ANALYSIS OF REVENUES AND PRODUCTION COSTS OF DAIRY SHEEP FARM

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ABSTRACT

The purpose of this study is to analyze the revenues and production costs of a dairy sheep farm to optimize the number of livestock.Statistical methods, comparative analysis are used.The results obtained show that the optimum number of sheep on the farm should be 500. The performed analysis about the activities of dairy Bulgarian Synthetic Dairy Population sheep farm, allowed concluding that: Over the three years of the analysed period, revenues from sales of milk had the greatest share in total revenues of the farm (45-52 %). In fact this confirmed the profile of the farm as dairy farm. The percentage of meat varied within a narrow range with lamb meat occupying the greatest share of meat revenues (26 - 29 %). The participation of other types of meat in farm's revenues was minor. The share of wool as element of revenues was insignificant over the 3-yar period. Wool production was rather a concomitant production therefore serious revenues from wool are not expected as at the time of the study, there is no market demand for this product. Among variable costs, the feed costs proportion was the greatest (40 – 44 %). Then followed labour, insurances and fuel costs. It should be mentioned that during the last year of the analysed period, costs for purchase of shearing machine and sharpening device are planned. Permanent costs did not change in 2016–2018. The share of depreciation costs from total costs was approximately 3 %.

Key words: economics results, sheep breeding, total costs

INTRODUCTION

Sheep farming is an important branch of EU agricultural sector, providing subsistence for thousands of producers by means of produce of exceptional quality, specific traits as well as secondary products, hence its social and economic relevance for rural regions of member states. During the last years, the sector experiences low incomes for producers, reduction of local production along with reduced consumption. The national retail market is increasingly competing with international products. Increased costs of production as a result of higher feed costs and the import of products poses a significant pressure on competitiveness of sheep farming, already in a critical condition.

The development of sheep farms is determined by natural resources and the traditions of the branch. At the same time, the development of sheep farms is not isolated from the global

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processes in this livestock sector. The trends for sheep farms development are closely associated to the EC common agricultural policy and are determined by its mechanisms and regulations (1).

The purpose of the present study was to analyse the production activities, revenues and costs of a dairy sheep farm (rearing sheep from the Bulgarian Synthetic Dairy Population breed).

MATERIAL AND METHODS

The data for the study originated from a sheep farm located in northeastern Bulgaria with initial number of 277 Bulgarian Synthetic Dairy Population sheep and 1000 ha own land. The prognosis production capacity is 500 ewes with regard to optimisation of the ratio between revenues and costs to achieve maximum profit for the farm. This capacity would be attained in 2018. Used feeds are made at the farm. The information for the study was obtained from the farmer by filling in a questionnaire.

Calculated parameters:
Revenues – they are calculated as a sum of realised produce multiplied by the cost of one

unit (milk, wool, lambs, culled animals, manure) and subsidies (coupled support and „de minimis" aid).

Costs – Total costs are calculated as sum of permanent and variable costs.
Profit – The difference between revenues and total costs.

RESULTS AND DISCUSSION

For achievement of maximum profit and reproduction, the enterprise should provide optimum planning and organisation of production, purchases and sales. A necessary prerequisite is the proper orientation of current costs and the outcome (2).

The revenues of an enterprise are all payments coming from realisation of produce. Hence, the relationship between revenues and amount of produce realised at a definite price, is obvious. In the different market structures, the price varies according to the elasticity of the market demands for the product of the enterprise. Depending on the market features, the price of

individual units sold could be either the same or could differ so that small amounts are realised at a higher price and vice versa. The total revenue represents the total sum of cash receipts from sales of produce over a given period of time. It is determined by the amount of produce and its price (3). Elements of the revenues of an enterprise are also the subsidies of different origin.

Production costs are monetary expression of the production inputs e.g. production factors. Their proportion within a unit of produce is essential from the point of view of costs (3). Production costs are a primary factor for price-associated decision making. For short periods, the enterprise could sell its produce under the average costs level, but in a distant perspective, it would not survive if price is not in concordance with costs (4).

The structure of revenues of a dairy Bulgarian Synthetic Dairy Population sheep farm for the period 2016 – 2018 is presented in **Table 1.**

Table 1. *Structure of the revenues of the sheep farm for the period 2016 - 2018*

	Years					
Revenues	2016		2017		2018	
	leva	%	leva	%	leva	%
I. Revenues (total)	164752	100	213451	100	269974	100
II. Milk	84942	52,0	107093	50,0	121464	45,0
III. Meat						
1. Lambs	42480	26,0	60750	29,0	74800	27,7
2. Lambs 6-12 months	1080	0,60	800	0,40	1000	0,37
3. Lambs 12-18 months	1080	0,60	1050	0,50	1000	0,37
4. Sheep	11466	7,0	13780	6,42	20313	7,5
IV. Wool						
1. Ewe	924	0,50	964	0,50	1236	0,45
2. Lambs 12-18 months	465	0,29	353	0,17	588	0,20
3. Ram	32	0,01	27	0,01	13	0,01
V. Subsidies						
1. De minimis	2178	1,0	2664	1,0	2892	1,0
2. National surcharge	16335	10,0	22200	10,0	42898	16
VI. Manure	3770	2,0	3770	2,0	3770	1,4

Source: Author calculations

It should be noted that over the 3-year period, the revenues increase and are anticipated to reach a maximum in 2018. The share of revenues from production of sheep milk is the most important (5, 6,7). In 2018, a slight decline of the share of milk in farm's revenues is anticipated. The second important revenues are from sales of lambs (26 – 29 %). National surcharge occupies an important part of analysed sheep farm's revenues (10 -16 %).

The increase in these revenues is due to the increasing number of animals that should attain 500 ewes in 2018. The lowest revenues are from wool, as there is practically no market demand for this product.

The data about the dynamics of chain-based and fixed-base revenues are presented in **Table 2.**

Table 2. *Dynamics of the revenues of the sheep farm for the period 2016 - 2018*

Parameters	Years						
	2016		2017		2018		
	Value, leva	%	Value, leva	Basic index, %	Value, leva	Basic index, %	Chain index, %
I. Revenues (total)	164752	100	213451	129,6	269974	163,9	126,5
II. Milk	84942	100	107093	126,0	121464	143,0	103,4
III. Meat							
1. Lambs	42480	100	60750	143,0	74800	176,1	123,1
2. Lambs 6-12 months	1080	100	800	74,1	1000	92,6	125,0
3. Lambs 12-18 months	1080	100	1050	97,2	1000	92,6	95,2
4. Sheep	11466	100	13780	120,2	20313	177,2	143,4
IV. Wool							
1. Ewe	924	100	964	104,3	1236	133,8	128,2
2. Lambs 12-18 months	465	100	353	75,9	588	126,5	166,6
3. Ram	32	100	27	84,4	13	40,6	48,1
V. Subsidies							
1. De minimis	2178	100	2664	122,3	2892	132,8	108,6
2. National surcharge	16335	100	22200	135,9	42898	262,6	193,2
VI. Manure	3770	100	3770	100	3770	100	100

Source: Author calculations

The table demonstrates a positive dynamics of revenues in general. The most important increase would occur for national surcharge in 2018. The cause is both in the increased number of animals, and in increased surcharge per animal. An important increase is noted for indices of revenues dynamics from lamb meat and sheep milk. The dynamics of revenues from sales of ram wool is negative (decreased by almost 60%).

The data about the structure of production costs of the analysed sheep farm are presented in **Table 3**.

Table 3. *Structure of the cost of the sheep farm for the period 2016 - 2018*

Costs	Years					
	2016		2017		2018	
	leva	%	leva	%	leva	%
1. Costs (total)	62199	100	65311	100	70315	100
2. Wages and social insurance	15360	24,69	15360	23,52	15360	21,85
3. Property insurance	5040	8,10	5040	7,72	5040	7,16
4. Purchase of animals	900	1,45	1350	2,07	900	1,28
5. Water	1000	1,60	1100	1,68	1100	1,56
6. Electricity	2500	4,02	2500	3,83	3000	4,27
7. Treatment	3000	4,83	3000	4,59	3000	4,27
8. Feed	25279	40,64	27821	42,59	30955	44,02
9. Salt	120	0,19	140	0,21	160	0,22
10. Fuel	5000	8,04	5000	7,65	5000	7,12
11. Amortisation	2000	3,22	2000	3,07	2000	2,85
12. Equipment	-	-	-	-	1800	2,55
13. Other expenses	2000	3,22	2000	3,07	2000	2,85

Source: Author calculations

The data show that the share of costs for feed was the greatest (40.64 – 42.59 **%**), followed by labour remuneration and insurance costs. In sheep from the same breed, Toneva (8) established a share of feeds amounting to 46% of total costs. The smallest share was for salt licks costs, which increased insignificantly throughout the analysed years.

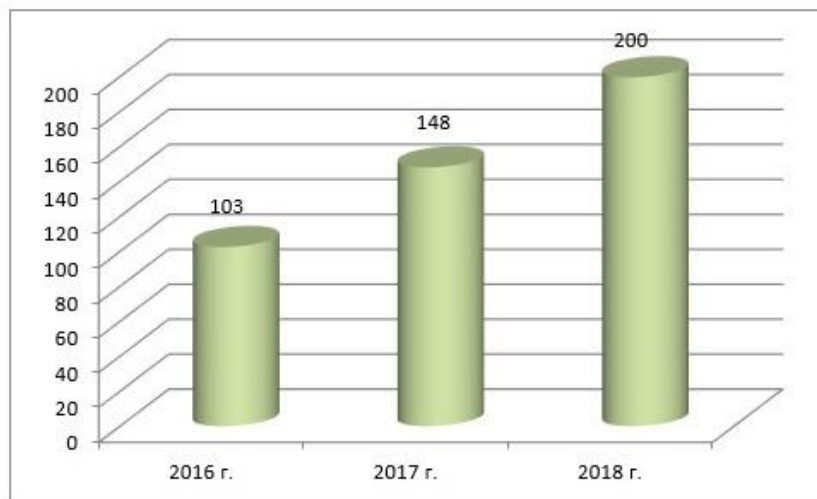The results from analysis of chain-based and fixed-base costs are given in **Table 4.**

Table 4. *Dynamics of the cost of the sheep farm for the period 2016 – 2018*

Parameters	Years						
	2016		2017		2018		
	Value, leva	%	Value, leva	Basic index, %	Value, leva	Basic index, %	Chain index, %
1. Costs (total)	62199	100	65311	105,0	70315	113,0	107,7
2.Wages and social insurance	15360	100,0	15360	100,0	15360	100,0	100,0
3. Property insurance	5040	100,0	5040	100,0	5040	100,0	100,0
4. Purchase of animals	900	100,0	1350	150,0	900	100,0	66,7
5. Water	1000	100,0	1100	110,0	1100	110,0	100,0
6. Electricity	2500	100,0	2500	100,0	3000	120,0	120,0
7. Treatment	3000	100,0	3000	100,0	3000	100,0	100,0
8. Feed	25279	100,0	27821	110,0	30955	122,5	111,3
9. Salt	120	100,0	140	116,7	160	133,3	114,3
10. Fuel	5000	100,0	5000	100,0	5000	100,0	100,0
11. Amortisation	2000	100,0	2000	100,0	2000	100,0	100,0
12. Equipment	-	-	-	-	1800	-	-
13. Other expenses	2000	100,0	2000	100,0	2000	100,0	100,0

Source: Author calculations

It should be noted that total costs of the sheep farm increased by 13% in general. The increase in costs for feed, salt licks, energy and water was expected as these are typical variable costs increasing parallelly to the amount of produce. There was no increase in remuneration, insurance and treatment costs. Depreciation costs, being typical permanent costs were not influenced by the amount of produce and remained the same over the analysed period. Dynamics is not calculated for equipment costs, as they are planned only for 2018.

Figure 1. Net profit of the dairy farm 2016-2018 (thousands leva)
Source: Author calculations

The dynamics of chain-based and fixed-base profit over the analysed period is shown in **Table 5.**

Table 5. *Profit dynamics of the sheep farm for the period 2016 - 2018*

Parameters	Years						
	2016		2017		2018		
	Value, leva	%	Value, leva	Basic index, %	Value, leva	Basic index, %	Chain index, %
1. Net profit	102 553	100	148 140	144,4	199 659	194,7	134,8

Source: Author calculations

The analysis of profit showed an increase by 44% in 2017 vs 2016. For 2018, the profit dynamics would attain 94.7% vs the baseline year 2016. The increase in profit for 2018 vs 2017 would be 34.8%.

CONCLUSIONS

The performed analysis about the activities of dairy Bulgarian Synthetic Dairy Population sheep farm, allowed concluding that:

Over the three years of the analysed period, revenues from sales of milk had the greatest share in total revenues of the farm (45-52 %). In fact this confirmed the profile of the farm as dairy farm.

The percentage of meat varied within a narrow range with lamb meat occupying the greatest share of meat revenues (26 - 29 %). The participation of other types of meat in farm's revenues was minor. The share of wool as element of revenues was insignificant over the 3-yar period.

Wool production was rather a concomitant production therefore serious revenues from wool are not expected as at the time of the study, there is no market demand for this product.

Among variable costs, the feed costs proportion was the greatest (40 – 44 %). Then followed labour, insurances and fuel costs. It should be mentioned that during the last year of the analysed period, costs for purchase of shearing machine and sharpening device are planned.

Permanent costs did not change in 2016–2018. The share of depreciation costs from total costs was approximately 3 %.

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