

Study on Productive and Economic Indicators in Two Types of Sheep Farms in Bulgaria

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Summary

This study attempts to establish and evaluate some productive, margin and expenses characteristics in two types sheep farms in lowland's areas of the south part of Bulgaria. Data were collected using a survey of 21 farms divided into two types: without take on a labourer and with take on labourer. Statistical analysis was performed and mean, standard error, minimum and maximum of productive and economical indicators of the farms were calculated.

The result indicates good milk yield per lambing ewe 117.85 l and 97.16 l, respectively for the first and second type. Flock litter size of two types of farms is similar (1.45 - 1.46). The weight of the sold lambs vary between 16.77 and 23.98 kg which determine market demands for light carcasses. It was find out that gross margin per lambing ewe was one and the same 31.12 - 31.42 €. Gross margin for the farms of type 1 was 956.43 € per flock and second type of farms provides gross margin from sheep farming were 2760.26 € per flock.

Key words: sheep farms, productive and economic indicators.

Introduction

Sheep farming play very important role in social and economical live of rural areas in Bulgaria. In lowland and mountain regions exist grate diversity of production and farming systems with sheep component. Unfortunately, nowadays most frequently skepticism predominates about perspectives of these systems especially small farms. In many production systems are included traditional practice at sheep farming with low degree of electricity and fuel consuming technique. Traditional production systems lately show distinctive characteristics with respect to others, mainly in the capability of quality livestock productions. These systems must also provide a balance between the animals and the grazing resources (Escribano et al. 2003). Till now there is no unprejudiced scientific analyze of existing sheep production systems concerning, productivity, profitability, social justice, preservation of agrobiodiversity and environment.

The aim of this study was to find out some productive and economical indicators of sheep farms in lowland region of Bulgaria and to estimate perspectives of sheep farming.

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Materials and Methods

The analyzed data belong to dairy sheep farms scattered over the Plovdiv region in Bulgaria and they were recorded in 2003 with in the framework of larger study on sheep production systems. Data were obtained from direct questionnaire carried out with responsible person for study dairy sheep production systems. The farmers were visited three times per year. Ewe numbers, lambings and other production facts were recorded during the visits. Database included 30 farms, but all basic information was available only on 21 farms and those were retained for this study. The farms were localized in a homogeneous soil and climate lowland's area. They were divided in two types: type 1 - without take on labourer and the other type 2 - with take on labourer.

The productive objectives of the analyzed sheep farms were milk and meat production. Milk is mostly sold to industry. Meat product is mainly lambs sold to the market as live animals.

Statistical analysis was performed and mean, standard error, minimum and maximum of productive and economical indicators of the farms were calculated. The differences between group means were checked using mean comparison by t-test. All calculations were made using the (9.0) version of the SPSS statistical package (SPSS,1999).

Results and Discussion

In the first type of farms the farmers keep their own herds, but sometimes they use the help of family members. In the second type of farms during the grazing period or the whole year the farmers take on labourer. From farming system point of view, all surveyed farms can be classified as "small holders" according FAO classification (2001). Two types of studied farms differ by the number of lambed ewes (31 and 89). Milk yield per lambed ewe was higher at farms type 1 - 117.85 l than the milk yield of the farms type 2 - 97.16 l. This result was lower than Sarda sheep farming system (Natale et al. 1999) but higher of Latxa dairy sheep farms (Gabinia et al. 1999). Flock litter size of two types of farms is similar (1.45 - 1.46). Lamb mortality and percent of empty ewes were higher in the second type farms. The weight of the sold lambs vary between 16.77 and 23.98 kg in two types farms which determine market demands for light carcasses

Table 1. Mean, standard error, minimum and maximum for productive indicators

Variable	Type of farm ¹	Number farms	Mean	SE of Mean	Confidence Intervals		t-test	2-tailed Sig. level
					minimum	maximum		
Lambd ewes per flock	1	13	31.615	3.54	13	51	5.17	(1)
	2	8	89.128	10.54	31	129		***
Ewe lamb, %	1	13	46.79	8.91	29,33	64.26	.797	.436
	2	8	36.08	9.11	18,22	53.93		ns
Milked ewes, %	1	13	75.48	3.33	68,96	82.00	.211	.835
	2	8	74.33	4.40	65,70	82.95		ns
Flock milking period, days	1	13	177.31	8.31	161,02	193.59	.110	.913
	2	8	175.88	9.54	157,17	194.58		ns
Milk yield per lambd ewe, l	1	13	117.85	6.08	105,93	129.78	2.285	.034
	2	8	97.16	5.90	85,61	108.72		**
Flock litter size	1	13	1.45	0.4	1,37	1.54	-.057	.955
	2	8	1.46	0.07	1,32	1.60		ns
Sold lambs per ewe	1	13	.87	0.03	0,80	0.95	-.927	.366
	2	8	.93	0.04	0,85	1.01		ns
Weight of sold lambs, kg	1	13	20.46	1.89	20,16	23.98	.543	.594
	2	8	19.05	1.16	16,77	21.33		ns
Wool yield per ewe, kg	1	13	2.88	0.09	2,70	3,07	1.555	.136
	2	8	2.64	0.12	2,40	2,88		ns
Replacement rate, %	1	13	24.16	3.07	18,15	30,16	1.203	.244
	2	8	18.35	3.60	11,29	25,41		ns
Abortion, %	1	13	2.21	0.56	1,12	3,30	-1.175	.255
	2	8	3.61	1.23	1,20	6,02		ns
Lamb mortality, %	1	13	2,12	0.46	1,22	3,02	-2.641	.016
	2	8	4.64	0.97	2,74	6,53		**
Empty ewes, %	1	13	1.24	0.41	0,44	2,05	-1.921	.070
	2	8	3.04	1.00	1,08	4,99		*

*, **, and *** indicates significant differences at the 0.05 0.01 and 0.001 levels, respectively. ns - non-significant. ¹ - type of farms: 1- without take on labourers; 2- with take on labourers;

Tables 2 and 3 lists indicators of margins and expenses expressed in euro (€) per lambd ewe and structure of different margins and expenses expressed in percent per lambd ewe. Sheep activity margin into the two studied types of farms was one and the same - 85.6 € per lambd ewe. The most significant sources of income were milk and lambs sales - 47.97 % and 34.50 % for the type 1 and 42.23 % and 39.53 % per ewe respectively for type 2. Other sources of income with less significance are culling ewes sold as live animals into the market which part vary between 4.27 % and 10.46 %, and subsidies with variation from 0.00 to 11.69 %. Some of the farmers did not receive subsidies during 2003. Usually farmers sell their sheep production as row materials: live lambs or adult animals, row wool and milk. Because of this fact the selling of hides provides non significant income of the flock.

Table 2. Mean, standard error, minimum and maximum for economic indicators

Variable	Type of	Number farms	Mean	SE of Mean	Confidence Intervals		t-test	Significant level
					Low	High		
Sheep activity margin / ewe, €	1	13	85.60	2.27	81.14	90.04	-.012	.991
	2	8	85.64	2.55	80.64	90.64		ns
Milk sales / ewe, %	1	13	41.97	1.63	38,78	45,16	-.107	.916
	2	8	42.23	1.61	39,07	45,39		ns
Lamb sales / ewe, %	1	13	34.50	1.42	31,73	37,28	-2.284	.034
	2	8	39.53	1.60	36,40	42,67		**
Culling ewes sold live / ewe, %	1	13	7.50	1.06	6,31	10,46	.827	.419
	2	8	6.96	1.37	4,27	9,65		ns
Wool sales / ewe, %	1	13	1.65	0.09	1,48	1,85	1.874	.076
	2	8	1.40	0.09	1,21	1,58		*
Yearling lambs sales / ewe, %	1	13	5.76	2.97	3.70	7,82	1.042	.311
	2	7	4.14	1.54	1,33	6,96		ns
Raw hide sales / ewe, %	1	13	2.17	0.84	0,89	3,45	1.976	.064
	2	8	0.67	0.39	-0,05	1,38		*
Subsidies / ewe, %	1	13	6.45	2.17	0.00	11,69	1.079	.299
	2	8	5.08	2.79	0,00	9,39		ns

*, **, and *** indicates significant differences at the 0.05, 0.01 and 0.001 levels, respectively. ns - non-significant. 1- type of farms: 1- without take on labourer; 2- with take on labourer;

Table 3. Mean, standard error, minimum and maximum for sheep activity expenses

Total expenses / ewe / year, €	1	13	54.18	1.75	50.73	57.63	-.086	.932
	2	8	54.52	4.25	46.17	62.87		ns
Feed expenses / ewe / year, %	1	13	75.57	1.11	73,39	77,76	4.856	.001
	2	8	57.39	3.57	50,39	64,40		***
Labour expenses / ewe / year, %	2	8	22.05	2.96	10.54	37.21	-	-
Electricity expenses / ewe / year, %	1	13	5.70	0.43	4,85	6,55	1.075	.296
	2	8	5.00	0.42	4,17	5,84		ns
Water expenses / ewe / year %	1	13	4.54	0.43	3,71	5,38	1.889	.074
	2	8	3.38	0.36	2,67	4,09		*
Veterinary expenses / ewe / year, (%)	1	13	6.87	0.70	5,49	8,24	1.970	.064
	2	8	4.81	0.68	3,47	6,14		*
Shearing expenses / ewe / year, %	1	13	3.11	0.82	1,50	4,72	.533	.600
	2	8	2.47	0.77	0,96	3,97		ns
Cleaning expenses / ewe / year, %	1	10	2.40	0.45	1,63	3,17	-.719	.483
	2	8	2.84	0.40	2,06	3,63		ns
Transport / ewe / year, %	1	6	1.86	0.67	0.00	2,75	-.511	.625
	2	3	2.42	0.78	1,49	3,36		ns
Gross margin / ewe / year, €	1	13	31.42	1.75	28.04	34.95	.108	.915
	2	8	31.12	3.13	24.98	37.29		ns
Gross margin / flock / year, €	1	13	956.43	73.69	492.37	1634.69	5.11	0.001
	2	8	2760.26	345.01	1049.17	5550.07		***

*, **, and *** indicates significant differences at the 0.05, 0.01 and 0.001 levels, respectively. ns - non-significant. 1- type of farms: 1- without take on labourers; 2- with take on labourers;

Feed expenses were the most significant in the two type of farms - 75 % for the type 1 and 57.39 % for the type 2. Labourer expenses for the type 2 were 22.05 %. Nevertheless sheep farming is low electricity consuming production, in this study expenses for electricity and water per lambing ewe were comparatively higher - 5.00 - 5.70 % for electricity and 3.38 - 4.54 % for water expenses, because these figures include household's electricity and water consumption. The sheep are kept in the farmyard of the farmer (this is distinctive character of Bulgarian farmers in lowlands) and it was not possible to divide flock and household electricity and water consumption. Veterinarian expenses vary between 3,47 and 8,24 % and in small flock they were higher. It can be seen that gross margin per lambing ewe in the

studied types of farm was one and the same 31.12 - 31.42 €. Minimum and maximum values of this indicators vary between 24.98 and 37.29 € per lambing ewe. The number “Lambing ewe” includes lambing ewe plus ewe lamb. Obviously, comparatively uniform farming conditions (feeding, grazing, mating and lambing seasons) contributes to similar gross margin per ewe.

Two type of farms were rather different by gross margin per flock. Gross margin 956.43 € per year for the farms of type 1 is additional and reliable income for the old people who lived in rural areas

Second type of farms in this study belong to younger farmer and larger households having capacity to manage larger farm unit. Their gross margin from sheep farming were 2760.26 with confidence interval from 1049.70 € to 5550.07 € per flock.

It must be taken into account that other sources of income for the farm families (pensions, incomes from other agricultural and nonagricultural activities) in this study were ignored in order estimate the role and perspectives of sheep farming component in the farming activities in the rural areas.

Conclusions

From the obtained results it is possible to conclude that sheep farming is reliable source if income for the households in rural areas.

Gross margin of 31.42 € per ewe and 956.42 per flock in the farms of type 1 provides monetary income which is larger than income from the pension per year of older man. The farms of type 2 provides significant family income per flock - 2760.26 €, which provide security of the younger families in rural areas.

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