THESES OF DOCTORAL (PhD) DISSERTATION

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THE ECONOMICAL ISSUES OF THE DOMESTIC PRODUCTION OF EU-CONFORM FATTED GOOSE-LIVER

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1. INTRODUCTION AND OBJECTIVES

For decades, the fatted goose liver has been a front-liner among so-called „hungaricums". Yearly 1700-1800 tons of fatted goose liver is produced, 75-80% of that is exported, and that assures an income of 5-6 billion forints for Hungary every year. The future of Hungarian fatted goose liver is mainly decided by the export prices, but the tightening animal protection regulations of the EU are also going to influence the future of this sector. In Europe there's a characteristic growth of customer opposition against the force-feeding of animals (such as goose-cramming). The EU's Scientific Committee of Animal Rights' report opposes to the practice of forced feeding in goose and duck keeping. The EU's 1996 „Recommendations for keeping of domesticated geese" was planning to eradicate the practice of forced feeding within 15 years, but the recommendation accepted in 1999 lacks this paragraph. Although at the present time there are no deadlines within the European Union that could stop the practice of forced feeding as a method of producing fatted goose and duck liver, still with ambitions like this our country can also expect a future ban on poultry-cramming. Knowing this, the question is what might offer a solution on a long run to people employed in producing fatted goose liver in the goose-sector.

On account of the Hungarian fatted goose liver's export's importance and the continous tightening of the EU's animal protection norms, new technologies are introduced in keeping and production inside the Hungarian goose-sector (and within that, in the production

of fatted goose liver). Preparations for this have to start already today. That's the reason why scientifically based research results are needed, that are able to give us pointers from an economical view for the introduction of these changes.

After answering the basic question, certain tasks (breeding, keeping, feeding) need to be reviewed, according to which the continously tightening conditions of the EU can be fulfilled.

Reviewing the economical aspects of the goose-sector, and within, the future forms (technologies) of the production of fatted goose liver, this dissertation plots the realization of the following goals:

- examination of the present state of fatted goose liver production, especially in view of economical (yield, costs, income, export etc.) concerns;
- a possible technology for the new method (without cramming) of the production of goose liver that is marketable on Hungarian and foreign markets;
- economical study of the home model of EU-conformity (without cramming) production of goose liver;
- a forecast of the domestic fatted goose liver sector's expected position within the next time period, regarding the new conditions.

The final intention of the dissertation is to work out an EU-conform production method of fatted goose liver introduced from an economical point of view, that will be able to fullfill the EU's expectedly tightening future animal protection norms, and at the same

time make it possible for the members of the sector to be present in both the foreign and domestic markets with a product that is marketable and secures an acceptable income.

2. MATERIALS AND METHODS

The research serving as a base for this dissertation had been conducted between 2003-2006 at the Western-Hungarian University's Agriculture and Food Science Department's Agricultural Economy and Marketing Faculty. The primary researches were based on questionnaire-tests and personal consulting. The secondary investigations were based on data from the Poultry Products Counsel (BTT), Research Institute for Agricultural Economy (AKI) and the Central Statistics Office (KSH) concerning the research time period. A fourteen-week long practice at the Low-Austrian Land Chamber of Agriculture gave a chance to collect data regarding the sector of ecological goose keeping. During the investigations, a great help was provided by consulting domestic practical experts, from whom it was possible to collect information that helped with the deeper familiarization with the practical questions of the topic.

The processing of the data collected during the research was achieved by the Microsoft Excel software. From statistical evaluations we completed finding averages and regression calculations. The base for the economical investigation about the production of fatted goose liver without cramming was provided by the experimental results of the Anser Branch Kft. The data and information used in the investigations

were acquired during domestic and foreign conferences, international professional study trips, and studying domestic and foreign specialized literature and documentation.

3. RESULTS

In the lineup of the world's top producers of fatted raw goose liver, Hungary has been in the first place for decades with its approximately 2000-ton yearly production. 80% of this is exported. Among the various export products of the Hungarian poultry sector – in spite of its continous decline- fatted goose liver represents a fairly big value, with its 8-10% share. The 1989 change of government – along with the other sectors of animal breeding- didn't leave the goose-sector untouched either. The numbers were continously following the conjuncture of goose-products (thus primarily fatted goose liver export), primarily outlined by the variations in goose liver exports. 1994 was exceptional regarding both the buying up of fatted geese and the quantity of fatted goose liver that was produced. From 1995 until 2004, Hungary's attachment to the European Union export permits were issued exclusively with the co-signing of BTT, up to the quota outlined by individual factories in their self-control forecasts.

3.1. Economical examination of goose fattening and the production of fatted goose liver

The evaluation that was conducted according to a country-wide survey is based on data given by the BTT. This data was supplied by

the country's six large producers of fatted goose, these represent 80% of the Hungarian fatted goose, so the survey and its data can be regarded as representatives of the whole.

Chart 1. contains the cost-structure of basic cram-resources and goose-fattening.

Chart 1

Cost and income relations regarding the raising of cram-resources and goose fattening (2002-2005)

	2002		**2003**		**2004**		**2005**	
	cram res. *	fattening	cram res. *	fattening	cram res. *	fattening	cram res. *	fattening
Costs								
Young geese/cr.res.	516,8	1 567,1	531,0	1 805,8	472,1	1 698,9	493,3	1 744,7
Feed	670,3	461,4	745,4	590,8	750,3	660,7	648,4	507,0
Litter	61,7	51,3	70,6	51,5	92,0	71,9	110,0	83,3
Energy	56,1	114,3	63,6	172,6	68,2	123,6	93,3	125,0
Health costs	31,2	77,3	44,2	84,0	41,1	67,8	48,4	65,1
Auxilarry works' c.	16,1	5,0	19,8	46,4	20,0	18,0	46,7	19,9
Wages+rates	65,6	66,7	52,0	60,7	60,2	112,3	80,0	117,8
Defeathering	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Interest+handling fees	41,8	0,0	35,3	0,0	30,3	4,0	16,7	6,7
Other costs	19,6	43,1	14,6	104,2	49,1	16,0	36,6	36,6
Total costs	**1 479,2**	**2 386,2**	**1 576,5**	**2 916,0**	**1 583,3**	**2 773,2**	**1 573,4**	**2 706,1**
Ft / kg	*341,6*	*343,3*	*358,3*	*407,8*	*353,4*	*400,2*	*342,0*	*381,1*
Income	**1 541,1**	**2 732,3**	**1 579,9**	**3 090,0**	**1 643,8**	**3 110,2**	**1 629,0**	**2 893,2**
Ft / kg	*355,9*	*393,1*	*359,1*	*432,2*	*366,9*	*448,8*	*354,1*	*407,5*
Results	**61,9**	**346,1**	**3,4**	**174,0**	**60,5**	**337,0**	**55,6**	**187,1**
Ft / kg	*14,3*	*49,8*	*0,8*	*24,3*	*13,5*	*48,6*	*12,1*	*26,4*
Average weight (kg / db)	4,33	6,95	4,40	7,15	4,48	6,93	4,60	7,10

9 week-old cram-resources,

Source: BTT, 2006.

Figure 1. shows that in the cram-resource phase of producing fatted goose liver that the greatest cost-proportion is represented by the costs of feed (41-48%). That data is very similar to the calculated of Kozák (1987) to the time period between 1978-1985. In spite of the costs of feed the costs of young geese (30-35%) and the litter costs (4-7%) were determinating factors.

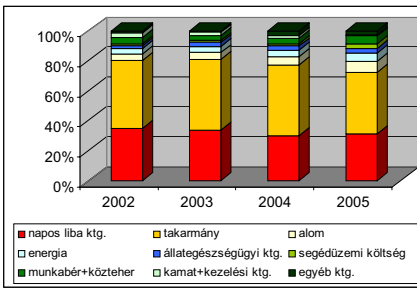

Fig. 1.: Cost structure of raising cram-resources (2002-2005)

Source: Own chart based on BTT data, 2006

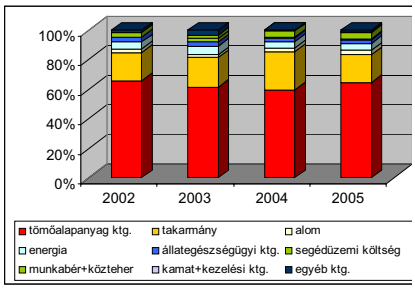

Fig. 2.: Cost structure of goose fattening (2002-2005)

Source: Own chart based on BTT data, 2006

In the cost-structure of goose fattening appears the total cost of the first phase, so during the goose fattening the cram costs are the most determinating factors. (60-66%). This establishing of us is being supported by the statement of Ballai-László (1972) for the period of 1967-1970, whereas the costs of cram-resources can exceed the 55 % of total costs. During the research period the other determinating costs were as in the first phase the costs of feed (19-27%) and the costs of energy (5-6%)

The total costs of raising the cram-resources and the changes in income from cram-resources are displayed in Chart 2.

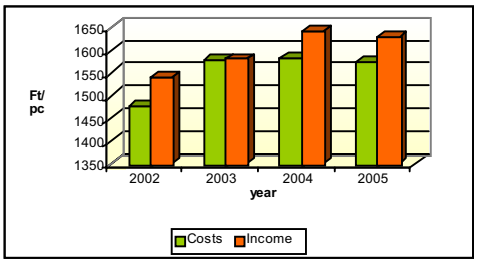

Fig. 2.: Costs and income from the production of cram-resources (2002-2005)
Source: Own chart based on BTT data, 2006

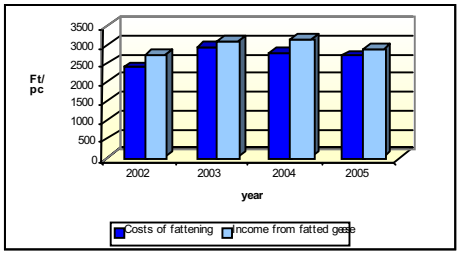

Fig. 3.: Costs and income from goose fattening (2002-2005)
Source: Own chart based on BTT data, 2006

The costs of raising cram-resources were stable in the last two years, following a peak in 2003. They even dropped in 2005 (1% compared to the year 2004). At the same time in income regarding a single animal grew 6% in 4 years. The results (yield) of this production phase –the exceptionally weak 2003 year excluded- are quite balanced regarding a single animal or unit bodyweight (1kg) (the cost-ratio income is approximately 3,5-4,0 %).

The situation is slightly different about the costs in connection with the fattening phase: in this case the costs of production were raised by 12% in 2005, in comparison to 2002. Opposed to this, the income was only moderately higher (by 6%) through these 4 years, and on top of that, it eventually declined compared to 2003 and 2004. On account of that, the results of fattening were 46% worse than in 2002. (Fig. 3.)

In spite of the relatively large increase in production costs and beside the moderate raise in producers' prices, both the raiding of cram-resources and goose-fattening were profitable through the 4

years examined. From this point of view, the most critical was the year 2003 -which thus needs a closer scrutiny-, when in both phases (but especially in the raising of cram-resources) the realized income decreased significantly. On account of the previous (2002) year's yield that was considered good, the price of cram-resources noteably increased (by 15% compared to 2002). Beside that the feed costs increased by 11% on account of bad feed production. Due to the combined effects of these, the cram-resource production drifted close to deficit and the results of goose fattening were decreased by half compared to the previous year.

Alltogether, we can establish that income from goose fattening was fluctuating through the 4 years examined, but it's tendency was significantly decreasing. (Chart 2.)

Chart 2.

Profit figures of goose fattening (2002-2005)

Description	2002	2003	2004	2005	Avg. of 4 years
Income-rate profit %	12,7	5,6	10,8	6,5	8,8
Production-costs-rate profit, %	14,5	6,0	12,2	6,9	9,7

Source: Own calculatons based on BTT data, 2006

3.2. Fatted goose-liver producing and marketing activity of a primary producer

This research was carried out in the Szigetköz, at a primary producer producing fatted goose-liver. This farmer was picked because he didn't only produce but processed and locally sold the goose-meat and the goose-liver. The main profile of this primary producer between 1987-2002 was goosekeeping and goose fattening. In the examined time period, the number of yearly turns was 6 on the farm, and the count within a turn was 80, so the overall yearly count was 480 animals. The feed that was used for fattening cost 2800 Fts/t we used this figure regarding self-produced feed. The pre-raised geese were bought at a weight of 4,5 kgs, at the price of 290 Fts/kg. The average weight of the fattened geese were 7,5 kgs/goose without liver. The yearly fatted liver production was approximately 300kgs, so the calculated average liver weight was 0,625 kgs. The weight of the meat sold was 2800kgs, the average selling price was 550 Fts/kg. The fattened goose-liver was sold at an average price of 2750 Fts/kg. The sales happened directly from the producer to restaurants, shops, and private consumers.

The primary producer realized a profit of 1.739.520 Fts in 2002, accounting 480 fattened geese. Chart 3. contains the costs incurred during goose fattening, the income from the products (fattened goose-lver, meat of fattened goose), and the results made up by the difference of the above. There was a deviation compared to the national average, that the farmer was not affected by rates although

among the primary producer's costs, the costs of transportation and also other fees during sales had appeared.

Chart 3.

Figures of fattening broken down to a single fattened goose (2002)

PRIMARY PRODUCER		NATIONAL AVERAGE	
Costs	**Ft**	**Costs**	**Ft**
Cram-resource	1305	Cram-resource	1567,1
Feed	448	Feed	461,4
Litter	63	Litter	51,3
Energy	125	Energy	114,3
Animal health costs	25	Animal health costs	77,3
Transportation	186	Costs of auxilary works	5,0
Wages	38	Wages+rates	66,7
Sales costs	25		
Costs of auxilary works	5,0	Other costs	43,1
Costs total	**2220**	**Costs total**	**2386,2**
Income	**5844**	**Income**	**2732,3**
Results	**3624**	**Results**	**346,1**

Source: Based on the primary producer's data and BTT 2006

As it can be determined from Chart 3., the examined primary producer realized a tenfold profit broken down to a single fatted goose, beside the basically equal levels of costs. This can be explained

by the primary producer selling his products directly, so the profits appeared directly on his side.

3.3. The quality changes of fatted goose-liver and the variations in export

The export of goose-products (meat and liver) showed a unique behavior among gross annual poultry exports: in the time period between 2000-2004, apart from the nearly balanced poultry-export, the export of goose-products (including fatted goose-liver) shows a significant decrease.

The primary goal of goose fattening is the production of fatted goose-liver with a quality that fulfills export conditions. Due to the export restrictions introduced in 1995 and the yearly decreasing export price, the quantity of exported raw fattened goose-liver and accordingly the export-profits gradually decreased, although an increase is experienced since the 2003 nadir. (Chart 4.)

Chart 4.

A few figures on the export of fatted goose-liver

Year	Exported fatted goose-liver		
	Quantity (tons)	Income (thousand Fts)	Calc. Avg. Income (Fts/t)
2000	1362,3	7 123 720	5 229 186
2001	1491,6	6 911 831	4 633 837
2002	1526,5	6 231 222	4 082 032
2003	1483,2	5 072 860	3 420 213
2004	1406,3	5 714 779	4 063 698
2005	1386,0	6 343 260	4 576 666

Source: Hungarian Goose Association, 2006, own calculations

Through the investigated six-year time period (2000-2005), profits from the total of exported goose products -including exported fatted goose-liver-, showed an overall decline. Compared to income in the year 200,. the 2005 year's export profits in the case of fatted goose-liver were 11% less, and parallel to that, its rate among exported goose-products declined. (Chart 5.)

Chart 5.

Quality spread of fatted goose-liver (%)

Year	1st class	2nd class	3rd class	4th class
2000	42,66	15,58	29,97	12,79
2001	45,73	15,37	27,69	11,04
2002	42,68	14,33	32,72	10,27
2003	42,00	12,51	35,67	9,82
2004	48,65	13,90	30,11	7,34
2005	50,10	16,68	21,84	11,38

Source: Hungarian Goose Association, 2006.

According to the data of Chart 5., in the last 5 years there was an average overall increase of 10% within the 1st and 2nd quality class, which are the most important regarding exports.

4.4. Possibilities of producing EU-conform fatted goose liver

Taking EU conditions into account, new (excluding forced feeding) goose fattening experiments have started in Hungary. We find the introduction of such an experiment justified on account of the

need of finding an alternative for the present (based on cramming) production method of fatted liver.

The experiments were carried out in 2005 by Anser Branch Kft. – occupied in the production of cram-resources and goose fattening- in Mezőkovácsháza.

Through the experiment the object was to achieve a specific goose-liver weight of 0,3 kg, whereas at this weight level is demand for the product in Switzerland. The goose hybrid used in the experiment was the Gourmaud SI-14, which also produces an excellent liver quality throughout traditional fattening.

Regarding the experimental group, the beginning period lasted for 42 days with ad libitum feeding. That was followed by a 37-46-day raising period. There was no time or quantity limit set for feed consumption. The pre-raising period (pregavage) following this lasted for 5-10 days, where the animals could feed ad libitum but only for limited time period.

Chart 6.

Classification of livers from the experimental stock

Goose	Avg.Wght.	1st cl.		2nd cl.		3rd cl.		4th cl.		Liver avg.
	Kgs	pc	Kg	pc	Kg	pc	Kg	pc	Kg	dkg/pc
300	7,83	0	0	0	0	0	0	294	40,2	136,7

Source: Application report Anser Branch Kft., 2005.

During the research because of the death of 6 geese only 70 of 294 geese were sellable as ’foie gras’. This was pointed out by ultrasonic diagnostics, and so the positiv variants could be choosen.

The livers were also weighed separately. In Chart 6. it's easy to see that the livers of individuals fattened using the new method can be classified to the 4rd class quality grade according to the traditional qualification system.

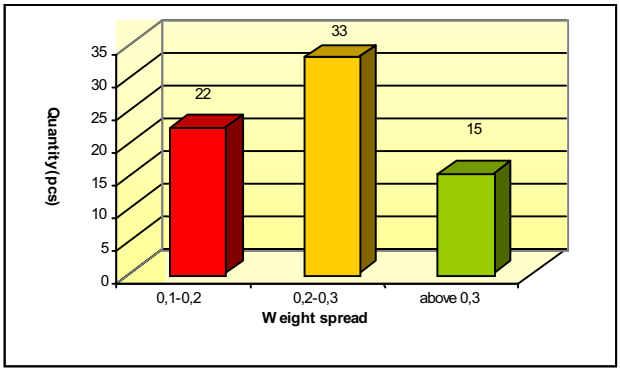

Fig. 5: The spread of the 70 livers according to weight
Source: Application Report Anser Branch Kft., 2005.

From the viewpoint of improvement, the group above 0,2 kg has the perspective, because in this case the income from the sale of liver comes up to and surpasses the safety (fund) point. From the 300 Gourmaud SI-14 meat-hybrid breed only 16 % (48 pieces) of the mixed sex individuals were suitable for the profitable production of fatted goose-liver without cramming.

In Chart 7. it's noticeable that the production fees in case of traditional fattening method are quite higher. The reason for this basic difference can be found in the fee payed for cramming.

Chart 7.

Production costs regarding the two fattening methods

Parameters	Fattening with cramming (Fts/goose)	New fattening method (Fts/goose)
Costs of feed	900	900
Young goose	500	500
Utility costs	500	500
General costs	550	550
Sum payed to crammer	900	-
Processing costs	1200	1200
Costs Total	**4.500**	**3.650**

Source: Application Report, Anser Branch Kft., 2005.

Chart 8.

Income from the two fattening methods (Fts/pc)

Parameters	Cramming	New fattening method
Income from precious meats	2.463	2.025
Income from liver	2.400	2.601
Income total	4.863	4.626
Production Profit (income- costs)	**363**	**976**

Source: Application Report, Anser Branch Kft., 2005

Chart 8. shows the profit calculated regarding one individual goose, in case of the two kinds of fattening methods. From this we can establish that after choosing the positiv variants, with the technology

(fattening method) that does not require cramming, higher profits can be achieved than with the traditional production of fatted goose-liver with cramming.

4. NEW SCIENTIFIC RESULTS (RESULTS ACHIEVMENT)

1. Although **the quality of raw fattened goose-liver (rate of liver classified as 1st-2nd grade) increased by 10% in the researched time period,** meanwhile the export price for the product got so low in the year 2003 that during the slight upswing since, the average of the year 2000's export prices could only be reagained by 2005.

2. During the investigated period (2002-2005) in **the cost structure** of **growing fodder cost had the highest rate** (41-48 %), **folowed by the costs of goosling** (30-35 %) **and litter costs** (4-7%). Parallel decreasing the proportion of gooslings and feed, the litter costs were increasing. During the research period in the cost-structure of goose fattening the cram costs were the most determinating factors. (60-66%). The other determinating costs were as in the first phase the costs of feed (19-27%) and the costs of energy (5-6%)

3. **Both the decreasing price of fattened geese and the rise of production costs** make the introduction of a new production (feeding) technology necessary. All in all we can establish that the

profit from goose fattening had decreased by 46% between 2000-2005. The investigation of export profits from fatted goose liver between 1998-2002 showed that it was in a constant decrease, and in 2002 it was already creating deficit.

4. Based on the comparative economical examination of goose fattening and production of fatted goose-liver we can establish that compared to the fattened geese fattened under industrial conditions and sold through wholesalers to the processors, **the realized income is multifold over the previous regarding fattened geese and fatted goose liver produced with small-scale (primary producer) methods which are sold individually (domestically).** Although under small-scale conditions, the fulfillment of very strict animal health and food hygiene regulations is a serious issue. We also have to mention, that the liver, produced with the presented method can satisfy only a little segment of the market.

5. The work-out of a **new so-called EU-conform goose fattening technology that would replace traditional** (cramming-based) **production of fatted goose-liver has started** in Hungary. Still, **goose-liver produced this way can't/doesn't provide an alternative for fatted goose-liver produced by traditional** (cramming) methods, but the research results are encouraging, though **choosing the positive variant animals higher profit** can be achieved. To substitute forcible feeding **further genetic**

selection and the improvement of the technology is needed to produce marketable and competitive foie gras.

5. SUMMARY

Following our entry into the European Union there's no doubt that the union's regulations are also binding on our country. In the European Union the question of animal protection and animal welfare is increasingly emphasized, which is meant to aid the improvement of animals' life conditions. Along these lines, the industrial, intensive keeping technologies are moving towards the breed-specific, extensive directions. With these kinds of ideas and endeavors, our country can also expect a nullification of rights concerning the production of fatted goose-livers –as a unique national product-, and a prohibition of this activity.

In our country the production of fatted goose-liver looks back on several centuries of tradition, which –same way as in our main competition among european states, France- ensures the livelyhood of tens of thousands of farmers. This is why we should take the endeavors that the European Union is making in this direction seriously, even if at the present time not too many of us foresee that sometime something could bar this activity. We have to believe in and identify with the common will of the majority of European Union's states.

On account of the above mentioned, we find it important to work out a method that could more or less substitute for the

production of fatted goose-liver using cramming, the typical method for producing fatted goose-liver at the moment. We tried to introduce an alternative to this problem in this dissertation, that could be applied with success in the future. Our studies show that the utilization of this production method (fatted goose-liver production without cramming) comes with lower production costs, so it makes it possible for producers to achieve higher profits. We think it's important to note that the fatted goose-liver produced with this method is not equal to the fatted goose-liver produced by cramming, neither by its weight, nor by it's quality.

In the initial part of the dissertation we characterized the economic examination of fatted goose-liver as a primary aim. Based on the investigations we can establish that within the examined time period, the production costs increased by 12% in the fattening phase. The increase in income wasn't the same rate, only half as much of an increase could be registered. We also established that the results of goose fattening were characteristically decreased. The specific liver weight increased by 20% in the last 6 years, which was also accompanied by an increase in the quality of liver. Summing up the results of the economical investigation of fatted goose-liver production, we can ascertain that the profit of goose fattening decreased by 46% between 2000-2005. The examination of fatted goose-liver's export profit between 1998-2002 showed that it was in a decline all along, and came to cause deficit in 2002.

Through our research, we examined the activity of a primary producer producing fatted goose-livet in Szigetköz. Our aim was to

determine how profitable the domestic, small-industrial production of goose-liver was, in comparison to industrial fatted goose-liver production. We established that in 2002 (the primary producer conducted this activity in this year for the last time) that the farmer examined by us could realize a tenfold profit during the production of fatted goose-liver compared to the average reflected by contemporary national data.

In the dissertation, we made a suggestion of working out an individual sales network, which could result in larger profits for the smallholders. For that, the sales method and possibilities of the primary producer provided a practical and theoretical base.

The profitable maintaining of fatted goose-liver production depends on several factors. One is the European Union's endeavor concerning the production of fatted goose-liver by cramming. This is independent from the nation's will. The other factor that can affect the profitability of goose-liver production is the formation of the expenditure system that carries a determining importance for the domestic producers, and also the extent of the export market.

6. PUBLICATIONS

Original papers published in scientific journals

1. Tóásó Sz., Birkás E., Vincze J. (2005): **The present state and the prospects of the Hungarian goose farms after EU accession**
   Gazdálkodás 12. számú különkiadása, 2005. XLIX. évfolyam, p. 70-78.

2. Tóásó Sz., Tenk A. (2006): **Schutz von Versuchstieren**
   Acta Agronomica Óváriensis, 2006. Volume 45. No. 1., p. 112-123.

3. Tóásó Sz.- Földes F.- Nagy B. (2005): **A magyarországi hízott libamáj előállításának kilátásai az EU csatlakozás után**
   „Fenntartható fejlődés, fenntartható társadalom és integráció" MTA VEAB Konferencia, Komárom, 2005. április 28., ISBN 963 9558 48 6, II. kötet, p. 230-239.

4. Tóásó Sz., Tenk A., Látits M. (2006): A hazai lúdhízlalás és **libamájtermelés helyzete és perspektívája**
   Gazdálkodás, under publishing

Oral and poster presentations

1. Tóásó Sz., Nagy B., Németh A. (2004): **The future of the hungarian goose-sector** (poster)
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