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Development of Selected Marketing and Economic Indicators Within the Growing of Oilseed Rape in the Slovak Republic

Growing of oil crops has spread considerably in the last years. The most important oil crop grown in our conditions is oilseed rape. In this paper we evaluate the growing of oilseed rape from the production and economic point of view. We focused on the years 2004 – 2010. Obtained results show that the economic advantage of oilseed rape growing is affected mainly by the climatic conditions as well as by the intensification of production and support policy. The year 2008 was economically most advantageous of evaluated years. The highest loss within the growing of oilseed rape was recorded in 2009. Higher hectare yield of oilseed rape can be achieved by the intensification of production.

INTRODUCTION

Agriculture is one of the most complex branches of economy not only in Slovakia but also in the whole European Union (EU). It results from the fact that the growing of agricultural commodities and the food production are complex processes. Moreover, the system of management – legislation and the institutional, organizational and administrative provision of agrarian market within the EU are complex processes as well.

Oil crops play an important role in the Slovak agriculture due to their different usages. Concerning the seeding, they are the second most common crops after the cereals. Oil crops form the raw base for different sectors of food processing and light industries within Slovak national economy. In the last years, these crops have belonged to profitable commodities of agrarian market. It is the consequence of increased media support when providing good human nutrition and the system approach of processing industry in the vertical production, processor and trade.

Oilseed rape growing has a long tradition in the Slovak Republic. Concerning average yields, Slovakia is almost approaching the most successful producers such as Germany, France or Great Britain. This is achieved thanks to industrial technologies. Mainly France and Great Britain have more suitable conditions for oilseed rape growing because of mild winters and sufficient precipitation. On the other hand, the technologies of oilseed rape growing on large areas are at higher level in Slovakia than in above mentioned countries. The growing of oilseed rape in all Slovak regions helped to determine the most suitable areas for its growing. Consequently, the areas of oilseed rape are decreasing in corn production areas whereas their number is increasing in potato production areas where the growing of oilseed rape shows the highest yield and the biggest profit. Concerning the establishment of oilseed rape it must be mentioned that a corn production area is not suitable for oilseed rape growing because the soil is too dry

after the summer and is not suitable for the traditional establishment of oilseed rape, which should be preceded by ploughing. On the contrary, rape and especially potato production areas are suitable for the emergence of oilseed rape after the traditional preparation of soil including ploughing. These areas usually provide an average snow cover during the winter and sufficient precipitation during the spring. In spite of the production zoning, oilseed rape will be probably spread in all production areas.

Oilseed rape is also a very important energy crop. There are two possibilities how to increase oilseed rape production. First possibility is to increase the number of growing areas. However, the producer could come across the seeding procedure policy. Second possibility is much more efficient and it is based on the intensification of oilseed rape growing by means of higher quality agrotechnology, plant protection and by growing highly efficient varieties and hybrids.

Oilseed rape is not only a common crop but it also provides first sales within the plant production in a given year. Moreover, it is considered to be an important forecrop under the winter cereals.

MATERIAL AND METHODS

The main aim of the paper is to assess selected production and economic problems within the growing of oilseed rape in the Slovak Republic. The paper is based on the information gathered from the materials published by the Research Institute of Agricultural and Food Economics in Bratislava. We focused on the years 2004 – 2010. The paper also analyzes the production of oilseed rape from the following points of view: prime costs, yield, producer prices and subsidies. These are used to evaluate economic relations such as sales, cost efficiency, share of subsidies on settlement costs, share of subsidies on sales and break-event point of yield.

Financial data obtained within 2004 – 2008 were calculated according to the conversion rate set at 30.126 Slovak koruna to the Euro.

In addition, other materials published by the Ministry of Agriculture of the Slovak Republic, the Research Institute of Agricultural and Food Economics and by the Statistical Office of the Slovak Republic are used to achieve the set objective. Yields presented in Table 1 as well as in other tables are gathered from different sources.

Efficiency of costs presents the index value which expresses the rate of profit (loss) from each Euro put into the production.

The break-event point from 1 hectare (without subsidies) is expressed by the following formula:

$$\acute{U} = \frac{VN}{P}$$

The break-event point from 1 hectare (with subsidies) is expressed by the following formula:

$$\acute{U} = \frac{VN}{(P + D)}$$

The above mentioned point shows the minimum hectare yield of oilseed rape when the prime costs of oilseed rape production are equal to revenues.

VN – prime costs (€. ha^{-1})
P – exercise price (€. ha^{-1})
Ú – yield (t . ha^{-1})
D – subsidies per hectare

RESULTS AND DISCUSSION

Table 1 shows selected marketing information on oilseed rape within given years. It can be observed that harvested areas of oilseed rape rose by 79% (72,493 ha) from 2004 – 2010. The largest harvested areas were recorded in 2009 when they reached the area of 166,476 ha. The hectare yields fluctuated. Concerning producers, the year 2004 was the best because the average hectare yield of oilseed rape reached 2.87 $t.ha^{-1}$. The production increased by 23% and the highest values were achieved in 2008 (424,444 t). The most significant increase (in %) was determined in relation to import due to the fact that in 2004, the import of oilseed rape into Slovakia was neglectable (803 ton) and within the domestic production it accounted for 0.3%. Export reached the peak in 2008 (189,838 ton). In 2010 the export indicator decreased significantly (83,115 ton) in comparison with the year 2009. This decrease accounts for 48.5%. The domestic consumption rose by 35%. The consumption of oilseed rape for the MERA production is continuously increasing whereas the use of rape seeds for food purposes is decreasing.

Table 1 Selected information on oilseed rape in Slovakia according to years (in ha, $t.ha^{-1}$, t)

Indicator	**Years**							
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**Index 10/04**
Harvested area	91,496	106,204	122,511	153,830	162,871	166,476	163,989	1.79
Yield	2.87	2.21	2.12	2.09	2.61	2.32	1.97	0.69
Production	262,660	235,066	259,650	321,100	424,444	386,691	322,452	1.23
Import	803	3,309	5,712	5,842	13,832	44,804	6,580	8.19
Export	85,410	87,009	123,206	140,036	189,838	171,495	88,380	1.03
Domestic consumption	178,000	151,419	142,156	186,906	248,438	260,000	240,652	1.35
- food consumpt.	101,000	74,419	46,440	53,000	95,116	80,000	70,000	0.69
- MERO	77,000	77,000	95,716	133,906	153,272	180,000	170,652	2.22

Source: VÚEPP Bratislava: Oil Crops. Situation and Development Report, own calculations.

Table 2 presents hectare yields, producer prices, prime costs, sales and cost efficiency within the growing of oilseed rape. The highest producer price was recorded in 2008 (412.06 €.t^{-1}) and the lowest producer price was observed in 2005 (224.42 €.t^{-1}). In 2008 – 2009 the price of oilseed rape decreased enormously by 162.89 €.t^{-1}, which accounted for 40% annual decrease. Prime costs also reached the highest value in 2008. The increase of prices of fertilizers and means of chemical crop protection affected considerably the increase of costs. There was a significant increase of production

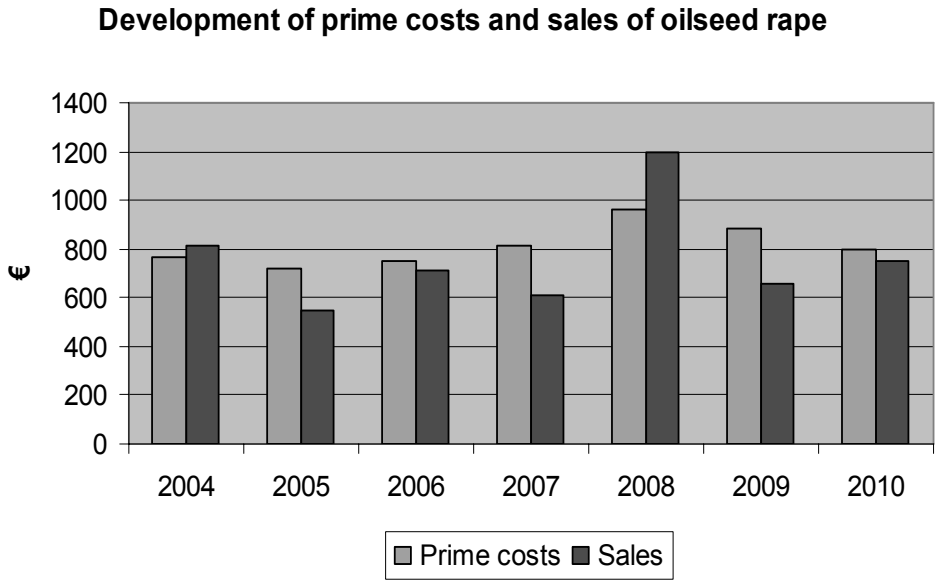
efficiency in 2008 and 2004. The producers of oilseed rape reached the sales of 1.24 or 1.06 € (without subsidies) for 1 € invested into the production. Concerning the rest of evaluated years, the growing of oilseed rape (without subsidies) was unprofitable in Slovakia. This fact can be observed in Graph 1, which presents the development of prime costs and sales of oilseed rape within given years. Graph 1 indicates the profit or loss with regard to the oilseed rape growing without subsidies. Graph 1 shows the increase of prime costs before 2008 and their decrease after the year 2008. The fluctuation of sales is presented as well.

Table 2 Production and economic analysis of oilseed rape growing in Slovakia in 2004 - 2010 (without subsidies)

Year	Yield in $t.ha^{-1}$	Producer price in $€.t^{-1}$	Prime costs in $€.ha^{-1}$	Sales in $€.ha^{-1}$	Cost efficiency in €
2004	3.03	292.14	764.99	812.76	1.06
2005	2.44	224.42	720.27	547.58	0.76
2006	2.67	267.94	753.60	715.40	0.95
2007	2.34	260.94	816.44	610.60	0.75
2008	2.90	412.60	962.16	1,196.54	1.24
2009	2.62	249.71	885.22	654.24	0.74
2010	2.27	329.02	797.86	746.87	0.94
Index 10/04	0.75	1.13	1.04	0.84	-

Source: Prime Costs and Economic Results of Agricultural Companies in Slovakia in 2004 – 2010 VÚEPP Bratislava, own calculations.

Graph 1 Development of prime costs and sales of oilseed rape ($€.ha^{-1}$)



Source: Prime Costs and Economic Results of Agricultural Companies in Slovakia in 2004 – 2010 VÚEPP Bratislava, own calculations.

Concerning the cost efficiency it can be stated that the highest cost efficiency (without subsidies) for 1 € invested into the production was recorded in 2008 (1.24 €). The lowest cost efficiency for 1 € invested into the production was reached in 2009 (0.74 €).

Table 3 indicates the efficiency of oilseed rape subsidies within given years. The results show that the highest share of subsidies on settlement costs was recorded in 2004 (31.21%) and the lowest one in 2010 (17.85%). The subsidies per hectare of grown oilseed rape reached the lowest value in 2010 (142.40 €.ha^{-1}) and the highest value in 2008 (294.26 €.ha^{-1}). Obtained results clearly indicate that the entrance of Slovakia into the EU (2004) increased considerably oilseed rape subsidies.

Table 3 Efficiency analysis of subsidies within the oilseed rape growing in Slovakia according to years

Year	Subsidies in €.t^{-1}	Subsidies in €.ha^{-1}	Share of subsidies on settlement costs in %	Share of subsidies on sales in %
2004	78.80	238.76	31.21	29.37
2005	80.37	196.11	27.23	35.81
2006	64.71	172.77	22.93	24.15
2007	81.05	190.70	23.36	31.23
2008	101.47	294.26	30.58	24.59
2009	85.12	223.01	25.19	34.09
2010	62.73	142.40	17.85	19.07
Index 09/96	0.80	0.60	0.57	0.65

Source: Prime Costs and Economic Results of Agricultural Companies in Slovakia in 2004 – 2010 VÚEPP Bratislava, own calculations.

Break-event points of oilseed rape yield are evaluated in Table 4. The break-event point expresses the economic situation when all costs are covered and there is neither profit nor loss. The bigger amount of production is achieved above the break-event point, the bigger profit is gained in the evaluated year. Moreover, this year is less influenced by risk factors such as the change of exercise price within the sale. The bigger amount of production is achieved below the break-event point, the bigger loss is recorded in relation to the oilseed rape production within the evaluated year.

The biggest difference in calculated break-event point of oilseed rape yield (without subsidies) was recorded in 2009 (-0.92 t.ha^{-1}). This means that if the oilseed rape yield increased by 0.92 t.ha^{-1}, the costs of oilseed rape growing would be equal to sales. Economically most advantageous years for oilseed rape growing were years 2008 and 2004 when the growing of oilseed rape was profitable also without the implementation of any subsidies. The growing of oilseed rape was loss-making even with the implementation of subsidies in 2007 and 2009. The production of oilseed rape was profitable with the implementation of subsidies in 2005, 2006 and 2010. Concerning the years 2005, 2006 and 2010, the growing of oilseed rape was loss-making without the implementation of subsidies.

Table 4 Break-event points of oilseed rape yield in Slovakia according to years

Indicator		Years						
		2004	2005	2006	2007	2008	2009	2010
Yield in t.ha^{-1}		3.03	2.44	2.67	2.34	2.90	2.62	2.27
Break-event point in t.ha^{-1}	1	2.62	3.21	2.81	3.13	2.33	3.54	2.43
	2	1.80	2.34	2.17	2.40	1.62	2.65	1.99
Difference in t.ha^{-1}	1	0.41	-0.77	-0.14	-0.79	0.57	-0.92	-0.15
	2	0.82	0.10	0.50	-0.06	1.2	-0.03	0.28
Profit (loss) in €.ha^{-1}	1	120.20	-172.67	-38.20	-205.84	234.38	-230.79	-51.00
	2	358.96	23.43	134.57	-15.15	528.65	-7.97	91.40

Source: Prime Costs and Economic Results of Agricultural Companies in Slovakia in 2004 – 2010 VÚEPP Bratislava, own calculations.
Note: 1 – without subsidies, 2 – with subsidies

The data in Table 4 indicate the need for the intensification of production. This can be done mainly by implementing positive experience and results of successful producers who reach the yield 2.9 t.ha^{-1} and more. The profitability of oilseed rape growing was influenced by the following important factors: hectare yields, prime costs, subsidies and exercise prices.

Upcoming yields will be significantly influenced by climate changes (increase of average temperatures together with the reduction of rainfall). This fact has already been recorded in the last years. Therefore, the agricultural companies will have to focus on the selection of appropriate forecrop and will have to respect the growing procedure within the production. They will also have to pay attention to the consequent soil preparation, date and density of sowing and to the provision of optimal protection and nutrition which is the task of the management of agricultural company.

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