without analysis you cannot learn about the reality, objective situation, and without objective situation you cannot set realistic goals, nor can you adequately direct the actions towards realization of these goals. Keeping this in mind, economical analysis of sunflower production on family farms was carried out in this paper, in order to achieve goal of more successful formulation of the answer to the question if and under which conditions this production is profitable.

MATERIAL AND METHODS

In order to have complete insight into investigated problem subject, investigations were carried out on selected family farms of the Republic of Serbia. Collected data were processed using calculation procedure for the purpose of determination of main economical indicators of the success of sunflower production.

RESULTS AND DISCUSSIONS

Changes which occurred in the last year on the market of primary agricultural products and production inputs in agriculture had significant effect on profitability of sunflower production. In present conditions, many family farms were not able to provide necessary financial means which influenced the decrease in the investment level. Considering above mentioned, in order to obtain complete picture, analytical calculation of sunflower production on family farms was carried out for different investments levels (Table 1).

This financial result in sunflower production is expected considering worsening of conditions in which family farms operated in 2009, manifested in increase of production costs and decrease of the price of primary agricultural products. Based on realized financial results it can be concluded that with the selling price of 185 EUR t^{-1}, only family farms which have achieved yield of over 3.71 t ha^{-1} with adequate level of investments are profitable. Since realized average yield of sunflower on family farms in Republic of Serbia in this year was 2.03 t ha^{-1} and level of investment necessary for realization of this yield, it is clear that majority of family farms have had loss in sunflower production. Also, what is the most alarming data is that with the yield of 2.03 t ha^{-1} family farms cannot cover even the variable production costs.

Table 1

Analytical calculation of sunflower production on family farms in year 2008/2009 for different investment levels (price of sunflower 185 EUR t^{-1}) (EUR ha^{-1})

DESCRIPTION	Yield Level (t ha^{-1})				
	2.0	2.5	3.0	3.5	4.0
I GROSS INCOME					
1. Crop revenue	370.00	462.50	555.00	647.50	740.00
II COSTS					
1. VARIABLE COSTS	386.95	413.98	441.00	468.03	495.05
1.1. Seed	38.71	38.71	38.71	38.71	38.71
1.2. Fertilizer	94.27	117.83	141.40	164.96	188.53
1.3. Pesticide	25.30	25.30	25.30	25.30	25.30
1.4. Fuel, oil, repair and maintenance	188.69	188.69	188.69	188.69	188.69
1.5. Other variable costs	39.98	43.44	46.90	50.36	53.81
2. FIXED COSTS	206.67	206.67	206.67	206.67	206.67
3. TOTAL OF ALL COSTS	593.63	620.65	647.67	674.70	701.72
III PROFIT	-223.63	-158.15	-92.67	-27.20	38.28
	-60.44%	-34.19%	-16.70%	-4.20%	5.17%

Source: Author's calculation

Therefore it is extremely important to identify dominant groups of costs in sunflower production (Figure 2) in order to be able to potentially make some savings. Reducing investments into production and at the same time maintaining of the high yields for the purpose of higher economical gain is interest of producers of all crops, even sunflower, and as pointed out by MUNĆAN AND ŽIVKOVIĆ (2004), requirement for maximum economical efficiency, i.e. realization of minimum-maximum principle, which in organization of business operation means: realization of maximum results (outputs) with minimum resource investments (inputs).

The most significant item in costs of sunflower production (29.13%) is costs of fuel, lubricants and machinery repair and maintenance, which is due to high purchasing price of fuel in the observed production year. As stated by VASILJEVIĆ ZORICA et al. (2008) purposeful and timely realization of adequate measures in the field of management is necessary in order to increase efficiency of agricultural machinery and minimize the cost of their use. This is certainly one of the sure ways to alleviate consequences of high fuel costs which is predominantly under the influence of global trends on the market.

However, in case of mineral fertilizer costs (21.83%) potential savings in mineral fertilizers applied by some family farms where there was lack of financial means and favourable sources of financing cannot be considered as rationalization, since reduced investment in this segment reflected negatively on profitability of production, since it is well known fact that quantity of applied mineral fertilizer is one of the factors which significantly influences the realized yield. Example of family farms where full agro-technical measures were applied, which included application of adequate quantities of mineral fertilizer, even in

conditions of the high purchasing price of this input, has economical justification considering it contributes to increase of profitability of the production (Table 1).
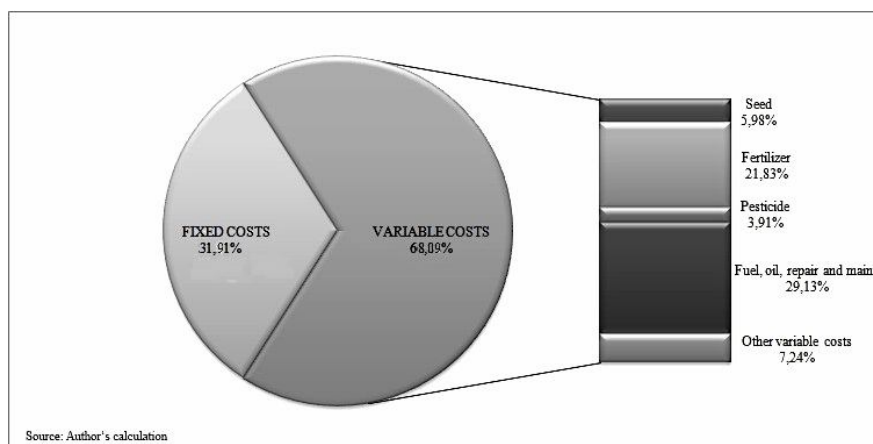

Source: Author's calculation

Figure 2: Structure of costs in sunflower production on family farms in year 2008/2009 (yield 3.0 t ha^{-1})

However, considering high price of mineral fertilizers, many family farms were not able to apply the sufficient amount of this input, which reflected negatively on yield, and on profitability of the production. So, it can be concluded that in observed production year, conditions for more intensive investments were not provided, as necessary assumption for increase of yield per unit of surface, and in this way realization of more profitable production.

Considering the high share of fixed costs (31.91%) it is necessary to find the solution for their reduction, using the fact, as stated by GOGIĆ (2005), that fixed costs do not change with the change of the production level or degree of the utilization of capacities, i.e. their total amount remains the same regardless of the quantity of produced products or services performed, which will reflect on financial results of the production.

Table 2

Realized profit per ha in sunflower production on family farms in year 2008/2009
depending on realized selling price and realized yield of sunflower

Price (EUR t[-1])	Yield Level (t ha^{-1})				
	2.0	2.5	3.0	3.5	4.0
140	-313.63	-270.65	-227.67	-184.70	-141.72
155	-283.63	-233.15	-182.67	-132.20	-81.72
170	-253.63	-195.65	-137.67	-79.70	-21.72
185	-223.63	-158.15	-92.67	-27.20	38.28
200	-193.63	-120.65	-47.67	25.30	98.28
215	-163.63	-83.15	-2.67	77.80	158.28
230	-133.63	-45.65	42.33	130.30	218.28

Source: Author's calculation

For the purpose of investigation of the influence of selling price and realized yield on variations of realized profit in sunflower production, the adequate analysis was carried out (Table 2).

In case in production yield of 3.0 t ha^{-1} is realized, sunflower production is not profitable if the selling price is under 215.89 EUR t^{-1}. Considering that market price of sunflower is 185 EUR t^{-1}, this means that sunflower production is profitable, as already stated, only if realized yield is higher than 3.71 t ha^{-1}. It is necessary to point out that family farms which realized yield of over 3.0 t ha^{-1} managed to cover variable production costs even with the current price of 185 EUR t^{-1}, and with price over 215.89 EUR t^{-1} even to realize profit. So, higher selling price of sunflower and higher yield result in changes which have positive effect on profitability of sunflower production as well as family farms in general.

CONCLUSIONS

Regardless of the conclusions relating to conditions under which sunflower production is profitable, final conclusion cannot be made without additional analysis, because family farms are different in size and/or relay on different production technologies, which is reason for differences in profitability of productions.

Based on results of carried out research it can be concluded that economical position of this production is under the influence of realized yield and selling price, as well as amount of applied production factors and level of prices of their purchasing.

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