THESES OF THE PHD DISSERTATION

UNIVERSITY OF WEST-HUNGARY
FACULTY OF AGRICULTURAL AND FOOD SCIENCES
MOSONMAGYARÓVÁR
INSTITUTE OF FARM MANAGEMENT
DEPARTMENT OF FARM MANAGEMENT

Program supervisor:
Dr. HC. Dr. IVÁNCSICS, János
Professor, Doctor of the Hungarian Academy of Sciences

Sub-program supervisor:
Dr. TENK, Antal
Professor

Supervisor:
Dr. HABIL. SALAMON, Lajos
Professor

CURRENT ECONOMIC QUESTIONS OF BEEF PRODUCTION AND PROCESSING

Author:
KOVÁCS, TAMÁS

MOSONMAGYARÓVÁR
2002.

1. Introduction, the antecedents of research

Beef production has always been a very important part of cattle keeping in Hungary. It catered partly for the needs of the domestic and partly for the international market. Hungarian beef cattle have generally been of good quality, and this ensured considerable foreign exchange revenue for the national economy. It fitted well to the rural way of life and the production structure. Keeping and feeding the stock was simple since it was based on natural pasture keeping, moreover, it was profitable.

Unfortunately since 1990 the previously advantageous positions and possibilities have gradually been lost due to the changes in the society and the economy. The cattle stock, and within it the beef cattle stock has decreased significantly. Beef production, which has also diminished, is provided by dairy cattle stocks.

The possibilities of developing beef production are complicated because of the BSE disease, the reduction of subsidies and the saturation of the markets of the EU countries. However, it also has to be mentioned that the amount of beef consumed is increasing all over the world, which could lead to the increase of BSE-free beef cattle production in Hungary.

In my dissertation I carried out research of beef cattle producing and processing farms at the level of enterprise (entrepreneurs) chosen representatively in the West-Transdanubian region. I tried to survey the weak and strong points of the branch, and find a possibility how

the situation, and the profitability of the branch currently undergoing a crisis could be improved, and also how the regulations of the CAP of the European Union could be applied for Hungarian beef production.

2. Matter and method

The aim of research was to enhance the development of the beef cattle branch by economic analysis of the beef cattle production and processing of the West-Transdanubian region. During the economic analysis the following factors were closely studied:

- the development of the economic environment of the branch and its future possibilities;
- the elements of beef cattle production, and the return, costs and income of processing, and their evolution;
- based on the indices of profitability the break-out points, through which the efficiency of production could be increased;
- the beef cattle regulations of the EU, and the possibilities of adaptation in Hungary;
- the development of a computer based economic analysing program and simulation model, which could be applied in practice later.

To achieve the aim set, two methods of data collection were applied; one based on primary sources: individually collected materials, and

another based on secondary sources: the already available information, and classification of the numerical, objective data according to new aspects.

During the research I analysed the relationships and connections between the factors influencing the profit of beef cattle production and processing. I explored the data of the body weight determining the return, the average sale price (live weight, quality, extra costs, etc.). I paid attention to the slaughter material, which influences the production cost, and the cost development of the fattened mass (subsistent, beef producing). During processing I observed the changes of purchase price according to quality, and the amount of the cover sum deriving from processing main parts of the cattle and the products. For a further analysis of the data gained I worked out a simulation analysis program, which can forecast the progress of profitability of beef cattle fattening and processing.

3. Research results

Based on representative research carried out in the West-Transdanubian region it can be stated that the agriculture of the territory shows a more favourable picture than the country average. The favoured position and role of agriculture can well be observed through the profitability indices important for the research. Based on the enterprisal, regional, and national data gained from the personal

interviews, and on the information from the national data the following conclusions can be made:

3.1. Beef cattle production and fattening

The efficiency of beef cattle production and fattening is mainly determined by the progeny and the reproduction performance. The value of the unborn and the deceased calf is irreplaceable. If the reproduction decreases (as in the co-operative where the research took place, and also in the region) with the same cost the number of marketable, weaned calf or slaughter cattle will be lower, less young heifers will be available to substitute the culled cows, and for sale. Unadvantageous progeny can worsen the already weak profitability indices of suckler cow keeping and fattening.

Analysing the data of beef cattle production and sale it can be stated from the research that in the examined co-operatives beef cattle production and sale shows a decreasing tendency between 1993 and 2000. Instead of the 720 (323 tons) in 1993 the co-operative sold 320 (177 tons) beef cattle in 2000. The decrease in number was 56% (in body weight –44%), which means that the co-operative gradually cuts back its beef cattle branch.

The reasons for these are as follows: since 1996 the branch outgrowth has shown a decreasing tendency, live animal marketing became difficult and complicated in the region and the production of meet

type breeds has resulted in deficit.

The live animal demand of the domestic market and its purchase prices are not advantageous to continue production. Comparing the national and the regional production costs with the co-operative costs it can be stated that beef cattle production costs remain a few Forints/kg below the national average.

Analysing the cattle-fattening of the co-operatives it can be stated, that they divert from the national average, however, to a small extent: the costs are higher at feeding by 8%, at the wage costs by 3%, and at the direct costs by 13% than the national average. In comparison to this the branch costs remain 10.4% lower, and the economic general costs by 3% below the national average. The reasons for this are as follows: the fattening cattle are fed with self produced, good quality, however, unfortunately expensive fodder and maize for silage, moreover the wages are above the national average.

3.2. Beef cattle processing

The breeds within the purchased and processed beef cattle were as follows: 80-85% Holstein-Friesian and its crossings, 5-10% Hungarian spotted and its crossings, and 5% other breeds. The annual number of the processed beef cattle decreased from 22000 in 1993 to 15000 in 1997, and stabilised at this level, in other words it means the processing of 50-60 beef cattle (or calf for slaughter) per day. The

decline of production could be explained by the following reasons: on the one hand meat consumption habits changed in Hungary, putting the stress on poultry, on the other hand consumer beef prices have increased rapidly.

If the sale prices per kilogram are compared to the purchased live weight price per kilogram, it can be stated, that during the observed period it was much higher every year. The domestic sale price exceeded the purchase prices by 78 Ft/kg in the first year, by 385 Ft/kg in the last year, the export prices by 166 Ft/kg in the first, and by 475 Ft/kg in the last year. The increase in the observed period was quite dynamic. Further examining the data of sales, however, no far reaching conclusions can be drawn, because using these data there was no possibility to have a look and an objective picture of the prices, extent and details of processing. For further analysis it is necessary to analyse the covering sum of the processed beef. About calf for slaughter processing it can be stated, that its cost related profitability per kilogram changes between 15-20%. The values of beef cattle processing are weaker, ranging between 8-12%.

3.3. New scientific results

From the research it can be concluded, that providing the producer and the processing firms take their requirements concerning the purchase price mutually into consideration, then both the producer and the

processing firm can bring in profit in the beef cattle branch.

The dissertation contains the following new scientific observations and results:

- Multi dimensional economic analysis based on enterprise database of the market participants of beef cattle production and processing in the West-Transdanubian region.
- Processing and systematizing of the economic data and parameters of beef cattle production and processing in the West-Transdanubian region. Exploration and comparative analysis of the profitability indices mainly influencing production and processing.
- Computer simulation economic and profitability analysis of beef cattle production and processing.
- Examining the problems and hardships of the beef cattle branch, their possible solution, and exploring the future options taking the EU regulations into consideration.

4. Conclusions and suggestions

Until 1990 beef cattle production, and beef processing was an export oriented branch of agriculture within cattle breeding for decades. The Hungarian beef cattle – Hungarian spotted, and other beef cattle from its crossings – were of excellent quality, and resulted in considerable

foreign exchange revenue for Hungary. From the end of the 1980s, and especially after the political and social changes in Hungary beef cattle production became a loosing branch, the reasons for which could be explained by the followings:

The primary reason is the high scale increase of the prices of input materials of live animal production (mainly the fodder, energy, maintenance, branch, etc. costs), which could not be charged on the output (live animal delivery) prices. The negative changes in production have resulted in a decrease of the cattle stock. Unfortunately due to the negative tendencies to process good quality beef, and provide for the needs of the consumer it became necessary to import considerable amount of beef, while the amount of abandoned resources (pasture and field area, workforce) is growing steadily.

The decrease in production besides the ones mentioned above, was caused by the following reasons:

- the steady decrease of state subsidy since 1990;
- new economic regulations, laws, and orders;
- the collapse of the CMEA markets;
- the decrease and changes in consumer demand;
- the narrowing down of the former EU markets.

Another important factor of the beef branch is that the Hungarian beef industry does not require the lower quality (so called hamburger) Holstein-Friesian beef cattle, but cannot pay for the Hungarian

spotted, and strictly single purpose cattle (pure beef). For the beef industry it ensures a larger income to import the cheaper EU beef than to pay for the costs of domestic cattle fattening.

The EU market strongly influences Hungarian live cattle and beef export possibilities. The EU countries have reached a self supporting level of 105-110%, however, beef consumption shows a mild decline, which has been strongly influenced by the occurrence of Bovine Spongiferous Encephalitis (BSE). After BSE became public (England) in the EU it resulted in a very severe loss of confidence by the consumers. It can be assumed, that in the forthcoming years beef consumption will be stagnant or will even decline. This stagnation and decline could lead to the revival of Hungary's currently BSE free beef cattle stock.

The research and analyses carried out on regional enterprisal (co-operative) level clearly revealed the current problems of beef cattle production. The cost of a 500 kg live weight animal increased from a yearly 76 Ft/kg in 1993 to 224 Ft/kg in 2001. This surpassed by an average 10-15% the live weight sale price (purchase price) and its increase. The loss was considerably great in the Kisalföld region in 1997 and 1998., when it reached or surpassed 20 Ft/kg.

At the smaller enterprises and the private entrepreneurs the prime costs of fattening cattle were more favourable. During the examined period from 1993 to 2001 the prime costs grew from 70 to 181 Ft/kg per 1 kg live weight, which stayed below the purchase price every year. Observing the profit without taxation per 1 kg live weight it can

be determined that the prime costs do not include a certain part of the small enterprises costs (wages, insurances, taxes, etc.) which if added to the prime costs – the same way as by the larger enterprises – would show that producing the prime material of beef cattle is not lucrative.

Purchasing and processing of beef cattle was examined at a meat processing firm. Analysing the purchase data it can well be seen, that from 1994 beef cattle processing – similarly to the prime material production – decreased by 25-30%. The reasons for this can be explained by the difficulties of purchasing the prime material, and the decline in the sales of products both on the domestic and the export market. When processing veal the covering price (indirect costs+profit) was 7.6% and 41.6% respectively between 1994-2001. If the rate of profit is analysed in the covering price, a profit of 10-15% can be realized without taxation selling 1 kg of veal. Similarly to the volume of sale the profit without taxation also shows a downward tendency. The covering price for marketing processed beef is 10.3% and 23.57% for domestic and export sale respectively, this, however, is more balanced for veal. For beef processing the profit without taxation is between 5-10% for selling 1 kg of beef. It can also be stated, that the enterprise processes 15000 beef cattle and 5 tons of calf for slaughter annually, which compared to former beef cattle processing, makes up only 45-50% of the previous activity.

Summing up the research it can be stated that the fattening phase (production) of the beef cattle branch is generally a non lucrative process, which is gradually put to and end and built down by the

enterprises, except for the small enterprises and farmers, who perform farming as a supplementary activity. Beef cattle processing currently produces profit, despite the fact, that it struggles severely with the purchase and sale of good quality prime materials.

Joining the European Union considerable changes should be made within the regulation of the Hungarian beef cattle branch. Suggestions for these are as follows:

- **a comprehensive *legal and economic regulation system compatible with that of the European Union's* and a strategic plan should be worked out which could ensure EU-marketability and profitability of the Hungarian beef cattle branch in the fattening, processing and marketing sector;**
- **within it it would be essential to elaborate or adapt efficient, *EU compatible market, price, subsidy and trade regulations* complying with Hungarian circumstances, which define the competitiveness of the beef cattle branch at its bases;**
- **moreover the *biological bases* of good quality beef cattle *should also be ensured more efficiently, together with its enterprise level state subsidy*;**
- **it is important that the declaration of the *purchase (guaranteed) price should also be established at a higher level*, and it should be subsidized by the state which would ensure the *profitability of production of***

***an average beef cattle enterprise (at least with a cost related income of 15-20%)*;**

- ***new integration connections*, agreements between the prime material producing and processing firms should be made, *in which the state takes part*.**

Table 1.The cost system of beef cattle fattening, and of its profitability indices

Unit: Ft/kg, %

Specification	**1998.**		**1999.**		**2000.**		**2001.**		**2002.**		**Index 1998= =100%**
	Ft/kg	**%**	**Ft/kg**	**%**	**Ft/kg**	**%**	**Ft/kg**	**%**	**Ft/kg**	**%**	**%**
Fodder cost	132	74,1	137	72,4	142	68,9	148	66,1	158	65,8	120,0
Other material costs	7	3,9	8	4,2	8	3,8	9	4,0	10	4,0	137,1
Full material costs	**139**	**78,0**	**145**	**76,6**	**150**	**72,7**	**158**	**70,1**	**168**	**69,8**	**120,8**
Wage costs	13	7,3	15	7,9	18	8,7	20	8,9	21	8,9	164,6
Costs of social security	4	2,2	5	2,6	6	2,9	7	3,1	7	3,0	185,0
Costs of amortization	1	0,5	2	1,0	2	0,9	3	1,3	3	1,3	310,0
Costs of ancillary plant	14	7,8	16	8,4	18	8,7	21	9,3	23	9,7	166,4
Service costs	1	0,5	1	0,5	1	0,4	1	0,4	1	0,5	120,0
Insurance costs	1	0,5	1	0,5	1	0,4	1	0,4	1	0,5	120,0
Other costs	2	1,0	2	1,0	2	0,9	2	0,9	2	1,0	120,0
Direct costs	**175**	**97,8**	**187**	**98,9**	**198**	**96,1**	**213**	**95,1**	**228**	**95,0**	**130,3**
By-products	*-4*	*-2,2*	*-5*	*-2,6*	*-5*	*-2,4*	*-6*	*-2,6*	*-6*	*-2,7*	*155,0*
General branch costs	3	1,6	3	1,5	7	3,3	7	3,1	7	3,0	246,6
Limited costs	**174**	**99,4**	**185**	**97,8**	**200**	**97,0**	**214**	**95,6**	**229**	**95,3**	**131,7**
Economic general costs	4	2,6	4	2,2	6	3,0	10	4,4	10	4,7	270,0
Full production/prime cost	**178**	**100**	**189**	**100**	**206**	**100**	**224**	**100**	**239**	**100**	**134,8**
Cost level (%)	**-**	**98,34**	**-**	**95,45**	**-**	**98,10**	**-**	**97,39**	**-**	**97,96**	**99,6**
Cost related income (%)	**-**	**1,66**	**-**	**4,55**	**-**	**1,9**	**-**	**2,61**	**-**	**2,04**	**120,7**
Average sale price	181	-	198	-	210	-	230	-	245	-	135,3
Income	**3**	**-**	**9**	**-**	**4**	**-**	**6**	**-**	**6**	**-**	**166,6**

Source: Own calculations, with the help of a computer simulation program

Table 2. The expense structure of beef cattle processing, and its profitability indices

Unit: Ft/kg, %

Specification	1998.		1999.		2000.		2001.		2002.		Index 1998==100 %
	Ft/kg	%	Ft/kg	%	Ft/kg	%	Ft/kg	%	Ft/kg	%	%
Material costs	**357**	**88,7**	**346**	**85,2**	**361**	**85,6**	**386**	**85,8**	**414**	**85,6**	**115,8**
Wage costs	3,5	0,9	5,8	1,4	6,4	1,5	6,8	1,5	7,3	1,5	207,8
Costs of social security	1,4	0,4	2,0	0,6	2,2	0,5	2,4	0,5	2,6	0,6	186,1
Direct costs	**365**	**90,8**	**358**	**88,3**	**373**	**88,2**	**398**	**88,4**	**427**	**88,2**	**116,7**
Indirect costs	**37**	**9,2**	**48**	**11,7**	**50**	**11,8**	**53**	**11,6**	**57**	**11,8**	**152,8**
Full cost	**402**	**100**	**405**	**100**	**422**	**100**	**451**	**100**	**483**	**100**	**120,1**
Cost level (%)	-	96,5	-	94,9	-	88,7	-	88,7	-	88,6	81,9
Cost related income (%)	**-**	**3,5**	**-**	**5,1**	**-**	**12,3**	**-**	**12,3**	**-**	**12,4**	**350,0**
Purchase price	195	-	174	-	186	-	199	-	213	-	109,2
Return	417	-	427	-	475	-	508	-	544	-	130,5
Outgrowth	**15**	**-**	**22**	**-**	**53**	**-**	**57**	**-**	**61**	**-**	**418,3**

Source: Own calculations, with the help of a computer simulation program

5. Scientific publications from the topics of the thesis

1. **Tell Imre, Básthy Tamás, Kovács Tamás:**

   Az élelmiszeripar fejlesztésének lehetőségei és korlátjai az

   északnyugat-dunántúli régióban (The possibilities and limits of developing food industry in the North-West-Transdanubian region)

   Acta Agronomica Ovariensis, 1995. volume 37. 2. sz.

2. **Dr. Salamon Lajos, Kovács Tamás, Tanyi Zoltán:**

   Új környezeti kihívások az agrárvállalatok számára (New challenges for agricultural enterprises)

   Acta Agronomica Ovariensis, 1995. volume 37. 2. sz.

3. **Kovács Tamás, Kun Ferenc:**

   A közös agrárpolitika (CAP) fejlődése, reformjavaslatok, jövedelem-támogatások az Európai Unióban (The development of Common Agricultural Policy (CAP), suggestions for reform, and subsidies in the European Union)

   Acta Agronomica Ovariensis, 1999. Volume 41. 1. Sz.

4. **Kovács Tamás, Simonyi Ildikó, Hingyi Hajnalka:**

   A vállalkozások gazdasági és pénzügyi elemzés modellje (Economic and financial analysis model of enterprises)

   Óvári Tudományos Napok (Scientific Days in Óvár), Mosonmagyaróvár, 1998.

5. **Kovács Tamás, Dr. Salamon Lajos:**

   Az Európai Unió gazdaság-politikájának hatása a magyar mezőgazdaságra (The effect of the economic policy of the European Union on Hungarian agriculture)

   Agrárökonómiai Napok (Agro-economic Days), Keszthely, 1996.

6. **Kovács Tamás:**

Északnyugat-Magyarország mezőgazdasági erőforrásainak vizsgálata 1985-1994. évek között (Analysing the agricultural resources of Northwest Hungary)

Óvári Tudományos Napok (Scientific Days in Óvár), Mosonmagyaróvár, 1996.

7. **Dr. Salamon Lajos, Kovács Tamás:**

Az integráció szerepe észak-nyugat Dunántúl agrártermelésében (The role of integration in agricultural production in the North-West Transdanubian area)

Agrárökonómiai Napok (Agro-economic Days), Keszthely, 1996.

8. **Kovács Tamás, Bednarik Róbert, Braun Zsolt:**

Az EU harmonizáció hatása a magyar mezőgazdaságra (The effect of EU harmonization on Hungarian agriculture)

Nemzetközi Agrárökonómiai Tudományos Napok (International Agro-economic Scientific Days), Gyöngyös 1998.

9. **Kovács Tamás:**

Egy mezőgazdasági vállalkozás beruházási döntéseinek optimalizálása az időtényező figyelembe vételével (Optimisation of the investment decisions of an agricultural enterprise taking the time factor into consideration)

Georgikon Napok (Georgikon Days), Keszthely, 1998.

10. **Kovács Tamás, Simonyi Ildikó:**

Egy mezőgazdasági vállalkozás pénzügyi helyzetének elemzése az éves beszámolóból (Analysing the financial situation of an agricultural enterprise based on the annual report)

Óvári Tudományos Napok (Scientific Days in Óvár), Mosonmagyaróvár, 1998.

11. **Kovács Tamás:**

A magyar mezőgazdaságban bekövetkezett alapvető változások és hatásaik 1990-től napjainkig (The fundamental changes taking place in Hungarian agriculture and their effects from 1990 to our days)

V. Ifjúsági Tudományos Fórum (5th Scientific Youth Forum), Keszthely, 1999.

12. **Kovács Tamás, Gulyás László:**

A vágómarha tartás ökonómiai vizsgálata egy nyugat-magyarországi mezőgazdasági szövetkezetben (Economic analysis of beef cattle keeping in a West-Hungarian co-operative)

II. Alföldi Tudományos Tájgazdálkodási Napok, Mezőtúr (2nd Scientific Days of Rural Development in the Alföld), 1999.

13. **Kovács Tamás:**

A piac befolyásoló szerepe egy élelmiszer-feldolgozó vállalat gazdálkodására (The influencing role of market on the economy of a food processing firm)

XLI. Georgikon Napok (Georgikon Days), Keszthely, 1999.

14. **Kovács Tamás:**

Egy élelmiszeripari vállalat gazdasági, pénzügyi elemzése 1993-1998. évek között (Financial and economic analysis of a food industrial firm between 1993-1998)

Nemzetközi Agrárökonómiai Tud. Napok (International Agro-economical Scientific Days) , Gyöngyös, 2000.

15. **Kovács Tamás:**

A vágómarha tartás lehetőségei észak-nyugat Magyarországon (The possibilities of beef cattle keeping in the North-West Transdanubian region)

XXVIII. Óvári Tudományos Napok (Scientific Days in Óvár), 2000. Mosonmagyaróvár.

16. **Kovács Tamás:**

A húsmarha tenyésztés helyzete Magyarországon napjainkban (Current situation of beef cattle keeping in Hungary)

Georgikon Napok (Georgikon days), 2000. Keszthely.

17. **Kovács Tamás, Józsa Máté József:**

Egy élelmiszer-feldolgozó vállalat gazdálkodásának vizsgálata (Analysing the economy of a food processing firm)

VII. Ifjúsági Tudományos Fórum (7^{th} Scientific Youth Forum), 2001. Keszthely.

18. **Kovács Tamás:**

A marhahús feldolgozás vizsgálata egy húsipari vállalatnál (Analysing beef processing at a meat industrial firm)

XLIII. Georgikon Tudományos Napok (Georgikon Scientific Days), 20001. Keszthely.

19. **Kovács Tamás, Józsa Máté József:**

A vágómarha tartás lehetőségei hazánkban (The possibilities of beef cattle keeping in Hungary)

XXIX. Óvári Tudományos Napok (Scientific Days in Óvár), 2002. Mosonmagyaróvár.

20. **Kovács Tamás, Kun Ferenc:**

The Agro-commercial and agro-diplomatic relationships between Hungary and the EU.

Acta Agronomica Ovariensis 2002. (to be published)

21. **Kovács Tamás:**

The questions of beef cattle production in Hungary

Acta Agronomica Ovariensis 2002. (to be published)

22. **Kovács Tamás:**

The questions of beef cattle processing in Hungary

Acta Agronomica Ovariensis 2002. (to be published)