

**CHOICE BETWEEN TWO ALTERNATIVE INVESTMENT PROJECTS
IN DAIRY CATTLE BREEDING**

Tsvetana S. Harizanova - Metodieva

Institute of Animal Science, Kostinbrod, Bulgaria, 2232, sp. Pochivka

E-mail: ts_harizanova@abv.bg



Abstract

The aim of the study is to propose an approach for assessing two alternative investment projects in dairy cattle breeding – the first with 70 cows in the main herd and the second with 120 cows. It was carried out an estimation of the necessary investment cash flows, cash inflows and outflows, based on information from a dairy cattle farm first category in Northwest region of Bulgaria and author's own calculations. Both projects have a positive NPV. IRR and MIRR of the both projects are larger than the discount rate, which means that their implementation is economically feasible. The second project much better uses the investments compared to the first investment project and it creates preconditions for the realization of economies of scale as a result of allocation of investments over a larger number of animals in the main herd.

Key words: cattle breeding, return, net present value, investments, investment project

1. INTRODUCTION

The investments in dairy cattle breeding are the key factor for the efficiency of that sub-sector of the Economy. In agriculture biological and non-biological assets are interacting in the production process. Therefore genetic traits of animals together with the conditions of rearing influence over the quality and quantity of milk production.

According to Ivanov (2009) the allocation of more funds for modernization of dairy farms will support their competitiveness and increase their comparative advantages; according to Kovacheva (2008) financial support for reconstruction of the dairy farms is needed. Atanasov (2009) concluded that the larger capacity of dairy cattle farms allows them to apply advanced technologies and the cost of the production is lower. A model for optimal operation of dairy farms using the simplex method was created (Abramova et al. 2003). Ivanov (2007) analyzes the factors, which determine the size of farms in the dairy sector and groups them to technological, price, capital and demographic factors. Harizanova et al. (2012) analyses the different categories of investments in dairy cattle breeding in Bulgaria.

The aim of the study is to propose an approach for assessing two alternative investment projects in dairy cattle breeding.

2. MATERIAL AND METHODS

In order to achieve the aim of the study it was carried out an analysis of the necessary investment cash flows, inflows and outflows during the years and cost of production, based on the collected information from a dairy cattle farm first category in Northwest region of Bulgaria and on the basis of author's own estimations. The analysis of the two alternative investment projects is based on: NPV - net present value of the investment; IRR - Internal Rate of Return on investment; MIRR - Modified Internal Rate of Return

on Investment (Alexandrova 2001); NPV per one cow from the main herd and discounted investment cash flow per one cow from the main herd. The discount rate is defined as the weighted average cost of capital, taking into account the reduction of the corporative tax, due to the interest, paid for the loan (Alexandrova 2001).

Next features of the investment projects are taken into account:

- It is planned the purchase of 100 dairy cows in t_0 for the realization of the first investment project; 32% of the cows are scheduled to drop in t_1 due to the fertility problems, mastitis, ungulate diseases, low milk production and other problems. It is planned a purchase of 176 dairy cows in t_0 for the realization of the second investment project as 32% of them are planned to drop in because of the same reasons as the smaller investment project. The price of one cow is 1,700 BGN.
- During the first year t_1 it is planned low milk productivity of cows - about 4,400 liters per a cow from the main herd (initially purchased cows – cull cows) for the two investment projects with price of realization of one liter of milk- 0.55 BGN.
- Projected fertility is around 55% in t_1 (initially purchased cows – cull cows) for the two investment projects. It is planned 5% of the calves to be culled before reaching one year of age, some calves to stay for repairing the main herd (14 calves in the first investment project for repair of the main herd and 24 calves in the second) and other calves (20 calves in the first investment project and 38 in the second) to be fatten for a year and then sold at 400 kg bodyweight. The price for realization of beef is 2.50 BGN for a kg of bodyweight.
- Cull cows and heifers are planned to be sold at price of 1,000 BGN (32 animals in the first investment project and the 56 in the second) during the first year t_1 .
- It is planned the farm to receive subsidies of 31,400 BGN for the first investment project and 44,600 BGN for the second.
- In the second year t_2 , 32 cows will be bought in the first investment project and 51 cows in the second, for the same price – 1,700 BGN.
- It is planned 30% of the cows in the main herd to be culled (30 cows in the first investment project and the 51 in the second) in the second year t_2 .
- Projected fertility is around 75% in t_2 for the two investment projects. It is planned 5% of the calves to be culled before reaching one year of age, some calves to stay for repairing the main herd (14 calves in the first investment project and 24 calves in the second) and other calves (35 calves in the first investment project and 60 in the second) to be sold at one year of age (400 kg live weight). The price for realization of beef is 2.50 BGN for a kg of bodyweight.
- The projected average milk production of a cow from the main herd during the second year t_2 is 4,600 l at price of 0.60 BGN for one liter for the two investment projects.
- From the third year till the end of the exploitation period of the investment projects, it is planned fertility of 85% (5% mortality). Part of the female calves will be kept to repair the main herd (14 calves in the first project and 24 in the second) and the rest of calves will be sold at the age of one year (42 calves in the first investment project and 72 in the second). The average price for realization of one kilogram beef bodyweight is planned to be 2.50 BGN.
- Average annual milk yield increased to 5,500 liters per cow in the first investment project, and to 5,800 liters in the second during the third year t_3 . Higher milk yield in the second investment project is due to better selection and breeding, the introduction of modern milking equipment (purchase of robot for

milking). It is planned 20% of the cows in the main herd to be culled in both projects during the third year t_3 .

- From year t_4 to t_{10} of the two alternative investment projects it is planned annual increase of the net cash flow by 3% on the basis of the previous year as a result of improving organizational processes in the farm, increase in the average milk yield, economies of scale and others. The reinvested tax is planned to increase annually by 3% from t_5 to t_{10} of the two alternative investment projects. It is planned 20% of the cows in the main herd to be culled in both projects from year t_4 to t_{10} .

- For all the years of the exploitation period of the two investment projects it is planned the repair heifers to be included in the main herd of 27 months of age; part of the calves are left for repair of the main herd, and the rest is grown one year and then sold at 400 kg live weight.

- For the creation of a farm with 70 cows it is not planned the use of loan capital, but to create a farm with 120 cows, it is planned to receive funding from MAF and the farm must return in the form of bank loan – 150,000 BGN with 5-year maturity and 7.5% annual interest.

- When the depreciation is calculated, it is taken into the account reported tax deductible depreciation rates of different types of assets. Land and animals don't have depreciation. They have to be revalued according to the current accounting standards (Accounting Standard № 41 - AGRICULTURE).

- Revenues are generated from the sale of milk, calves, cull cows and heifers and subsidies. The expenses are divided to: expenses from main activities and financial expenses.

- Terminal value of the first project is set at 265,000 BGN, and the second – 462,000 BGN. Terminal value reflects the amount of cash that the farmer will receive if at the end of the exploitation period he/she decides to sell the farm and all assets and liabilities.

- Net cash flow from main activities is found as the difference between revenues (cash inflows) and expenses from main activities plus depreciation minus corporate tax due.

- The value of net cash flow is calculated as follows: from the net cash flow from main activities are deducted the interest and principal paid during the year to determine how much is the return on investment only for the farmer, not for the bank and the farmer. The principal is deducted when calculating net cash flow, because: although the payment of principal is not expenditure according to the accounting standards in Bulgaria, it reduces the amount of cash that the farmer possesses, i.e. it is cash outflow. Principal payments are reflected in the cash flows statement during the preparation of financial statements of the company each year. The interest paid is the financial expenditure for the farm. It is the cost of borrowed capital, the amount of money which the bank receives for the loan. In this case, it is seek the return on investment from the viewpoint of the farmer. Therefore, in determining the amount of net cash flow, the interest and principal are removed.

- Accounting financial result for tax transformation is calculated as the difference between revenue, cost of production and cost of animals which were sold and financial expenditures.

- Tax financial result has been found as the difference between the accounting financial result for tax transformation (if positive) and the amount of the loss occurring not later than five previous reporting periods according CITA art. 70. For the purpose of the analysis it is assumed that other transformations of the accounting financial result except the application of Art. 70 of CITA will not be applied.

- Corporate tax due (income tax due) is established by deducting 60% of the corporate tax. Corporate tax is 10% from the tax financial result. These 60% of the corporate tax (remitted income tax) have to be reinvested in the following year in main activities (in assets); the amount of the reinvested tax shall not exceed 50% of the value of assets in which the farm invests according to CITA art. 189b.

- The net financial result is found by subtraction of the income tax from the accounting financial result.
- The cost of equity is set at 8.4% (Harizanova et al. 2012). In the first investment project the cost of the capital coincides with the weighted average cost of capital. In the second project, the weighted average cost of capital is 8.3% for the first five years of the exploitation period, and for the rest of the exploitation period it is 8.4%.
- For the calculation of NPV it is assumed that most of the investments are made in the period t_0 , and the cash inflow and cash outflow are realized during the periods from t_1 to t_{10} (exploitation period).

3. RESULTS AND DISCUSSION

Table 1, Table 2, Table 3 and Table 4 show the estimated data of the different types of cash flows for the period from t_0 to t_3 of the two alternative investment projects.

Investment cash flows for t_0 are planned to be 797,000 BGN for the first investment project and 1,251,200 BGN for the second project; for t_2 they are respectively 56,812 BGN and 86,700 BGN and for t_3 they are respectively 5,028 BGN and 894 BGN.

In t_0 it is planned the purchase of 100 cows for the first project and 176 cows respectively for the second. For the implementation of the first project it is necessary to purchase and reconstruct two buildings totaling 100,000 BGN, and for the second project it is necessary to be built one farm building and for that 170,000 BGN is needed. For the realization of the both investment projects it is planned the purchase of 100 decares of land with average price of 600 BGN/decare. It is envisaged the farm to rent 900 decares municipal pastures for the price of 2.5 BGN/decare per year and 300 decares of arable land with an annual rent of 30 BGN/decare. The rent of pastures and arable land are included in the cost of forage production. 422,000 BGN are needed to buy tractors, bobcat, jeep, computer with peripherals, and other fixed assets for both projects. To realize the first project it is necessary to adopt a milk line for 45,000 BGN, and for the second project - a milking robot for 300,000 BGN.

Reinvested tax is 1,206 BGN in t_2 and 2,514 BGN in t_3 for the smaller investment project. It is planned to reinvest tax of 447 BGN in t_3 for the second project. This is because the largest investment project is associated with larger initial investments and larger cash outflows that can not be compensated by the cash inflows in the first year of the exploitation period.

Cash inflow is planned to be 247,960 BGN in t_1 ; 289,600 BGN in t_2 and 318,400 BGN in t_3 for the first investment project.

Cash inflow for the second investment project is planned to be 429,000 BGN in t_1 ; 486,800 BGN in t_2 and 558,200 BGN in t_3 .

The largest part of the cash inflow for both investment projects comes from the sale of milk. In t_2 the amount of revenues from the sale of cull cows and heifers gradually reduced at the expense of increasing revenues from the sale of calves. In the first year of the exploitation period, the second investment project is characterized by 73% larger cash inflow than the first investment project; in the second year this percentage is 68% and 75% in the third year.

Expenses from main activities for the first investment project are 287,152 BGN in t_1 and 284,152 BGN in t_2 ; in t_3 in their size is respectively 243,452 BNG. Expenses from main activities include: labor – gross salaries and social and health insurances for 5 persons; forage (bought and produced); medicaments, vet and accounting services; electricity, water, disinfectants; fuel, spare parts, other materials and services; depreciation.

For the second investment project expenses from main activities are 492,708 BGN in t_1 and 492,137 BGN in t_2 ; in t_3 their amount is 411,596 BGN. For both project the largest share from the expenses has the expenditures for forage, followed by depreciation. Expected interest on borrowed capital for the second project has value of 5,720 BGN per year for the period t_1 to t_5 .

Accounting financial result for tax transformation in the first investment project is 20,100 BGN in t_1 ; 41,900 BGN in t_2 and 54,700 BGN in t_3 . Accounting financial result for tax transformation for the second investment project is -14,950 BGN (loss) in t_1 ; 22,400 BGN in t_2 and 40,300 BGN in t_3 . The net financial result for the first investment project is scheduled to 19,296 BGN in t_1 ; 40,224 BGN in t_2 and 52,512 BGN in t_3 . The net financial result for the second investment project is scheduled to -14,950 BGN (loss) in t_1 ; 22,102 BGN in t_2 and 38,688 BGN in t_3 . Net cash flow from main activities for the first investment project is: 23,508 BGN in t_1 ; 67,276 BGN in t_2 and 136,264 BGN in t_3 . Net cash flow from main activities for the second investment project is: 79,092 BGN in t_1 ; 137,165 BGN in t_2 and 287,792 BGN in t_3 .

Net cash flow from main activities for the two investment projects have positive values, unlike the accounting financial result and the net financial result in t_1 for the second project. This is due to differences in formation of financial result and the net cash flow from main activities. Accounting financial result for tax transformation is important for the farm, because on its basis a transformation of the financial result is made and respectively the income tax and remitted tax are calculated.

Table 5 presents the different categories of cash flows for the period from t_0 to t_{10} , NPV, IRR, MIRR, net present value per one cow from the main herd and the discounted investment cash flow per one cow from the main herd for the two investment projects.

The realization of the second investment project will require 469,002 BGN more investments than the smaller investment project (discounted investment cash flow). From the analysis of the data, it was found that the net present value of the first project is 39,814 BGN, while that value for the second project is 431,956 BGN. The discounted investment cash flows per one cow from the main herd is 12,543 BGN for the first project and 11,225 BGN for the second, i.e. the increase of size of the main herd reduces investments per one animal from the main herd. This is a consequence of more efficient use of fixed assets. The net present value per one cow from the main herd is 569 BGN for the first investment project and 3,600 BGN for the second. IRR and MIRR of the two investment projects are as follows: 9.20% for the first project and 13.45% for the second and respectively 8.88% for the first project and 11.42% for the second.

Both projects have positive NPV. IRR and MIRR are larger than the discount rate. It means that their implementation is economically feasible. When comparing the performance of both projects it is found that the second project (120 cows) is better than the first because the investment generates a higher net present value, higher internal rate of return and higher modified internal rate of return.

NPV of the second project is higher with 392,142 BGN than the NPV of the first project. The second investment project has 46% higher IRR, and 29% higher MIRR than the first project. Consequently, the additional investment of 469,002 BGN leads to increased return on investment. One BGN discounted investment cash flow accounts for 1.05 BGN discounted net cash flow in the first investment project, while in the second investment project that value is 1.32 BGN.

Investments in the larger project lead to economies of scale, more efficient use of limited resources and a higher return on investment.

When comparing the two investment projects, it can be found the next features:

1. For the implementation of the second investment project it is needed additional investments to create main herd with 50 animals more than the first project.

2. In the second project it is planned an adoption of a modern, highly-productive milking technology while in the first project it is planned an construction of a milk line.
3. While in the first project it is planned the reconstruction and modernization of existing agricultural buildings, in the second project, construction of new buildings is planned.
4. It is planned in the second project the cows from the main herd to reach higher milk productivity compared to animals from the first project.
5. The percentages of cull cows and calves and the fertility rate by years are the same for both projects.
6. The cows include in the main herd of age of 27 months for both projects.
7. In the first project, the investments will be made with equity, while in the second it is planned to use debt and equity.
8. For the period from t_4 to t_{10} it is set growth rate of 3% for the net cash flow from main activities in both investment projects.
9. It is planned in both investment projects from the third year of exploitation period, cull animals to be replaced from own replace animals.
10. All male calves and a part of females that will not be included in the main herd, will fattened for one year, then sold in both investment projects.

Table 1. Cash flows during the period t_0

Indicators	t_0					
	70 cows			120 cows		
	Number	Price (BGN)	Sum (BGN)	Number	Price (BGN)	Sum (BGN)
Investment cash flow			797000			1251200
Cows	100	1700	170000	176	1700	299200
Remitted tax (reinvested tax)						
Buildings-reconstructed	2	50000	100000			
New buildings				1	170000	170000
land (dka)	100	600	60000	100	600	60000
tractors	3	50000	150000	1	50000	150000
Bobcat	1	50000	50000	1	50000	50000
Jeep	1	20000	20000	1	20000	20000
Computer with peripheral devices	1	2000	2000	1	2000	2000
Other (2 forage harvesters, 2 mowers, 1 hay rake, 4 trailers, 1 cultivator, 1 plow, 2 seeders, 1 sprayer)	1	200000	200000	1	200000	200000
Milk line	1	45000	45000			
Milking robot				1	300000	300000
Other agricultural machines						

Table 2. Cash flows during the period t_1

Indicators	t ₁					
	70 cows			120 cows		
	Number	Price (BGN)	Sum (BGN)	Number	Price (BGN)	Sum (BGN)
Cash inflow			247960			429000
From the sale of milk	299200	0.55	164560	528000	0.55	290400
From the sale of calves	8000	2.50	20000	15200	2.50	38000
From the sale of cull cows and heifers	32	1000	32000	56	1000	56000
From subsidies	1	31400	31400	1	44600	44600
Expenses from main activities			287152			492708
Labour	5	6000	30000	5	6000	30000
Forage	1	156000	156000	1	265000	265000
Vet and accounting services	12	810	9720	12	1819	21828
Medicaments	12	325	3900	12	550	6600
Electricity, water, disinfectants	12	669	8028	12	790	9480
Fuel, spare parts, rent for pastures, other materials and services	1	16000	16000	1	17000	17000
Depreciation	12	5292	63504	12	11900	142800
Financial expenses						5720
Interests on loan				1	5720	5720
Accounting financial result			20100			-14950
Loss from previous periods (BGN)						
Tax financial result (BGN)			20100			-14950
Corporate tax due			804			
Net financial result (BGN)			19296			-14950
Net cash flow from main activities			23508			79092

Table 3. Cash flows during the period t₂

Indicators	t ₂					
	70 cows			120 cows		
	Number	Price (BGN)	Sum (BGN)	Number	Price (BGN)	Sum (BGN)
Investment cash flow			56812			86700
Cows	32	1700	54400	51	1700	86700
Remitted tax (reinvested tax)			1206			
Buildings-reconstructed						
New buildings						
land (dka)						
tractors						
Bobcat						
Jeep						
Computer with peripheral devices						
Other (2 forage harvesters, 2 mowers, 1 hay rake, 4 trailers, 1 cultivator, 1 plow, 2 seeders, 1 sprayer)						
Milk line						
Milking robot						
Other agricultural machines			2412			
Cash inflow			289600			486800
From the sale of milk	322000	0.60	193200	552000	0.60	331200
From the sale of calves	14000	2.50	35000	24000	2.50	60000
From the sale of cull cows and heifers	30	1000	30000	51	1000	51000
From subsidies	1	31400	31400	1	44600	44600
Expenses from main activities			284152			492137
Labour	5	6000	30000	5	6000	30000
Forage	1	156000	156000	1	267429	267429
Vet and accounting services	12	810	9720	12	1819	21828

Medicaments	12	325	3900	12	550	6600
Electricity, water, disinfectants	12	669	8028	12	790	9480
Fuel, spare parts, rent for pastures, other materials and services	1	13000	13000	1	14000	14000
Depreciation	12	5292	63504	12	11900	142800
Financial expenses						5720
Interests on loan				1	5720	5720
Accounting financial result			41900			22400
Loss from previous periods (BGN)						-14950
Tax financial result (BGN)			41900			7450
Corporate tax due			1676			298
Net financial result (BGN)			40224			22102
Net cash flow from main activities			67276			137165

Table 4. Cash flows during the period t_3

Indicators	t_3					
	70 cows			120 cows		
	Number	Price (BGN)	Sum (BGN)	Number	Price (BGN)	Sum (BGN)
Investment cash flow			5028			894
Cows						
Remitted tax (reinvested tax)			2514			447
Buildings-reconstructed						
New buildings						
land (dka)						
tractors						
Bobcat						
Jeep						
Computer with peripheral devices						
Other (2 forage harvesters, 2 mowers, 1 hay rake, 4 trailers, 1						

cultivator, 1 plow, 2 seeders, 1 sprayer)						
Milk line						
Milking robot						
Other agricultural machines			5028			894
Cash inflow			318400			558200
From the sale of milk	385000	0.60	231000	696000	0.60	417600
From the sale of calves	16800	2.50	42000	28800	2.50	72000
From the sale of cull cows and heifers	14	1000	14000	24	1000	24000
From subsidies	1	31400	31400	1	44600	44600
Expenses from main activities			243452			411596
Labour	5	6000	30000	5	6000	30000
Forage	1	120000	120000	1	200000	200000
Vet and accounting services	12	710	8520	12	1100	13200
Medicaments	12	200	2400	12	343	4116
Electricity, water, disinfectants	12	669	8028	12	790	9480
Fuel, spare parts, rent for pastures, other materials and services	1	11000	11000	1	12000	12000
Depreciation	12	5292	63504	12	11900	142800
Financial expenses						5720
Interests on loan				1	5720	5720
Accounting financial result			54700			40300
Loss from previous periods (BGN)						
Tax financial result (BGN)			54700			40300
Corporate tax due			2188			1612
Net financial result (BGN)			52512			38688
Net cash flow from main activities			136264			287792

Table 5. Calculation of the different categories of cash flows for the period from t_0 to t_{10} , NPV, IRR, MIRR, net present value per one cow from the main herd and the discounted investment cash flow per one cow from the main herd for the two investment projects.

Indicators (BGN)		Years					
		t_0	t_1	t_2	t_3	t_4	t_5
70 cows in the main herd	Remitted tax (reinvested tax) from the previous year			1 206	2 514	3 282	3 381
	Investment cash flow	-797 000		-56 812	-5 028	-6 564	-6 762
	Net cash flow		23 508	67 276	136 264	140 352	144 563
	Discount rate %	8.4	8.4	8.4	8.4	8.4	8.4
	Discounted investment cash flow	-797 000	0	-48 348	-3 947	-4 754	-4 518
	Discounted net cash flow	0	21 686	57 253	106 978	101 649	96 585
	NPV	39 814					
	IRR	9.20					
	MIRR	8.88					
	Net present value per one cow from the main herd	569					
	Discounted investment cash flow per one cow from the main herd (in absolute value)	12 543					
120 cows in the main herd	Remitted tax (reinvested tax) from the previous year				447	2 418	2 491
	Investment cash flow	-1 251 200		-86 700	-894	-4 836	-4 982
	Net cash flow from main activities		79 092	137 165	287 792	296 426	305 319
	Interests on loan		5 720	5 720	5 720	5 720	5 720
	Principal		30 000	30 000	30 000	30 000	30 000
	Net cash flow		43 372	101 445	252 072	260 706	269 599
	Discount rate %	8.30	8.30	8.30	8.30	8.30	8.30
	Discounted investment cash flow	-1 251 200	0	-73 920	-704	-3 515	-3 344
	Discounted net cash flow	0	40 048	86 492	198 445	189 512	180 957
	NPV	431 956					
	IRR	13.45					
	MIRR	11.42					
	Net present value per one cow from the main herd	3 600					
	Discounted investment cash flow per one cow from the main herd (in absolute value)	11 225					

Continue:

Indicators (BGN)		Years					Terminal value of the project
		t ₆	t ₇	t ₈	t ₉	t ₁₀	
70 cows in the main herd	Remitted tax (reinvested tax) from the previous year	3 483	3 588	3 696	3 807	3 922	
	Investment cash flow	-6 966	-7 176	-7 392	-7 614	-7 844	
	Net cash flows	148 900	153 367	157 969	162 709	167 591	265 000
	Discount rate %	8.4	8.4	8.4	8.4	8.4	8.4
	Discounted investment cash flows	-4 293	-4 080	-3 877	-3 684	-3 501	
	Discounted net cash flows	91 774	87 202	82 859	78 731	74 810	118 291
	NPV						
	IRR						
	MIRR						
	Net present value per one cow from the main herd						
	Discounted investment cash flow per one cow from the main herd (in absolute value)						
120 cows in the main herd	Remitted tax (reinvested tax) from the previous year	2 566	2 643	2 723	2 805	2 890	
	Investment cash flow	-5 132	-5 286	-5 446	-5 610	-5 780	
	Net cash flow from main activities	314 479	323 914	333 632	343 641	353 951	462 000
	Interests on loan						
	Principal						
	Net cash flow	314 479	323 914	333 632	343 641	353 951	462 000
	Discount rate %	8.40	8.40	8.40	8.40	8.40	8.40
	Discounted investment cash flow	-3163	-3006	-2857	-2715	-2580	0
	Discounted net cash flow	193 828	184 172	174 998	166 281	157 998	206 229
	NPV						
	IRR						
	MIRR						
	Net present value per one cow from the main herd						
	Discounted investment cash flow per one cow from the main herd (in absolute value)						

4. CONCLUSIONS

Both projects have positive NPV, IRR and MIRR. IRR and MIRR are larger than the discount rate for both projects, which means that their implementation is economically feasible. Each of the two projects can be selected for implementation by the farmer according to the amount of available capital and funding sources.

The second project uses better the invested capital than the first. Preconditions are created for the realization of economies of scale as a result of allocation of investment over a larger number of animals from the main herd. The realization of the second investment project requires 469,002 BGN more investments as well as additional funds to meet larger cash outflows, incurred from the increase of the herd size. IRR of the second project is 46% higher than IRR of the first project, and MIRR is with 29% higher.

ACKNOWLEDGEMENT:

This paper and the participation in conference “Agriculture & Food”, Elenite, 2013, is supported by the project BG051PO001-3.3.06-0033 “Support for the development of young researchers and postdocs in the IAS - Kostinbrod”, OP "Human resources development", Ministry of Labour and social policy, European Social Fund (ESF).

REFERENCES

- Abramova, G., Zimniakov, V. & Zimniakov, A. (2003) ‘A model for optimum function of the milk cattle breeding’, *Agricultural Economics and Management*, vol. 54, no. 1, pp. 54-56.
- Accounting Standard № 41 - Agriculture (2007) appendix to letter to the Council of Ministers no. 46/21.03.2005, State Gazette no. 30/7.04.2005, in force as of 01.01.2008, Bulgaria
- Alexandrova, M. (2001) *Financial criteria and techniques for optimizing investment choice when investing in real assets*, Trakia-M, Sofia, pp. 119, 104-141.
- Atanasov, D. (2009) ‘Dairy Farming Trends in EU and Bulgaria During the Period 2000–2007’, *Agricultural Economics and Management*, vol. 54, no. 6, pp. 44-50.
- Corporate Income Tax Act (CITA), State Gazette no. 105/22.12.2006, in force as of 01.01.2007, *Last Amendment - SG no. 94/30.11.2012, in force as of 01.01.2013, Bulgaria*
- Ivanov, B. (2007) ‘Factory determining the size of farms in dairy sector’, *Agricultural Economics and Management*, vol. 52 no. 6, pp. 18-26.
- Ivanov, B. (2009) ‘Analysis of the Situation in the Dairy Sector in Bulgaria’, *Agricultural Economics and Management*, vol. 54, no. 3, pp. 72-79.
- Kovacheva, C. (2008), ‘Competitiveness and Prospects for Development of the Milk Industry after the Accession of Bulgaria to the EU’, *Agricultural Economics and Management*, vol. 53, no. 6, pp. 3-9.
- Harizanova, T., Gaidarska, V. & Stoikov, P. (2012) ‘Justification of the minimum required rate of return on equity in dairy cattle farms’, *Agricultural Economics and Management*, vol. 57, no. 2, pp. 17- 22.
- Harizanova, T., Gaidarska, V. & Ivanova, T. (2012) ‘Possibility to evaluate the structure of investments in dairy cattle breeding farms’, *Journal of Mountain Agriculture on the Balkans*, vol. 15, no. 1, pp. 102 – 109.