Animal welfare, etológia és tartástechnológia

Animal welfare, ethology and housing systems

Volume 7 Issue 4

Különszám

Gödöllő
2011

ECONOMIC ANALYSIS OF HUNGARIAN GREY CATTLE KEEPING

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Abstract

Hungarian grey cattle breeding and keeping in Hungary only recently started to come-back. For the present most of them are kept to the effect gene reservation, breeding pedigree sires and environment protection. Because of high quality of grey beef products, commercial breeding and sale would given competitiveness for all market-players. But because of lower production of this species, Hungarian grey cattle keeping is a non-profitable business.

By a right keeping and feeding technology also could be achieved profit in this sector. Because keeping and feeding costs of this species could be greatly reduced. Hungarian grey has got a number of genetic properties, which is perfectly suitable for extensive livestock. It can be fed on pasture throughout the year, its keeping does not require a large investment.

In the course of this research a farm with 45 cows and its growth by three scenarios was examined. The scenarios includ the cost evaluations of several keeping technologies. The costs were compared with potential production value and with available revenues. Then were examined the economic efficiency of keeping technologies. The research showed that Hungarian grey cattle keeping by a semi intensive keeping condition is a non-profitable business, in contrast by an extensive condition is a profitable business.

Keywords: Hungarian grey cattle keeping, cost, income, profitability, efficiency

A magyar szürke szarvasmarha tartás gazdasági vizsgálata

Összefoglalás

Magyarországon a magyar szürke szarvasmarha fajta tenyésztése és tartása csak az utóbbi időben kezdett újra fellendülni. Egyelőre azonban nagy részüket csak génmegőrzés, tenyészállat előállítás és természetvédelem céljából tartják. A szürke marha termékekben rejlő magas minőség miatt a gazdasági célú tenyésztés és értékesítés minden piaci szereplő számára versenyképességet (előnyt) jelentene. A szürke marha tartás azonban – az állat alacsonyabb termelési mutatói miatt – nem jövedelmező tevékenység.

A helyes takarmányozási mód és tartástechnológia megválasztásával azonban ebben az ágazatban is eredmény érhető el. A tartás, valamint takarmányozás költségei ugyanis ezen állatfajta esetében nagymértékben csökkenthetők. A magyar szürke szarvasmarha számos olyan genetikai tulajdonsággal bír, amely kiválóan alkalmassá teszi az extenzív állattartásra. Takarmányozása egész évben legelőről megoldható, tartása nem igényel nagy ráfordítást.

Munkám során egy 45 tehénből és annak szaporulatából álló gazdaságot három lehetséges forgatókönyv szerint vizsgáltam. A forgatókönyvek három különböző típusú tartástechnológia költségkalkulációját tartalmazzák. Ezután a költségeket összevetettem a lehetséges termelési értékkel és az elérhető árbevétellel, valamint két féle tartástechnológia gazdasági hatékonyságát vizsgáltam. A kutatás eredménye szerint a szürke marha tartás félintenzív tartási körülmények mellett veszteséges, míg szélsőségesen extenzív körülmények mellett nyereséges lehet.

Kulcsszavak: szürke marha tartás, költség, jövedelem, jövedelmezőség, hatékonyság

Literature review

Hungarian grey cattle has different genetic characteristics against modern breeds of cattle. This species grow slow, ripen late, and heifers may be bred for only 2-3 years of age. Growth and feed utilization of calves sad to be medium, while its forms of meat are bad *(Kovács, 2002)*. Because of this characteristics in Hungarian grey cattle sector can be achieved lower income, therefore this activity may seem to be uneconomic. At the same time grey cattle tolerates extreme environmental and weather conditions much better. It bears extensive keeping conditions very well, its production is not reduced by more modest keeping and feeding method *(FAO, 1990; Baltay, 2003)*. Because of special genes of this

species, these animals can be grazed almost all the year round *(Tőzsér et al., 2003)*. In summer the animals eat only grass of the pasture. In general, they does not get any supplement of dry matter or fodder *(Tőzsér et al., 2003, Petró, 2005; Bodó, 2007)*. In winter the feeding is based on harvested grass hay, straw, fodder or silage *(Bodó, 2002; Tőzsér et al., 2003; Petró, 2005)*. In winter the housing of grey cattle does not require any stable. According to *Bodó (2002)* and *Stefler (2003)* its wintering can be solved in cheap buildings or in building-free keeping.

Because of these favourable properties breeding of Hungarian grey cattle can be based on extensive keeping technology and on its feeding method *(Seregi et al., 2004)*. If livestock keeping is based on this technology, profit could be realised in this sector.

Materials and methods

In this research primary data were used, which has come on the one hand from questionnaire sent to the grey cattle farmers, on the other hand from in-depth interview made them. Preliminary tests found, that a Grey cattle farm is viable with about 45 cows and its growth. Therefore in this study was counted with this number of animals. To do this, data of farms with several livestock was proportioned, then it was counted with the data of model farm with 45 cows. This model farm was examined by three scenarios, and was determined the cost evaluations, the available incomes and economic efficiency of three scenarios. First keeping technology seeks after the cheapest solution. In this case animals are on pasture all the year round, feeding only on pasture. In winter animals are not fed additional fodder and silage, the only source of feed is harvested forage. The farm produce itself the production stock (calf), and it does not employ any employee. The second keeping technology – unlike the previous – is a semi industrial technology. Although animals are on pasture from spring to autumn, in winter they are kept in littered stable, and are fed additional fodder and silage. The feed is produced by the farm itself. Calves are bought from other farms and breeders, and there are employed some employee. The third technology is the same as the second, only differs from the second, that it buys the winter supplementary feed.

Results and evaluation

Costs

The results of cost calculation are represented in *Table 1*. In table can be seen the cost calculation and cost structure of the three different keeping technology.

Table 1: **Costs and cost structures of several Hungarian grey cattle keeping technology**

Denomination	Scenario 1		Scenario 2		Scenario 3	
	HUF/livestock	**%**	**HUF/livestock**	**%**	**HUF/livestock**	**%**
Material costs	17971 – 40537	53,4	30187 – 59004	53,6	40837 – 83625	69,1
from this:						
feed costs	(2922 – 6545)	(8,6)	(10347 – 15340)	(15,4)	(20997 – 39961)	(33,8)
livestock costs	(13029 – 29714)	(39,0)	(16286 – 37143)	(32,1)	(16286 – 37143)	(29,8)
other material costs	(2020 – 4278)	(5,8)	(3554 – 6521)	(6,1)	(3554 – 6521)	(5,5)
Staff costs	650	1,2	2962	3,6	2962	3,3
Amortization	3992	7,3	7986	9,6	3992	4,4
Operating costs	198 – 350	0,5	842 – 1323	1,3	198 – 350	0,3
Auxiliary costs	11603 – 15960	25,2	15044 – 19401	20,7	11603 – 15960	15,3
Other direct costs	2240 – 3357	5,1	4825 – 5942	6,5	2240 – 3357	3,1
General cost	2903 – 5137	7,3	2903 – 5137	4,8	2903 – 5137	4,5
Total cost	**39557 – 69982**	**100,0**	**64735 – 101729**	**100,0**	**64543 – 115383**	**100,0**

Resource: Own calculation by own examination, 2009

In all three cases material costs come out at more than half of total cost. Feed costs consist of additional winter fodder and silage, depending on the animals fed and the quantity of production (or purchase) amount. These costs are the highest in scenario 3, there farms purchase the feed. In scenario 1 and scenario 2 these costs consist of first cost of harvested forage and winter fodder or silage. In scenario 1 there are a high rate of auxiliary costs, because in this case animals can be fed with green and dried forage from grassland in all the year round. To this only the mechanical harvest works need (there are not any cost of seeds, fertilizer, pesticide or irrigation). In all of scenarios are livestock costs relatively variable, because its amount depends on the choice and breeding age weight of animals, on the other hand on the production costs of animals. Staff costs obviously are the highest in those farms (scenario 2, scenario 3), which employs employee, while amortization and operating costs are the highest, where can be found stable and crop production machines too (scenario 1).

Production value

In Hungarian grey cattle keeping calf, young animal and fattened animal (meat) are also major product. Some farmer sell only one major product, but most bull calves, steers and fattened bulls are sold (proportionally distributed between age groups), while 100 percent of heifer calves, and about 50-70

percent of intermediate heifer are kept in production. The rest are also sold for breeding purposes, waste animals are taken slaughter.

Yields and production value of major product by various utilization mode are represented in *table 2*.

Table 2: **Potential production value of Hungarian grey cattle keeping**

Utilization mode	Major product	Sales direction	Yield (kg)	Price of yield (HUF/kg)	Production value (HUF)
Beef cow breeding	suckling calf	breeding	60-100	500	40000
		fattening	60-100	500	40000
	selected heifer calf	breeding	180-200	500	95000
		fattening	180-200	500	95000
	selected bull calf	breeding	200-220	500	105000
		fattening	200-220	500	105000
		processing	200-220	300-350	68250
	breed intermediate heifer	breeding	320-400	550-650	216000
	breed intermediate bull	breeding	420-520	550-650	282000
Fatted cattle breeding	fattened steer	slaughterhouse	420-520	300-350	152750
		farm processing	420-520		
	fatted bull	slaughterhouse	520-720	300-350	201500
		farm processing	520-720		
	waste bull	slaughterhouse	520-720	280-300	179800
		farm processing	520-720		
	waste cow	slaughterhouse	450-550	280-300	145000
		farm processing	450-550		

Resoruce: Technology Issue of Association of Hungarian Grey Cattle Breeding, 2007, own edition by own examination, 2009

The available yield varies widely, because it depends on many factors (e.g.: age at sale, feeding method, keeping technology, etc.)

Revenues

If farmers can sell 100 percent of their products for sale at the market price shown in *table 2*, the revenues equal to the stated production value. According to my calculations the model farm (with 45 cows) can achieve 4 644 – 5889 thousand HUF revenues by age group proportional sale of breed heifer, waste animals and bulls. This amount depends on weight, price and location of sale. (The calculation took account of the following information: rate of live birth: 95 %, calf mortality: 4%, choice calf mortality: 0%, intermediate animal mortality: 2%, adult animal mortality: 1%, adult animal culling: bull: 10-20%, cow: 4-10%.) At the same time if farmers choose the second keeping technology, they can achieve 10 kg overbalance by fodder feeding, resulting in sales revenue takes between 4879 – 6134 thousand HUF.

Incomes

By income calculation the lower value is pessimistic (smallest available income and highest cost difference), while the upper value is optimistic (maximum available income and lowest cost difference). Taking account of revenue and cost data, it can be appointed, that income may be about -745 – 2843 thousand HUF by scenario 1, about -2954 – 1149 thousand HUF by scenario 2 and about -4005 – 1164 thousand HUF by scenario 3. By all the three keeping technology can be realized profit and loss too. But lowest risk of loss and highest probability of profit can be quantified by scenario 1.

By scenario 2 with feeding fodder can be realized higher revenue, therefore it would be profitable in order to achieve a cost reduction, which's solution of production do not cause yield losses (e.g.: reducing energy costs, watered from a natural watercourse, operating solar electric fence, etc).

Economic efficiency

As we have seen, all the three different technology of hungarian grey cattle keeping result different costs. Because of higher feeding costs and higher operating costs by scenario 2 is total cost higher too. However because of additional feeding (especially feeding fodder) daily weight gain of animals, such as fattening and selling final weight (yield) also increases, so the holdings in the form of additional revenue will be displayed.

By first and second keeping technology noted production value per unit of additional cost (economic efficiency) is indicated in *table 3*. In cell of production value and total cost occur the average of the lowest and highest values.

It can be seen, that the efficiency of second keeping technology (semi intensive) is lower, compared to first (extensive). By expense 1 Ft the first achieves 1.249 HUF production value, while the second achieves 0.859 HUF production value. It can be concluded, that Hungarian grey cattle is not worth too much fodder feeding, green and dried grass of pasture is enough for it.

Table 3: **Economic efficiency of Hungarian grey cattle keeping technology**

	Unit	Scenario 1	Scenario 2
Production value	HUF/év	5266500	5506500
Total cost	HUF/év	4217200	6410400
Economic efficiency		1.249	0.859

Resource: own calculation by data of table 1 and table 2

Conclusions

Hungarian grey cattle keeping may seem a loss activity, but with proper organization it can be made profitable. Namely the optimal choice of keeping technology may call forth a significant cost saving. By this species the keeping technology associated with the least investment may be also efficient. Furthermore by semi intensive keeping can be calculated on yield growth, at the same time incremental production value per unit of cost increase is lower, than by total extensive technology. So by this species is not worth to apply an expensive and not profitable keeping technology.

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