Journal of International Scientific Publications: Agriculture and Food

Volume 2, ISSN 1314-8591 (Online), Published at: http://www.scientific-publications.net

EFFECTIVENESS OF DAIRY SHEEP BREEDING IN BULGARIA

Tsvetana S. Harizanova - Metodieva, Nikola T. Metodiev

Institute of Animal Science, Kostinbrod, Bulgaria

Abstract

The aim of this study was to determine the effectiveness of dairy sheep breeding in Bulgaria on the basis of an investment project for establishing a farm with 300 ewes in the main flock from the Synthetic Population Bulgarian Milk Breed.

The study was carried out on the basis of a farm, situated in the Northwest region of Bulgaria with an average number of 300 ewes. Based on the collected information, and on own calculations, it was defined the different types of investments, necessary to create a dairy sheep breeding farm, as well as the Net present value, the Profitability index and some other indicators for evaluation of the farm's effectiveness.

According to the results of the research, it could be concluded, that the studied investment project is profitable. The Net present value of the investment project is a positive number, which means that the rate of return on the investment is higher than the discount rate, and the investment provides a return, greater than the minimum required rate of return of 10.27%.

Keywords: *dairy sheep breeding, farm effectiveness, forages, Synthetic Population Bulgarian Milk Breed, investment project*

1. INTRODUCTION

Dairy sheep breeding is a main sub sector in Bulgarian animal husbandry, which is developed traditionally in rural areas. The produced sheep products are highly demanded in the domestic and in the international markets. As of 01.11.2012, there were 1,361.4 thousand sheep in Bulgaria, including 1,085.2 thousand ewes, which numbers were with 6.4 % and 7.5% respectively less than the previous year (Agricultural Report 2013). The trend of consolidation of holdings in the sub sector continued in 2012 and the average number of sheep in a holding had been increased by 6.6%, compared to 2011 and had reached 20.9 heads (Agricultural Report 2013). In 2012, the country had produced 84,447 thousand liters of sheep milk, which was 13.3% more than in 2011 (Agricultural Report 2013).

The economic effectiveness in Bulgarian sheep breeding was studied by some authors, but the discounted indicators have been unstudied yet. The economic efficiency of breeding meat-type crossbreed sheep in the mountains and hilly regions of Bulgaria was studied by Popova et al. 2013, who came to the conclusion, that the Rate of return in the studied farm was 27.95%. According to Odjakova et al. 2010, the rate of profitability of Karakachan sheep rearing was 28.45%. Todorov et al. 2013 found that innovations in dairy sheep farms rapidly improve the economics of the farms.

The aim of this study was to determine the effectiveness of dairy sheep breeding in Bulgaria on the basis of an investment project for establishing a farm with 300 ewes in the main flock from the Synthetic Population Bulgarian Milk Breed.

2. MATERIAL AND METHODS

For the development of the study, it was visited and collected survey information, from a dairy sheep breeding farm, situated in the North region of Bulgaria, with 300 ewes from different breeds. To achieve the aim of the study, the calculations of the necessary investment cash flows, inflows and outflows from the main activity were made, based on the collected information from the dairy farm and on the basis of authors' own estimations. It was not taken into account the influence of the paid, remitted and reinvested taxes. Only the cash flows from the operating activities (dairy sheep breeding and forage production) were calculated. The prices in the investment project were set without VAT.

The year, in which the investment project starts is presented as t_0, and the years of the exploitation period of the project are from t_1 to t_{10}.

Volume 2, ISSN 1314-8591 (Online), Published at: http://www.scientific-publications.net

The effectiveness of the dairy sheep breeding was estimated with the help of the next methods:

- Method of Net Present Value (Alexandrova 2001, pp. 104-106). With the help of this indicator, the financial effect of the investment could be calculated, by taking into account time value of money.
- Profitability Index Method (Alexandrova 2001, pp. 142-143). The Index determines the value of the net cash flow, which falls to 1 BGN invested capital. For the calculation of the Index, the discounted values of the net cash flow and the investment cash flows are taken.
- Method of Discounted Payback Period (Alexandrova 2001, pp. 149-151). With this indicator, the payback period of the investment is calculated. The indicator accounts for time value of money.
- Annuity Method (Alexandrova 2001, pp. 145-146). This method estimates the Average financial impact from the investment.

It was not planned in the study, the use of loans for financing the investment project. The investment would be implemented with own capital (equity) of the holding, and the discount rate was determined to be 10.27% (Harizanova 2013).

It is planned in the investment project, a dairy sheep farm with 300 ewes in the main flock, to be established. The farm will start with the purchase of 114 lambs (100 female and 14 male) from the Synthetic Population Bulgarian Milk Breed and will gradually increase the main flock, till the number of ewes becomes 300.

First, in the study are calculated the initial, required investment, feed ratios for the different category of sheep, the movement of animals and the planned quantity of forages. Then, the cash flows by year and by sources are analyzed, and based on these calculations and analyses, the effectiveness of a dairy sheep breeding farm with 300 Ewes in the Flock is established.

3. RESULTS AND DISCUSSION

3.1. The initial, necessary investment, feed ratios for the different category of sheep, the movement of animals and the planned quantity of forages

The investments are shown in Table 1. It was planned the purchase of 100 female lambs and 14 male lambs, at the age of 4 months, from the Synthetic Population Bulgarian Milk Breed at the end of April. The price of one lamb is 175 BGN. For the implementation of the investment project 260 dka arable land were planned to be purchased. The investment in buildings includes the purchase of 2 stalls for 40,000 BGN and the reconstruction expenses of 20,000 BGN. The total sum of investment is 355,250 BGN. The investments will implement during the year t_0, t_1 and t_3.

Table 1. Investments (BGN)

Year	Investment	Quantity	Price (BGN)	Sum (BGN)
t_0	Land	260	700	182,000
t_0	Buildings	2	30,000	60,000
t_0	Tractors	2	30,000	60,000
t_0	Tractors	2	3,000	6,000
t_0	Trailers	3	2,000	6,000
t_0	Baler	1	6,000	6,000
t_0	Mower	1	2,000	2,000
t_0	Hay Van	1	5,000	5,000
t_0	Forage Grinder	1	2,000	2,000
t_0	Others	1	5,000	5,000
t_1	Lambs	114	175	19,950
t_3	Mobile Milking Equipment with Compressor	1	1,300	1,300
	Sum (BGN)			**355,250**

Volume 2, ISSN 1314-8591 (Online), Published at: http://www.scientific-publications.net

The feed ratios for the different category of sheep are represented in Table 2. The planned forages in Table 2 are indicative and slightly higher (with 10-20%). The quanities of feed comply with the standards for feeding sheep (Todorov et al. 2004). The system of raising animals is stall - pasture.

Table 2. The feed ratios for the different category of sheep

Category	Winter Season		Summer Season	
	Rough and Voluminous Forages (kg)	Concentrate Mixture (kg)	Rough and Voluminous Forages (kg)	Concentrate Mixture (kg)
Lambs	0.7	0.4	-	0.3
Ewe Lambs and Ram Lambs	2.0	0.3	-	0.3
Ewes	3.0	0.5	-	0.5
Rams	2.0	0.5	0.5	0.5 /1.0

The feed depends on body condition and physiological needs of the sheep categories. Feedeng is separated into two periods:

- Winter - coincides with the stall raising of sheep. The planned duration of the period is 200 days.

- Summer - coincides with the grazing period of sheep. The planned duration is 165 days. Depending on the grass composition and condition of pastures, if it necessary, the animals are extra fed to keep them in good body condition throughout the year.

The farmer must provide sheep with access to clean water and licking salt blocks, vitamins and mineral supplements. The planned rough and voluminous forages are hay (meadow and lucerne) and corn silage (30% dry matter). Concentrate mixture for lambs is purchased from feed mills. For other categories of animals the concentrated forages include barley (whole grain) and sunflower meal (ratio 2:1). The needed straw for bedding and feeding is 100 kg per animal per year.

The ratio of concentrated feed for rams has to be increased twice before and during the mating period.

When the grass is grown enough, the lambs are put in a pasture to graze. Until then it must be provided about 0.500-0.700 kg per lamb per day high quality lucerne hay and between 0.300 and 0.500 kg concentrate mixture. The mixture should be with 18% digestible protein.

The movement of animals and the planned quantity of forages are represented in Table 3. The forming of the main flock of 300 ewes and the necessary forages per year are presented in Table 3. It is planned the flock to reach 300 ewes during the 9th year of the exploitation period.

The indicators, characterizing the movement of the flock, are:

- The mortality rate of lambs is planned to be 5% during the first year of the investment project, and 10% for the rest of years. The mortality rate during the first year (t_1) is lower, because it is planned to be purchased lambs at 4 months of age at the end of April (114 lambs).

- Lambs are moved to the group of ewe-lambs at the age of 6 months.

- Ewe lambs are inseminated at 18 months of age. Insemination is artificial or natural "by hand". First lambing for the investment project is planned for January during the third year (t_3).

- Ewe lambs are included in the main flock (the group of ewes) after their first lambing.

- Ram lambs are included in the group of rams at the beginning of their first mating season.

- The annual fecundity of ewes is 140%. The majority of female lambs remain in the farm for breeding purposes, and the male and part of female lambs have to be sold when reaching a live weight of 25 kg.

- The planned cull rate for ewes during the period from t_3 to t_6 is 5% per year. From t_7 by the end of the investment project, this percent is 15%. The cull rate for the first years is lower because the animals are younger, and because the goal of the farmer is to increase relatively quickly the flock size.

- The planned cull rate for rams is 30% per year. From the 6th year, it is planned the purchase of rams.

- Part of the culled animals are sold.

Table 3. The Movement of Animals and the Planned Quantity of Forages

Movement of Animals										Needed Forage for All Animals for an Entire Year (kg)						
Year	Group	Number at 01.01	Transferred to another group	Arrived from another group	Sold	Culled	Born	Bought	Number at 31.12	Corn Silage	Lucerne Hay	Meadow Hay	Sunflower Meal	Barley	Concentrate Mixture	Straw for Feeding and Bedding
	Female Lambs		95			5		100							2,400	
t_1	Male Lambs		13			1		14							336	
	Ewe Lambs			95					95	8,550		8,550	1,710	3,420		9,500
	Ram Lambs			13					13	1,170		1,170	234	468		1,300
t_2	Ewe Lambs	95				5			90	19,000		19,000	3,468	6,935		9,000
	Ram Lambs	13	12			1				1,430		1,430	273	546		
	Rams			12					12	1,080		2,520	360	684		1,200
t_3	Lambs		50		57	12	119				9,163				6,286	5,700
	Ewe Lambs	90	85	50		5			50	4,500		4,500	900	1,600		5,000
	Ewes			85					85	34,000		17,000	6,205	9,308		8,500
	Rams	12		12	1				11	2,400		5,790	876	1,710		1,100
t_4	Lambs		50		52	11	113				8,701				6,022	5,200
	Ewe Lambs	50		50		3			97	13,900		13,900	2,616	5,231		9,700
	Ewes	85			1	3			81	34,000		17,000	6,205	9,308		8,100
	Rams	11			1				10	2,200		5,225	770	1,485		1,000
t_5	Lambs		70		83	17	170				13,090				8,950	8,300
	Ewe Lambs	97	47	70		3			117	15,700		15,700	2,976	5,951		11,700
	Ewes	81		47	3	3			122	48,800		24,400	8,906	13,359		12,200
	Rams	10			1	1			10	2,000		4,825	730	1,425		1,000
t_6	Lambs		100		102	22	224				17,248				11,956	10,200
	Ewe Lambs	117	47	100		4			166	22,200		22,200	4,209	8,418		16,600
	Ewes	122		47	4	5			160	64,000		32,000	11,680	17,520		16,000
	Rams	10			3			3	10	2,000		4,825	730	1,425		1,000
t_7	Lambs		115		127	27	269				20,713				14,251	12,700
	Ewe Lambs	166	66	115		5			210	29,350		29,350	5,538	11,075		21,000
	Ewes	160		66	27	7			192	76,800		38,400	14,016	21,024		19,200
	Rams	10			3			3	10	2,000		4,825	730	1,425		1,000
t_8	Lambs		56		252	34	342				26,334				16,224	25,200
	Ewe Lambs	210	95	56		6			165	26,840		26,840	4,987	9,973		16,500
	Ewes	192		95	34	9			244	97,600		48,800	17,812	26,718		24,400
	Rams	10			3			3	10	2,000		4,825	730	1,425		1,000
t_9	Lambs		56		322	42	420				32,340				19,656	32,200
	Ewe Lambs	165	109	56		3			109	15,640		15,640	2,943	5,885		10,900
	Ewes	244		109	43	10			300	120,000		60,000	21,900	32,850		30,000
	Rams	10			3			3	10	2,000		4,825	730	1,425		1,000
t_{10}	Lambs		56		322	42	420				32,340				19,656	32,200
	Ewe Lambs	109	53	56		3			109	15,640		15,640	2,943	5,885		10,900
	Ewes	300		53	43	10			300	120,000		60,000	21,900	32,850		30,000
	Rams	10			3			3	10	2,000		4,825	730	1,425		1,000

Note: Green mass from the pastures was not included in the needed forage.

The quantities of produced, bought and sold forages by years, and the prices of different types of forages are presented in Table 4. Three percent (3%) growth rate of the prices is set on the basis of the previous year.

The investment project foresees the purchase of 260 decares of arable land, of which 70 decares are for the production of corn silage, 70 decares – for alfalfa and 120 decares – for barley (grain and straw). The planned average yields per decare are: 2,000 kg corn silage; 500 kg of lucerne hay; barley (grain) - 350 kg and 150 kg straw.

It is envisaged renting of meadows for the production of meadow hay - 300 kg per decare per year. From t_1 to t_5 the farm has to rent 150 decare per year and during the next years - 300 decares of meadows.

It is planned also the renting of 200 decares of pastures for the period from t_1 to t_5, and during the next years - 400 decares. The animals will graze on the pastures during the summer.

The overproduced forage will be sold. The sunflower meal, the concentrate mixture for lambs and a part of the straw will be purchased at the set prices.

Table 4. Produced, Purchased and Sold Forages

	Needed Forage for All Animals for an Entire Year (kg)							Produced Forage (kg)				
Year	Corn Silage	Lucerne Hay	Meadow Hay	Sunflower Meal	Barley	Concentrate Mixture	Straw	Corn Silage	Lucerne Hay	Meadow Hay	Barley	Straw
t_1	9,720		9,720	1,944	3,888	2,736	10,800	140,000	35,000	45,000	42,000	18,000
t_2	21,510		22,950	4,101	8,165		10,200	140,000	35,000	45,000	42,000	18,000
t_3	40,900	9,163	27,290	7,981	12,618	6,286	20,300	140,000	35,000	45,000	42,000	18,000
t_4	50,100	8,701	36,125	9,591	16,024	6,022	24,000	140,000	35,000	45,000	42,000	18,000
t_5	66,500	13,090	44,925	12,612	20,735	8,950	33,200	140,000	35,000	45,000	42,000	18,000
t_6	88,200	17,248	59,025	16,619	27,363	11,956	43,800	140,000	35,000	90,000	42,000	18,000
t_7	108,150	20,713	72,375	20,284	33,524	14,251	53,900	140,000	35,000	90,000	42,000	18,000
t_8	126,440	26,334	80,465	23,529	38,116	16,224	67,100	140,000	35,000	90,000	42,000	18,000
t_9	137,640	32,340	80,465	25,573	40,160	19,656	74,100	140,000	35,000	90,000	42,000	18,000
t_{10}	137,640	32,340	80,465	25,573	40,160	19,656	74,100	140,000	35,000	90,000	42,000	18,000

continue:

	Price for 1 t (BGN)							Purchased Forage (BGN)				Sold Forage (BGN)					
Year	Corn Silage	Lucerne Hay	Meadow Hay	Sunflower Meal	Barley	Concentrate Mixture	Straw	Sunflower Meal	Concentrate Mixture	Straw	Sum (BGN)	Corn Silage	Lucerne Hay	Meadow Hay	Barley	Straw	Sum (BGN)
t_1	120	350	150	300	350	780	100	583	2,134		2,717	15,634	12,250	5,292	13,339	720	**47,235**
t_2	124	361	155	309	361	803	103	1,267	-		1,267	14,693	12,635	3,418	12,214	803	**43,763**
t_3	127	371	159	318	371	828	106	2,538	5,205	244	7,987	12,586	9,586	2,816	10,901		**35,888**
t_4	131	382	164	328	382	852	109	3,146	5,131	654	8,930	11,777	10,046	1,456	9,923		**33,202**
t_5	135	394	169	338	394	878	113	4,263	7,858	1,718	13,838	9,923	8,633	13	8,378		**26,946**
t_6	139	406	174	348	406	904	116	5,783	10,808	2,993	19,584	7,200	7,207	5,390	5,943		25,740
t_7	143	418	179	358	418	931	119	7,261	13,268	4,272	24,801	4,555	5,972	3,119	3,543		**17,189**
t_8	148	430	184	369	430	959	123	8,682	15,559	6,039	30,280	2,007	3,726	1,754	1,670		**9,158**
t_9	152	443	190	380	443	988	127	9,718	19,420	7,125	36,262	359	1,178	1,812	815		**4,164**
t_{10}	157	457	196	391	457	1018	130	9,999	20,010	7,293	37,302	371	1,216	1,869	841		**4,296**

Note: Green mass from the pastures was not included in the needed forage and in the produced forage.

3.2. The planned cash flows by years and by sources

Three percent (3%) growth rate, based on the previous year, is set for the selling prices of milk, wool and for the price of 1 kg live weight of animals. Also three percent (3%) growth rate of prices is set on the basis of the previous year for the purchased rams, materials, services, and labor costs.

In Table 5 are presented the planned cash inflows by years and by sources. In the Table are shown the planned quantities and selling prices of sheep production, subsidies and cash inflows from the sale of forages. It is planned the average milk yield of 120 liters per ewe per year; the planned production of wool is as follows: ewe- 4 kg/year, rams – 5.5 kg/year and ewe lambs and ram lambs - 3 kg/year. Table 5 presents the cash inflows from the sale of lambs. Lambs are sold at 25 kg live weight, and their number is defined in Table 3. There are also cash inflows from the sale of culled animals with an average weight of an animal - 45 kg, the number of which is defined in Table 3. There are also subsidies of 42 BGN per ewe per year and 30 BGN per decare of arable land, pastures, and meadows.

Table 5. Cash Inflows

	t_1			t_2			t_3			t_4		
Source of Cash Inflow	Quantity*	Price (BGN)	Sum	Quantity*	Price (BGN)	Sum	Quantity*	Price (BGN)	Sum	Quantity*	Price (BGN)	Sum
Sold sheep milk							10,200	1.30	13,260	9,720	1.34	13,025
Sold Lambs							1,425	7.00	9,975	1,300	7.21	9,373
Sold Ewes, Rams and Ewe - lambs							45	2.00	90	90	2.06	185
Wool				330	0.80	264	400	0.80	320	520	0.82	426
Sold Forage			47,235			43,763			35,888			33,202
Subsidies for Ewe							85	42.00	3,570	81	42.00	3,402
Other Subsidies	610	30.00	18,300	610	30.00	18,300	610	30.00	18,300	610	30.00	18,300
Sum			65,535			62,327			81,403			77,913

Continue:

	t_5			t_6			t_7			t_8		
Source of Cash Inflow	Quantity*	Price (BGN)	Sum	Quantity*	Price (BGN)	Sum	Quantity*	Price (BGN)	Sum	Quantity*	Price (BGN)	Sum
Sold sheep milk	14,640	1.38	20,203	19,200	1.42	27,264	23,040	1.46	33,638	29,280	1.51	44,213
Sold Lambs	2,075	7.43	15,417	2,550	7.65	19,508	3,175	7.88	25,019	6,300	8.11	51,093
Sold Ewes, Rams and Ewe - lambs	180	2.12	382	315	2.19	690	1,350	2.25	3,038	1,665	2.32	3,863
Wool	680	0.85	578	890	0.87	774	1,100	0.90	990	1,350	0.93	1,256
Sold Forage			26,946			25,740			17,189			9,158
Subsidies for Ewe	122	42.00	5,124	160	42.00	6,720	192	42.00	8,064	244	42.00	10,248
Other Subsidies	610	30.00	18,300	960	30.00	28,800	960	30.00	28,800	960	30.00	28,800
Sum			86,950			109,496			116,738			148,631

Continue:

	t_9			t_{10}		
Source of Cash Inflow	Quantity*	Price (BGN)	Sum	Quantity*	Price (BGN)	Sum
Sold sheep milk	36,000	1.55	55,800	36,000	1.60	57,600
Sold Lambs	8,050	8.36	67,298	8,050	8.61	69,311
Sold Ewes, Rams and Ewe - lambs	2,070	2.39	4,947	2,070	2.46	5,092
Wool	1,410	0.96	1,354	1,410	0.98	1,382
Sold Forage			4,164			4,296
Subsidies for Ewe	300	42.00	12,600	300	42.00	12,600
Other Subsidies	960	30.00	28,800	960	30.00	28,800
Sum			174,963			179,081

* For sheep milk - l
For sold lambs - kg
For sold ewes, rams and ewe - lambs - kg
For wool - kg
For subsidies for a ewe - number
For other subsidies - dka

Cash outflows include (Table 6):

- The cash outflows for the purchase of rams – the purchased rams replace those, which have been culled by t_6 to the end of the investment project.

- The cash outflows for the purchase of materials: cash outflows for forages (the produced forage, which was given to the animals is not included here, because the costs of the production of that forage are included in the other cash outflows - fuel, spare parts, mechanised services, rents for meadows, other costs); fuel - this is the fuel, needed for soil cultivation and maintenance of the sheep farm; cash outflows for seeds, fertilizers, and chemicals, related to the production of feed; electricity; spare parts - here are the estimated costs for the repair of agricultural machinery; cost of veterinary medicines and additives; other material costs.

- The cash outflow for external services: veterinary services; accounting services; mechanised services (for sowing and harvesting); rent of pastures and meadows; other services.

- The cash outflow for salaries and social security. From t_1 to t_2 it is planned 2 employees on full-time to work in the farm; from t_3 to the end of the investment project, it is planned 3 employees to work.

- The terminal value of the project is set at 463,940 BGN at the end of the 10th year. This value represents the amount, which the farmer would have received if he/she sells the farm - animals, land, machinery, buildings, and inventories.

- The net cash flow and the investments are discounted with the discount rate of 10.27% to t_0.

Table 6. Effectiveness of a Dairy Sheep Breeding Farm with 300 Ewes in the Flock

Indicators	t_0	t_1	t_2	t_3	t_4	t_5	t_6	t_7	t_8	t_9	t_{10}	Terminal Value
Investment Cash Flow	334,000	19,950		1,300								
Purchased Rams							1,500	1,545	1,591	1,639	1,688	
Cash Outflow for Materials (BGN), including:		19,936	18,917	26,995	28,673	34,638	41,539	47,898	54,711	61,696	63,367	
for Purchased Forage		2,717	1,267	7,987	8,930	13,838	19,584	24,801	30,280	36,262	37,302	
Fuel		5,031	5,182	5,337	5,498	5,662	5,832	6,007	6,187	6,373	6,564	
Seeds, Fertilizers and Plant		3,900	4,017	4,138	4,262	4,389	4,521	4,657	4,797	4,940	5,089	
Electricity		400	412	424	437	450	464	478	492	507	522	
Spare Parts		7,250	7,468	7,692	7,922	8,160	8,405	8,657	8,917	9,184	9,460	
Veterinary Medicines and Additives		68	61	152	174	229	293	353	433	475	475	
Other Materials		570	510	1,265	1,450	1,910	2,440	2,945	3,605	3,955	3,955	
Cash Outflow for External Services (BGN), including:		9,420	9,599	10,884	11,410	12,315	15,466	16,514	17,782	18,640	19,039	
Veterinary Services		228	204	506	580	764	976	1,178	1,442	1,582	1,582	
Accounting Services		3,600	3,708	3,819	3,934	4,052	4,173	4,299	4,428	4,560	4,697	
Mechanised services		3,200	3,296	3,395	3,497	3,602	3,710	3,821	3,936	4,054	4,175	
Rented Pastures		500	515	530	546	563	1,159	1,194	1,230	1,267	1,305	
Rented Meadows		1,350	1,391	1,432	1,475	1,519	3,130	3,224	3,321	3,420	3,523	
Other Services		542	485	1,202	1,378	1,815	2,318	2,798	3,425	3,757	3,757	
Cash Outflow for Salaries and Social Securities (BGN)		12,960	13,349	20,624	21,243	21,880	22,536	23,212	23,909	24,626	25,365	
Number of Persons Employed		2	2	3	3	3	3	3	3	3	3	
Total Amount of Cash Outflows for Operating Activities in the Dairy Farm (BGN)		42,316	41,865	58,503	61,326	68,833	81,041	89,169	97,993	106,601	109,459	
Cash Inflow (BGN)		65,535	62,327	81,403	77,913	86,950	109,496	116,738	148,631	174,963	179,081	463,940
Net Cash Flow		23,219	20,462	22,900	16,587	18,117	28,455	27,569	50,638	68,362	69,622	463,940
Discounted Investment Cash	334,000	18,092		970								
Discounted Net Cash Flow		21,056	16,830	17,079	11,219	11,112	15,827	13,906	23,165	28,359	26,193	174,537
Net Present Value		6,221										
Profitability Index		1.02										
Discounted Payback Period		10										
Average Financial Impact		1,024										

3.3. Effectiveness of a dairy sheep breeding farm with 300 ewes in the flock

The Net present value of the project is 6,221 BGN; the Profitability index is 1.02; the Discounted payback period is 10 years, and the Average financial impact is 1,024 BGN.

The Net present value of the investment project is a positive number, which means that the rate of return on the investment is higher than the discount rate, and the investment provides a return, greater than the minimum required rate of return of 10.27%.

The Profitability index is higher than 1, which means that the investment in the dairy sheep breeding farm is profitable.

The Discounted payback period is 10 years. It is mainly due to the adding of the terminal value of the project in t_{10}, which means that if the project lasts more than 10 years, the Discounted payback period will be more than 10 years. The relatively high value of this index is the result of the 9 years planned period for reaching the size of 300 ewes in the main flock.

The positive value of the Average financial impact shows, that the investment is financially profitable.

4. CONCLUSIONS

According to the results of the research, it could be concluded, that the studied investment project is profitable. The Net present value of the investment project is a positive number, which means that the rate of return on the investment is higher than the discount rate, and the investment provides a return, greater than the minimum required rate of return of 10.27%.

Volume 2, ISSN 1314-8591 (Online), Published at: http://www.scientific-publications.net

This conclusion is confirmed by the Profitability index, which is higher than 1, and from the positive value of the Average financial impact.

The Discounted payback period is 10 years. It is mainly due to the adding of the terminal value of the project in t_{10}, which means, that if the project lasts more than 10 years, the Discounted payback period will be more than 10 years. The relatively high value of this index is the result of the 9 years planned period for reaching the size of 300 ewes in the main flock.

The greatest share of the cash outflows have the cash outflows for materials, followed by the cash outflow for salaries and social securities.

During the period from t_1 to t_5, the largest share of the cash inflows have the cash inflows from the sale of forages - own production. This is mainly due to the relatively small number of animals, especially the number of ewes. During the sixth and the seventh years the cash inflows from subsidies are the main source of revenue for the farm, and from the 8th year to the end of the investment project, the revenue from the sale of lambs takes the largest share of the cash inflows.

ACKNOWLEDGEMENT:

The participation in the Symposium was financed by Project BG051PO001-3.3.06-0033 "Support for the development of doctoral graduate students and young researchers", OP "Human Resources Development", Ministry of Labour and Social Policy, European Social Fund (ESF).

European Union

Project BG051PO001-3.3.06-0033
"Support for the development of doctoral graduate students and young researchers"
Funded by: Operational Program "Human Resourses Development"
Ministry of Labour and Social Policy
European Social Fund (ESF)

ESF Bulgaria
European Social Fund

REFERENCES

Agricultural Report (2013). Ministry of agriculture and food, Republic of Bulgaria.

Alexandrova, M. (2001) 'Financial criteria and techniques for optimizing investment choice when investing in real assets', Trakia-M, Sofia, pp. 104-106, 142-143, 149-151, 145-146.

Harizanova, Ts. (2013) 'Determination of the minimal required rate of return on equity in dairy sheep breeding in Bulgaria', Agricultural Science, 46(1), pp. 31-38.

Odjakova, Ts. Popova, Y., Laleva, S., Slavova, P. & Dimova, V. (2010) 'Rate of profitability of Karakachan sheep rearing', Journal of Animal Science, XLVII, 3/2010, pp. 24-27.

Popova, Y., Laleva, S., Kirilova, S., Slavova, P., Kalaidjiev, G. & Karabashev, V. (2013) 'Economic efficiency of breeding meat-type crossbreed sheep in the mountains and hilly regions of Bulgaria', Science & Technologies, vol. III(5), Animal studies & Veterinary medicine, Publisher "Union of Scientists - Stara Zagora", pp. 78-81. http://journal.sustz.com/VolumeIII/Number5/Papers/YovkaPopova1.pdf

Todorov, N., Ilchev, A., Georgieva, V., Girginov, D., Djuvinov, D., Penkov, D. & Shindarska, Z. (2004) Feeding of animals. UNISCORP – Sofia.

Todorov, N., Simeonov, M. & Nedelkov, K. (2013) 'Innovations for rapidly improvement of dairy sheep farm economics', Agricultural Science, 46(1), pp. 3-18.