

# Organization of Profitable Cattle Husbandry Through Exploiting Favourable Environment Factors

– Case Study in Hungary –

Gyorgy Alpár\* · Kim Jong-Moo\*\*

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## ABSTRACT

Through manifestation of the principles of commodity production spatial sharing of labour can be observed in the agriculture as well as in cattle production. Better adjustment of the production structure to the environment factors brings higher yields and more effective production. In being able to maximize the profit the entrepreneurs opt for producing output that closely matches to their featuring conditions. In contrary to the relatively high "mobility" of crop production animal husbandry and within this cattle production—as known—is strictly chained to forage production. On the basis of our economic research and as a result of multivariable analysis(factor analysis) it can be concluded that two variable groups(factors) are highly dominant in organizing profitable cattle production. First of them is the crop site factor(indicated by gold crown value), the second is the forage production feature(forage and grassland area and the yield of them). During recent years the weight of environmental factors suffered from devaluation. As a result of the central economic administration differentiating effects were suppressed

\* Pannon Agricultural University, Faculty of Animal Science, Kaposovar, Hungary.

\*\* Sung Kyun Kwan University, Dept. of Agricultural Economics.

and the chances of equalizing concepts strengthened. The outcome can be observed even today. In the regions, for example, being predominantly suitable for grass and forage cropping the milk and slaughter cattle production decreased. The same is true for corn and pig production regions. Unexploitation of local environmental features can be observed mainly in grassland management. Branches being potential user of grasslands hardly take them into consideration. Main method of rational use of grasslands is pasturing. Presence of pastures and the usage of them through cattle production is highly important not only for profitable production but also for maintaining ecological stability.

*Key Words* : Hungary, Cattle husbandry, Environmental factors.

## I . INTRODUCTION

Through manifestation of the principles of commodity production spatial sharing of labour can be observed in the agriculture as well as in cattle production. Better adjustment of the production structure to the environment factors brings higher yields and more effective production. In being able to maximize the profit the entrepreneurs opt for producing output that closely matches to their featuring conditions.

Different regions of the country provide different conditions for growing crops. Range of varieties croppable in a region and their yields are highly effected climatic, geographical and soil features. Spatial distribution of plant growing - and forage cropping - is basically determined by these factors. In the first half of the century cropping traditions and experiences had also their impacts (beside natural factors) on the differentiation of production in the West - Transdanubian region (counties Győr - Moson - Sopron, Vas, Zala) and in county Tolna where along with the high cattle density a sophisticated breeding and farming culture had been established.

During recent years the weight of environmental factors suffered from devaluation. As a result of the central economic administration differentiating effects were suppressed and the chances of equalizing concepts strengthened. The outcome can be observed even today as the following example highlight them :

- regional specialization of cattle farming loosened. Milk and slaughter cattle production declined even in regions having favourable conditions for these operations. Cattle stock has grown in corn and pig producing areas ;

- no technological development was done on small scale farms while on large scale ones practically identical technologies were used. Expensive, uniform farms of high energy consumption were built using up government subsidies ;
- unexploitation of local conditions can be observed mainly by grassland farming. No improvement was achieved in appropriate grassland usage. Potential grassland users hardly utilize them. A sorrowful example is the Zselics, near Kaposv where practically no ruminant is kept on the grassland of 7,100ha ;
- in connection with the specialization and concentration production process has become an environment endangering factor. Enormous and unhandable sewage and manure output that economic advantages of specialization could serve for effective production ..... etc.

When such anomaliae occur, one could easily ask whether the indicated problems have any importance in the organization of economic cattle farming. Results of our studies demonstrate that environmental factors have severe impact on the problem of branch-profitability.

## II . ENVIRONMENTAL EFFECTS

During our branch study a multifactorial analysis was done using 16,000 indices derivated from 40 featuring parameters of slaughter cattle farms representing 25% of the branch in respect. The model characterized by variables (in this case slaughter cattle production) was examined to determine the key variables or variable groups foremostly featuring the model and utmostly effect its inner linkages. In being able to do this, factor analysis a statistic method was used.

Resulting factor weight matrix is shown in Table 1.

As known, target of factor analysis is to examine numerous quantitative variables being in connection with each other. New variables, called factors, represent the information of embedded variables. It was exactly the complexity of the problem that led us to apply this method for economic purposes.

From Table 1 it can be clearly seen that two factors (variable groups) played a dominant role. First one is the crop site factor which is expressed by gold crowns. Second one is the forage feasibility factor which contains the variables ob forage area, grassland area and grassland yield. Third place was granted to the factor representing

the level of meat production. Even the exact analysis based on factual economic data showed that production site conditions and circumstances of forage production are crucial factors of cattle production. Any organizing activity aiming profitable production, can be carried out only by taking the information of these factors into consideration.

Table 1. Factor Weight Matrix for Slaughter Cattle Production

Variables	Study 1		Study 2		
	1. Fact	2. Fact	1. Fact	2. Fact	3. Fact
Common property AK.	0.129	<b>0.876</b>	-0.127	0.133	<b>0.912</b>
Ploughland AK.	0.131	<b>0.781</b>	-0.132	0.185	<b>0.851</b>
Grassland AK.	0.235	<b>0.657</b>	0.155	0.150	0.532
Grassland yield	0.196	0.267	-0.639	0.131	-0.021
Indices per cow					
Calves born	-0.529	0.255	-0.667	0.065	0.138
Regrouped calf(pcs)	-0.676	0.340	-0.267	<b>0.816</b>	-0.142
Regrouped calf(kg)	-0.688	0.365	0.010	<b>0.909</b>	-0.103
Culls	-0.543	-0.058	-0.466	-0.340	0.153
Regroup heifers	0.184	-0.189	0.059	-0.026	0.253
Calf cull	0.088	0.279	-0.072	0.533	-0.004
Meat production	-0.611	0.376	-0.028	<b>0.717</b>	0.064
Forage production area	<b>-0.771</b>	-0.123	<b>-0.876</b>	0.126	-0.194
Grassland	<b>-0.740</b>	-0.379	<b>-0.853</b>	0.128	-0.247
Workday	-0.673	0.045	-0.058	-0.256	-0.131
Maintenance	0.350	0.353	0.355	0.177	-0.172
Tractor serv.	0.137	0.211	0.135	0.460	0.261

### III. GRASSLAND AS ABSOLUTE FORAGE

Unexploitation of grasslands is well known by experts. That means almost on 1.3 milion ha the ecological potential is not used. As it can be seen in Table 2 abt. 30% of present forage-need reserve could be raised up to 60% by the end of the century. While potential capacity of ploughlands is well exploited the respective value for grasslands shows only 30~35%.

Table 2 Grassland Prognostic (Agroecological Potential at the End of the Century)

Variables	Expected					
	Unit	Present	Total	Large sc. usg.	Slaugh t. usg.	Not used
Area	1,000 ha	1,300	1,300	716	241	334
Average yield	t / ha	1.5	3.7	6.0	2.0	-
Total yield	1,000 t	1,938	4,783	4,300	483	-
Feed base reserve	%	30	60	53	7	-

Apart from professionally based usage, pasturing of ruminants, mainly cattle on grasslands plays an important role in maintaining the ecological balance too. Due to the mishandled subsidy policies of recent decades (i.e. sources were allocated to apparently more profitable branches) specific yields failed to grow, level of usage remained practically constant.(Table 3)

Table 3. Pattern of Average Yields

Crop	1935	1950	1970	1990	Change
	t / ha				%
Wheat	1.3	1.5	2.1	5.1	377
Corn	1.8	1.5	3.4	6.2	338
Sugarbeet	19.9	14.3	29.8	43.9	221
Potato	6.7	4.7	10.4	18.6	277
Grassland	1.6	1.4	1.4	1.1	65

Newly utilized grasslands of mid eighties has become wild again as cereal boom passed by and their depreciation processes accelerated. A given part of areas being utilized as ploughland in the present should be turned back into grassland in being able to improve ecological balance and, predominantly, to exploit their economic advantages.

#### IV. UTILIZATION THROUGH PASTURING

Best method for rational usage of grassland is pasturing. A research team of PAU Faculty of Animal Science (Babinszky, M. et al.) developed and tested a method for grassland based milk production. Their system concerning the grassland utilization of river valleys provides an excellent example for environment conservation and economy driven management.

It is great use to publish some suggestions of their technology :

- grass yield is converted into marketable product through cattle ;
- base of milk production is intensively cultivated, drytill grassland in river valleys ;
- base of bulk feed (greenfeed, hay, silage) is provided all through the year by grassland ;
- mobile milkstand, hay and concentrate feeding, drinking ;
- operational units of 120~150 cows ;
- seasonal calving in February, March, April ;
- artificial insemination ;
- partialized diurnal pasturing 6~7 months long ;
- usage of intensive milk type genotypes ;
- winter keeping in closed, deep litter, loosehold, grouped system ;
- low investments, high prifit.

Keeping herbivorous species on pastures provides more economic advantages. It can be concluded (with no desire to cover the whole range) :

- Ever higher energy costs urge producers to be more economical. It has been shown that most significant cost of mechanization comes up by harvesting (energy consumption, seasonality, special devices). Hence, significant cost reduction can be achieved by letting the animal harvest its forage.
- Pastured cattle (sheep, horse) stocks require no sheds during summer. In winter keeping sheds are needed to provide dry and warm litter for animals. Such a way of farming is economic in sense of material allocation. Cost consequences can be traced in Table 4.

Table 4. Results of Milk Production in Different Farming Systems

Year	Grassland based milk production		Ploughland based milk production	
	Yield(1)	Margin(HUF/1)	Yield(1)	Margin(HUF/1)
1984	4,666	6.75	4,540	9.33
1986	5,869	7.24	4,960	9.62
1988	5,381	8.10	5,410	10.10
1990	5,100	9.55	5,010	11.28

- In pastured stocks as long as they are pastured (180~200 days) there is no manure to handle ; excrement of animals spread monotonously on the grass and it is washed into

the soil by precipitation. Winter in deep litter keeping there is no sewage output, manure can be handled in a more cost effective way.

- Digestion of pastured animal is better, metabolic diseases can hardly occur, reproduction parameters of the stock takes up desired values, culling rate is less, usable lifespan of cows is higher compared to tight keeping.
- Comparative studies at PAU have shown there are remarkable differences in productivity per area between different breeds. Milk yield of diurnally pastured milk type breeds reaches the yield of respective genotypes kept in sheds.
- Well managed grassland improve the aesthetic value of landscape. Cultured outlook, the scene with animals on grasslands can strengthen the touristic attractiveness of a region.

It can be concluded that basic condition of profitable milk and beef production is pasturing either in small and large scale farms. Processes remapping the property pattern and the expectable improvement of profitability in the branch are to fortify the need for grassland usage and pasturing.

Regulation effects of market and economic liberty of producers become more emphasized. It has to be achieved that the value of human labour manifested in product be measured within the frames of demand and supply. Expectedly entrepreneurs will be driven by market competition and economic sanity toward counting their possibilities and perhaps they will thrust to widen their cattle keeping capacities. Role of government is to provide stabile economic environment and to take at least on middle term countable economic measures.

Comparative and competitive advantages are expected to come up only in such an economic environment that provides the possibility for marketable and profitable cattle production also in long terms.

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## 환경요인을 적절하게 이용한 경제성 있는 축산조직

- 헝가리의 사례연구 -

Gyorgy Alpár · 김종무

### 적 요

농업과 가축생산에서 상품생산의 원리를 통하여 노동의 공간분배를 관찰할 수 있다. 환경적인 요인에 적응이 잘되면 생산량의 증대와 효과적인 생산을 가져올 수 있다. 농장에서 이윤을 최대화하기 위하여 발생하는 조건에 밀접하게 일치되는 생산을 하도록 노력하여야 한다. 가축 생산에서는 이미 잘 알려진 데로 사료생산에 밀접하게 연결되어 있다. 경제연구와 요인분석에 의하여 경제성있는 축산경영을 하는데 두 가지 집단(요인)이 지배적이라는 사실을 발견한다.

첫번째로, 곡물의 재배지역이다. 그리고 두번째로, 사료작물 생산형태(사료 및 초지재배지역 및 생산량)이다.

최근에는 환경적인 요인들은 저평가되는 경향이 있다. 중앙집권적인 행정제도의 결과로 인하여 차별화되는 효과는 활동을 못하게 되고, 그리고 동일하다는 개념이 강조되었다.

그와 같은 결과는 오늘날에 관찰될 수 있다. 예를 들어서 초지와 사료작물의 재배가 적당한 지역에 우유와 비육생산은 감소되고 있다. 옥수수과 돼지사육 지역에서도 유사한 현상이 발생되고 있다.

주로 초지경영에서 지역적 환경요인을 이용하지 못하는 현상을 발견할 수 있다. 초지의 합리적인 이용이 축산경영에서 중요하다는 것이다. 그리고 초지의 이용은 경제성있는 생산뿐만 아니라 생태적인 안정성을 유지하기 위하여 가축생산에서 대단히 중요하다.