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**DEVELOPMENT POSSIBILITIES AND DIRECTIONS OF
GRASSLAND BASED ANIMAL BREEDING IN THE
NORTH- HUNGARIAN REGION**

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INTRODUCTION

In the last two decades the social, economic and environmental changes in our country had a serious effect on the North Hungarian Region (hereinafter: the Region), that already had adverse economic facilities and resulted in a disadvantageous situation. The disadvantageous situation of the Region examined is due to the degraded condition of the industry having been prospered before, the weakness of the agricultural production, high unemployment rate and the low standard of living. The number of unemployed people is very high and still increasing, the habitants have low income levels and standard of living. These conditions have conserved the social issues of the Region. Since there is hardly any chance of the revival of the industry – on the short term, therefore the people living in the region should have other opportunities to make their living. This is about possibilities that can make the region „sourceful” and therefore more attractive in order to help to keep the habitants of the Region there as well.

The high ratio of the weak soils, the geographical characteristics (mountainous areas), the small ratio of the agricultural areas and the rate of high unemployment as well as the reduction of the industry created a situation that resulted in the subsidence of the Region.

Even with the characteristics of the soil that has been weaker than the average, the presently dead grasslands can serve as the basis of the animal breeding as a possibility of improvements. The development of the animal breeding would result in extensive development of the Region and the pressure to adapt to the ecological abilities. Therefore it can be seriously hoped that the capability to keep the habitants of the region can increase as well as they would preserve the natural scenery of the Region.

In order to get to know and introduce the actual situation of the Region, the examination of the actual situation of animal breeding is a good opportunity. These examinations show the

result of the given animal breeding sector as well as the situation of the generated income.

The work would not be well established and complete, if we ignored those possibilities, actual financial resources (funds), which are used by the EU to influence and control the future status of the animal produce of the member countries. Therefore the examinations will also include the relevant sources of the EU funds for animal breeding. This can be the fundament of the analysis of effects of joining the EU by the factory (enterprise) conditions, the possible directions of development, the competitiveness of the products and revenue generated of it.

Taking into consideration the present circumstances and the future perspective development possibilities the following objectives can be defined:

- define the development level of the North Hungarian Region and using the given regional data (2001-2005) calculate the measures of the regional competitiveness;
- detailed analysis of the agriculture of the North Hungarian Region (grass management, plant production, animal breeding) for the first years of the 21st century;
- the actual situation of the estimated animal farmers' breeding activities and the analysis of their results;
- modelling the effect and consequences of the joining the EU in 2004 in the animal breeding based on grassland of the Region;
- define and work out the development options and directions of the animal breeding based on grassland of the Region, adapting to the environmental conditions of the Region, just as the function of animal breeding and its other tasks;
- define whether the more extensive utilisation of grasslands and change of structure of the livestock on those lands, would have an effect and what the effect would be on the performance of animal breeding and agriculture at regional level.

I. MATERIAL AND METHOD

The first part of the examinations begins with the introduction of the national seven planning - statistical regions, the differences of economy among them, the calculation of the regional competitiveness measure and the detailed analysis of the North Hungarian Region. Following the collection and filing of several narrative and statistical data there were comparative studies made with regards to national and regional relevancies. In order to study the grassland management and animal breeding of the North Hungarian Region the individually collected data of the Central Statistics Office and the publications of the Hungarian Sheep Breeding Association and the Hungarian Grey Cattle Breeding Association were used. The data collected refer mainly to the animal breeding sectors (sheep, cattle, horse) their number, number of farms, division by sector. The data collection, as primary research method was necessary as the national statistical – and other database – do not have any information available on the sector level data on the subject of research, on the grassland based animal farming and the economical parameters of those.

Filling in questionnaires in the selected farms took place in person, with the involvement of the relevant farm owners. During the „visits” factual and actual data were collected. The farmers are significantly suspicious, therefore out of the 12 sheep farm visited there were 7, out of the 6 meat-purpose and 2 dairy farms 5, and the 3 horse farms visited 2 were not willing to give - referring to economical interests – the keeping costs per animal (costs for one milk-ewe, one meat-purpose and dairy cow and one horse). The other questions were answered, and therefore the information was processed.

Main aspects of selecting the farms were as follows:

- ◆ the selected animal breeding farms should have characteristic keeping and feeding system of the Region, and have mainly or fully grassland based animal farming,
- ◆ the farmers should be those who give realistic data for the realistic picture to ensure representativeness of data – and therefore should have the relevant accurate registrations.

During the studies based on primary data, the North Hungarian Region animal farming enterprises' data were examined in detail for the period of time 2001-2005. In order to highlight and introduce the conditions of the relevant period in the region among the farmers – based on the aspects mentioned above – there were 2 meat-producing and 1 dairy farm, 1 horse breeding farm and 5 sheep farms selected for economical study. These studies were targeted to show the result of the management of the given animal breeding – based on actual data. The primary data source used for the examinations was the base documents of the farms, their breeding base documents, balance sheet and analysis. The company level analysis were aimed to define that during the period examined how the cost-, price- and revenue situation of the three type of animals (cattle, sheep, horse) formed in the Region. The central question of the examinations was how the use of the available grasslands influenced the result of the given facilities. In line with this the data collection in the Region was covering the areas of animal breeding sectors based on grasslands (sheep, cattle, horse), number of animals, area of grasslands – use of grasslands, ability of grasslands to keep the animals, different fundings used, effects of the support funds, the conditions of keeping- and feeding (type of grass usage) as well as the areas used for feeding (arable lands and grasslands) as well as the documentation of farms involved into the research.

The basis of the primary data collection was not only the filling in of the questionnaire, but also the personal discussions with the farm owners, which necessity was required by the more

detailed reply with better possibilities of evaluation, just as the assessment of the personal reaction of the respondents.

The national measures shown in the examination phases, characterising the standard of production give the possibility to foresee the future situation of the animal produce production. This deduction can be the base to see the required changes and to mark the directions of development. Since these changes are not at all independent from the effects of the EU regulations influencing the animal breeding, production (meat cattle-, sheep farming grants, grassland management funds, etc.), therefore calculations were made about the regional effects of these support funds.

From the result of above mentioned analysis the critical points and areas can be, just as the possible break-away and development directions can be defined.

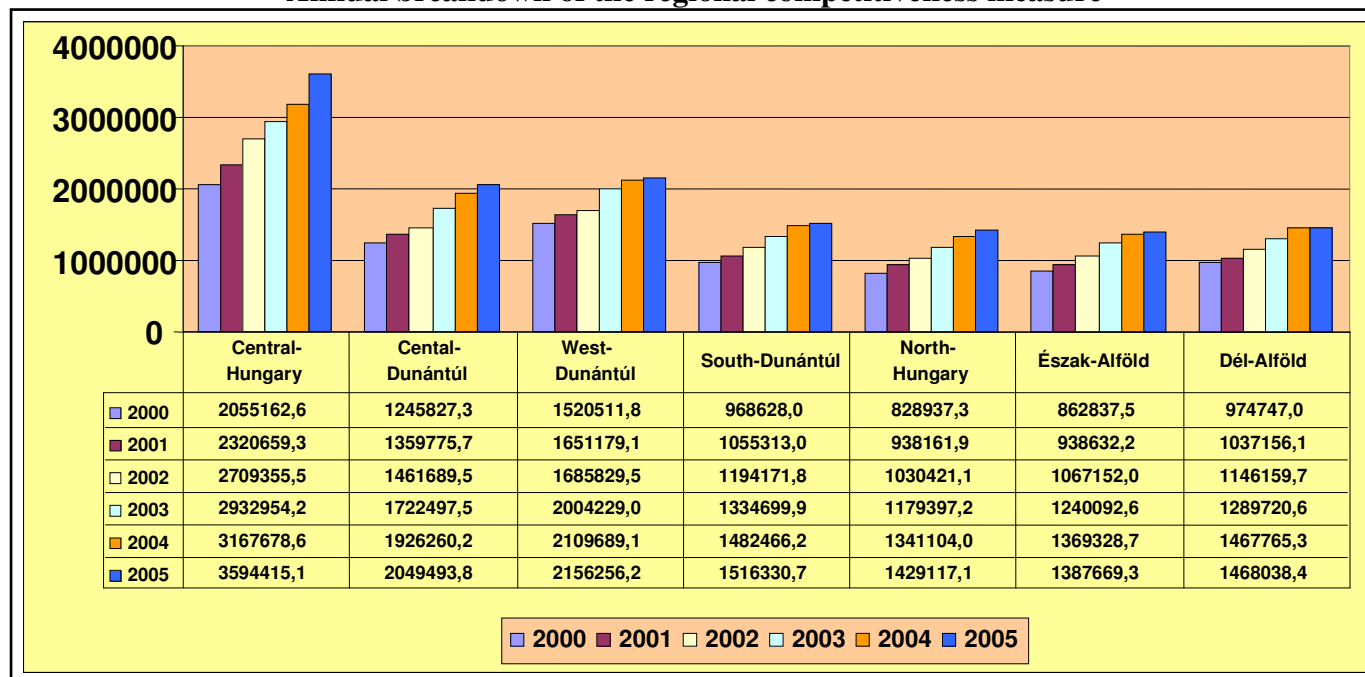
II. OWN EXAMINATION RESULTS AND THEIR EVALUATION

Based on the economical measures the North Hungarian Region - along with the Northern part of Lowland area (North-Alföld) is the most underdeveloped of the seven regions of the country. The disadvantage of the Region has been considerable for many years, as it only reached 64-67% in comparison with the national GDP average between the years 2000-2005. The employment rate of the Region is the lowest of the regions, while the unemployment rate (10.6%) the highest. The North Hungarian Region, based on the calculations by Porter-model to give the complex regional competitiveness measure, is the last in comparison among the seven regions of the country. (Chart 1). To calculate the regional competitiveness there are some components used (value of GDP / habitant, a regional effectiveness and employment rate) separately show the weakness of the Region.

The concentration of the problems of the Region is shown by the fact that about 77% of the settlements are in three regions, North of Lowlands (North-Alföld), North-Hungary and South-Dunántúl. In these regions most of the settlements have adverse conditions. Almost 30% of the adverse places to live, 35% of highly unemployed-, and 37% of adverse and highly unemployed settlements can be found in the examined Region out of all the settlements in the country.

1. Chart

Annual breakdown of the regional competitiveness measure



Source: Own calculation and edition

The agricultural possibilities of the region are limited by the unfavourable conditions of droops and the unfavourable soil fertility. The Golden Crown (AK) average of the Region is 11, while the national is 19, which means 57% ratio. In the 11 Golden Crown (AK) average there is 7.5% below 5 AK and 37.6% below 9 AK and only 33.3% is above 12 AK area.

The utilised grassland ratio of the Region has dramatically declined compared to the average of the years 1996-2000 and almost to the half by the year 2005. At the same time the average yield of crops doubled, the reason behind this is the utilisation of the better lands. In the year 2005 only 59% of the 193 561ha grassland was utilised area.

In the agricultural activity of the Region relatively small ratio is the animal farming. This is a problem, since the three counties of the examined Region are considered to be hilly and mountainous areas of the country from geographical aspects and therefore they are not suitable for growing plants or crops. In the three counties of the Region there are equally low number of animal kept, the low density of animals is characteristic of the Region. As for the 100hectare agricultural area of the Region the number of animals is much below the national average (Table1).

Table 1

**Size of animal stock on 100hectare agricultural area
expressed in units per type of animals**

Unit: Animal number

	North-Hungary				Hungary			
	2003	2004	2005	2006	2003	2004	2005	2006
Cattle	6,4	6,4	6,4	6,4	10,4	9,6	9,6	9,6
Sheep	1,07	0,99	0,99	0,93	1,57	1,71	1,71	1,57
Pig	4,44	3,07	3,07	2,85	9,57	7,86	7,52	7,86

Source: CSO (KSH): Own calculations based on Periodical information of livestock (2003c, 2004e, 2005f, 2006g)

In 2005 the produce of animal breeding was only 26% of the agricultural products. Based on the total value of the plant

production and animal breeding for 100hectare agricultural area the North Hungarian region is the last region in the rank. In 2005 from the animal breeding produce they could only produce half of the national average (Table 2). This is the case despite of the fact of the region having 100hectare unexploited grasslands.

Table 2

Plant production, gardening products, live stock and animal produce for 100hectare agricultural area (2005) (Thousand HUF)

Description	Plant production, and gardening produce for 100 hectare agricultural area	Live stock and animal produce for 100 hectare agricultural area	% of Plant production and animal breeding
Central - Hungary	16 312	6 901	70,3 : 29,7
Central - Dunántúl	14 420	10 662	57,5 : 42,5
West- Dunántúl	16 480	10 537	61,0 : 39,0
South- Dunántúl	16 755	8 348	66,7 : 33,3
North- Hungary	13 507	4 806	73,8 : 26,2
North-Alföld	16 065	9 810	62,1 : 37,9
South-Alföld	19 555	11 130	52,4 : 47,6
Country total	16 506	9 238	64,1 : 35,9

Source: CSO (KSH): The economy and competitiveness of the region based on summary and calculations (2006c)

It is characteristic of the grasslands used by sheep farms the average of 8.5-10 tons of green grass yield per hectare, which can support the farming of 4-4.5 milk-ewe and lamb. By the cattle herds the grasslands grow on average of 8.2-9 tons per hectare which is enough for 0.8-1.1 cow and its calf. The horse

farms grass fields the grass yield per hectare was on average of 9.2-11.3 tons, which can sustain 1.0-1.1 horse and its foal.

In 2005 the meat-purpose sheep production value was much above the Hungarian merino, this was due to the nominal produce calculated per ewe. Along with the sales of lambs further revenue was generated by the wool, which used to be a highly sellable product, but by now there is hardly any importance of the wool production. During the years examined 90% of the production value was generated from the „main product” sales, which is the discarded breeding animal – 7%, sales of wool was 3%. In the case of the grey cattle the factors influencing the production value was the revenue earned from the sales of calves, while the milking cows more than 85% of the revenue was from the sales of milk.

In the total cost the biggest ratio was the variable costs: by a Hungarian merino mother it represented 52-, a grey cattle cow 48-, a milking cow 71-, and a horse 50%. Opposed to this by the meat sheep the examined 5 years period of time average the fixed costs are the heaviest ratio (53%).

Based on the data of the four enterprises the Hungarian merino farming was profitable in all the five years examined. By the shareholding company two years of the five were deficit – in spite of the government funding – due to the high costs and market prices basically influencing the production value. On the long term only those enterprises are able to make profit, who own their own lands – equipment and they themselves produce the necessary fodder and most of the input required. All the five years examined were profitable for the grey cattle farmers. The cropper dealing with dairy farming gained significant profit year by year. By the horse farmers, out of the five years examined, only 2002 and 2004 years were profitable, in generally deficit was significant in this sector.

Only 35% of the examined animal farms were satisfied with the conditions of asking for funds, 65% were not satisfied, they mainly complained that the information about the available funds is not enough or is not reaching them and they also hardly

get any help in asking for the funds, supports or grants 40% of the people asked would simplify, 60% would make stricter the conditions of receiving the funds. All of them agreed that the amount of funding increased and the support opportunities also increased. 91% of the participants of the survey thought that by the available support farming could be more profitable. 82% experienced that following the joining the European Union the market environment became instable and less secure for the sales of animal produces.

In the case of the maximum use of the available support the ability of the farms to generate income can also increase. The support by the meat farming would increase the profit by 1008 HUF, and the support by hectares would increase the profit with 18 586 HUF. This by the Hungarian merino farms 2460 –, and HUF 14 405 (Table 3). By the grey longhorn farms it is 171 246 -, and the milking cow farms 50 113 HUF increase per animal. In the case of a horse farm it would be 132 966 HUF per horse. (Table 4).

Table 3

**Revenue calculated based on the different available funds
and support amounts for sheep farmers**

Description	Hungarian merino ewe	Meat purpose ewe
<i>Net revenue (HUF/ewe)</i>	3570	3611
The available support funds and the amounts (HUF/ewe)		
<i>Support for ewe farming</i>	1452	
<i>Support for ewe farming on adverse areas</i>	1008	1008
<i>Support based on size of land</i>	4200	4726
<i>Support for adverse areas (KAT)</i>	3665	2577
NVT – Agricultural – environmental friendly production support funds (Group of grassland management agricultural – environmental friendly production target group)		
<i>Basic level grassland management target programme (grassy land caretaking)</i>	3270	3679
<i>Ecological grass management target programme</i>	3270	3679
<i>Supplementary agro- management target programme (clearing bushes from grasslands)</i>	-	3925
Revenue calculated with the total available support funds (HUF/ ewe)	20 435	23 205
Four member family requirements to live on a minimum level for a year (HUF/ year)	2 256 000	2 256 000
Required farm size (number of ewe, pcs)	110	97
Four member family requirements to live on an average level for a year (HUF/ year)	3 072 000	3 072 000
Required farm size (number of ewe, pcs)	150	132

Source: Own calculation from collected data

Table 4

Revenue calculated based on the different available funds and support amounts for milking cow and grey longhorn farmers

Description	Milking cow	Meat cow
<i>Net revenue (HUF/cow)</i>	169 954	57 247
The available support funds and the amounts (HUF/cow)		
<i>Support for farming of cows</i>	-	
<i>Intensification cow farming support</i>	-	11 702
<i>Support based on size of land</i>	18 904	23 630
<i>Support for adverse areas (KAT)</i>	16 493	20 616
NVT – Agricultural – environmental friendly production support funds (Group of grassland management agricultural – environmental friendly production target group)		
<i>Basic level grassland management target programme (grassy land caretaking)</i>	14 716	18 395
<i>Ecological grass management target programme</i>	-	18 395
<i>Supplementary agro- management target programme (clearing bushes from grasslands)</i>	-	19 624
<i>Hungarian grey longhorn target programme</i>	-	35 548
<i>Cattle target programme</i>		23 336
Revenue calculated with the total available support funds (HUF/ cow)	220 067	228 493
Four member family requirements to live on a minimum level for a year (HUF/ year)	2 256 000	2 256 000
Required farm size (number of cows, pcs)	10	10
Four member family requirements to live on an average level for a year (HUF/ year)	3 072 000	3 072 000
Required farm size (number of cows, pcs)	14	13

Source: Own calculation from collected data

The analysis showed that in the adverse conditions Region it is very useful to complete significant intensification programme, during which the grassland based farming has seriously more important role in the possibility of breaking-away and improvements. In order to utilise the existing grasslands the grazing animal farming offers the most rational solution that is in line with the social purposes as well. From the survey it

turned out that the sheep farms, the grey cattle and horse farms – except for one – did not use the yield of grasslands. However it is also a fact that in the case of milking cows the number of livestock and the size of the land used for grazing is not in line, since they kept more animals than the area was able to sustain.

The utilisation of the grasslands of the Region is very slow. In 2005 the unexploited area of the total grassland was 47.1% (91 212ha). The hay of the grasslands would ensure the annual fodder for 4-4.5 milk ewe and lamb -, 0.8-0.9 meat-purpose cow -, and 1-1.1 milking cow and its calf. With the maximum utilisation of the unexploited grasslands today the author made the following calculation: 15% is hayfield, 15% milking cow -, 40% meat-purpose cow –and the remaining 30% serves the supply for milk ewe fodder. Based on the unexploited grasslands it is reasonable to increase the number of stock, 152 326 mixed types of animals, in the number of animals is 42 111. The grassland management and the meat-purpose cow farming have huge reserves in the competitiveness of the Region (Table 5).

Table 5

Possible directions and ratio of the grazing animal farming on the unexploited grasslands of the Region.

Animal farming	Animal sustaining ability (mother+progeny/ha)	grass (ha)	Number (pcs)	Animal unit
grazing animals				
milch ewe	4	27 364	109 456	7815
meat cow	0,8	36 485	29 188	23 350
milking cow	1	13 682	13 682	10 946
non grazing animals				
Description	hay yield (t/ha)	grass (ha)	total yield of hay (t)	
area used for hayfield	2,25	13 682	30 785	
Total unexploited grasslands (ha)				
91 212				
reasonable increase of number of animals (pcs)				
152 326				
reasonable increase of number of animals (animal pcs)				
42 111				

Source: Own calculation

Based on the calculations the total grassland of the Region can sustain 323 247 animals (so as 89 363 animal), in comparison to the 2005 year's 77 000 (5498 animal) milk ewe - and 33 000 cow (26 400 animal) number of animals (Chart 2).

2. Chart

Total potential animal sustaining ability of the total grassland of the Region

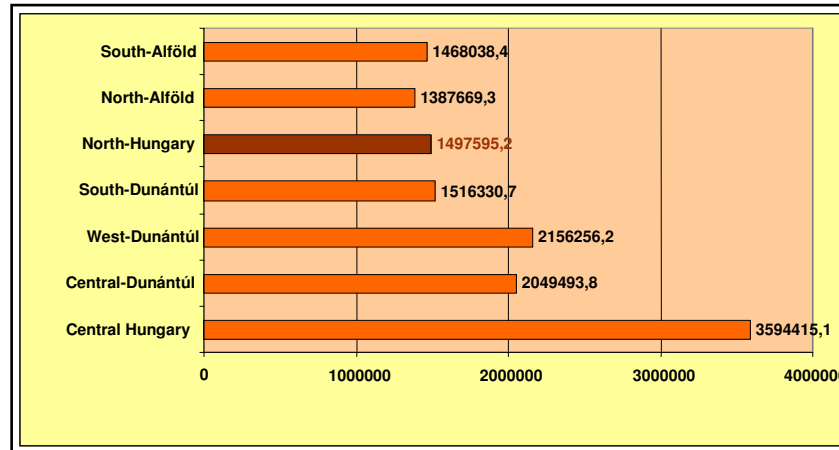
Total grassland		→	193 561 ha
BY GRAZING			
On 30% ewes	→	232 273 pcs	→ 16 584 animal
On 40% meat cattle	→	61 940 pcs	→ 49 552 animal
On 15% milking cow	→	29 034 pcs	→ 23 227 animal
WITHOUT GRAZING			
15% hayfield	→	29 034 ha	→ 65 327 t hay

Source: Own calculation

Considering the previous calculation of the utilisation of the grasslands in the Region and the revenue that can be generated of this the GDP/capita could be increased by 21 463 HUF. As the effect of this, the number of employees could increase by 2445 persons. With the calculated revenue of the animal stock development and the 2445 new employment the measure of the regional competitiveness from the 1 429 117.1 defined in 2005 would increase to 1 497 595.2 (Chart 3). By this way it could leave behind the North- and South-Alföld Regions, and would get significantly closer to the competitiveness of the South-Dunántúl Region. The developments would contribute to the gross contribution value of agriculture, give an approximate 25.3% increase of that. This way the contribution of the agriculture to the GDP would increase from 4.4% to 5.9%, therefore in the regional rank it would come to the place number four, coming before the West-Dunántúl Region. This way the presently unexploited grasslands produce would have a significant role in the increase of competitiveness.

3. Chart

Measure of regional competitiveness by region of the calculated revenue of the improvable animal stock and the number of calculated employees (2005)



Source: Own calculation

III. NOVELTY AND NEW SCIENTIFIC RESULTS

1. **The agriculture of the Northern Region of the country (Since 1997: North-Hungarian Region) had a performance below average and it shows a decreasing trend since the change of system in 1989.** According to the studies it reached its slump in 2005. Both the contribution to the GDP / capita and the measure of complex regional competitiveness it is the last of the seven regions of the country. **In relation to the national GDP average the ratio of contribution is only 65% during the period of time examined (2001-2005) and reduced by 3%,** due to the following reasons: (1) low level of employment of unemployed people in the agriculture; (2) dramatic reduction of the number of animals; (3) low level of utilisation of the grasslands; (4) low level of utilisation of the new support fund opportunities.
2. **Based on the studies completed, the author has introduced that in the case of utilising the sources of the maximum available support funds in the sheep farming for meat, there is 19 thousand -, by the Hungarian merino 17 thousand -, the meat purpose grey cattle 171 thousand -, and in the milk production 50 thousand HUF could be the increase of the revenue calculated for one animal and its progeny.** This increase by the kind of animals and utilisation directions is rather different, but comparing them to the 2005 year's it is significant. This fact is interesting since the source (basis) of the excess revenue is mainly the grassland and the relevant supports for the grasslands, which is now only partly or slightly utilised.

- 3. With relevant calculations it can be defined that in the case of gaining all the support funds available for the animal farming based on grasslands and with the actual price level of the animal products one four-member family live in reduced circumstances and on average standard of living (in line with the CSO (KSH) this is annual 2,256,000 and 3,072,000 HUF revenue) the required revenue can be generated with 97-132 meat purpose and 110-150 Hungarian merino milk ewes, or 10-13 meat purpose greycattle, or 10-14 milking cow or 22-30 mares farming.**

- 4. With the professional utilisation of the total grasslands of the Region there would be an opportunity to farm 89 363 animals, which is almost three times more than the actual number. The increase number of animals would improve the total revenue of the sector that due to that the GDP/capita value would increase 21 463 HUF and the number of employees would be 2445 persons more. Taking into consideration the excess revenue from the farming and the increase of number of employees with 2445 persons the regional competitiveness measure (RVM) would change from the 2005 year value of 1 429 117.1 to 1 497 595.2 in a way that the contribution of the agriculture to the GDP would also grow from 4.4 % to 5.9 %. This way in the rank of the regions the North Hungarian Region would be the number four in the rank of regions.**

IV. PUBLICATIONS ISSUED IN THE GIVEN SUBJECT

Foreign language scientific journal articles:

1. **Judit Vincze – Antal Tenk** (2007): Efficiency analysis of a sheep farm. Acta Agronomica Óváriensis, Mosonmagyaróvár, 2007. Volume 49. Number 1, p. 103-112.

Hungarian language scientific journal articles:

2. **Vincze J. – Dr. Harcsa A. – Kiss Cs.** (2006): A juhászat jövedelemviszonyai egy Borsod-Abaúj-Zemplén megyei gazdaságban. Gazdálkodás 16. számú külökiadása, 2006. 50. évfolyam, p. 81-87.
3. **Vincze J. - Tenk A. - Németh A. - Falusi B.** (2007): Juhászatra specializált telepek nyeresége. Gazdálkodás 20. számú Különkiadás, 2007. 51. évfolyam, p. 126-132.

Proceedings published in foreign language in full content:

4. **Vincze, J. – Harcsa, A. dr. – Kiss Cs.** (2006): Profitability of a Borsod-Abaúj-Zemplén county sheep farm (support – in bottom of bag?) (*előadás angol nyelven*). Within the European Union III. Nemzetközi Konferencia, NYME-MÉK, Mosonmagyaróvár, 2006. április 6-7.

Proceedings published in Hungarian language in full content:

5. **Vincze J.** (2005): Az Észak-Magyarországi Régió agrárfejlődésének száz éve (Fokozatos felzárkózás avagy végleges leszakadás?). XXVII. Országos Tudományos Diákköri Konferencia, Agrárökonómia „B” tagozat, Szarvas, (a Versenydolgozatok tartalmi kivonatai p. 56.) 2005. március 31.- április 2.

6. **Vincze J.** (2005): A mezőgazdaság regionális elmaradottságának néhány mutatója az Észak – Magyarországi Régióban. Veszprémi Egyetem Georgikon Mezőgazdaságtudományi Kar és az Állattenyésztési Tudományok Doktori Iskola XI. Ifjúsági Tudományos Fórum, Keszthely, 2005. március 24.

7. **Vincze J.** (2005): Az Észak-Magyarországi Régió elmaradottságának mezőgazdasági aspektusai. MTA VEAB Konferencia, „Fenntartható fejlődés, fenntartható társadalom és integráció”, Komárom, 2005. április 28.

8. **Vincze J. – Dr. Harcsa A. – Pusztainé Káldi J. - Kiss Cs.** (2005): A juhtenyésztés jövedelmezőségének vizsgálata egy Borsod-Abaúj-Zemplén megyei gazdaságban. A Gazdálkodásban 1995-2005 között publikált PhD hallgatók I. Tudományos Konferenciája, NYME-MÉK, Mosonmagyaróvár, 2005. október 14., Gazdálkodás 14. számú külökiadása, 2005. XLIX. évfolyam.

9. **Vincze J. - Tenk A. - Németh A. - Falusi B.** (2007): Juhászatra specializált telepek nyeresége. Gazdálkodás 1957-2007 Konferencia, NYME-MÉK, Mosonmagyaróvár, 2007. április 25-26., Gazdálkodás 20. számú Különkiadása 2007. 51. évfolyam.

Foreign language posters:

10. **Vincze, J. – Kiss, Cs.** (2005): Hundred years of agricultural development of the North – Hungarian Region (Gradual closing up or final subsidence?). „Verseny élesben” Európa - Napi Konferencia, NYME-MÉK, Mosonmagyaróvár, 2005. május 5-6.

11. **Vincze, J. – Harcsa, A. – Kiss Cs.** (2006): Earning power of a Borsod-Abaúj-Zemplén county sheep farm. X. Nemzetközi Agrárökonómiai Tudományos Napok, Károly Róbert Főiskola, Gyöngyös, 2006. március 30-31.

Hungarian language posters:

12. **Vincze J.** (2006): A juhágazat jövedelemváltozása a hozamok és a támogatások tükrében egy Borsod-Abaúj-Zemplén megyei gazdaság példája alapján. XXXI. Óvári Tudományos Nap, NYME-MÉK, Mosonmagyaróvár 2006. október 5.