SOME ASPECTS LOOKING OF ECONOMICAL EFFICIENCY FOR LIVESTOCK IN C.S. AGROCOMPLEX A.S. LUNCA-PASCANI

Roxana-Dana BUCUR [1]

[1] **Agricultural Sciences and Veterinary Medicine University, Iaşi**

Abstract

In the market economy, the economic efficiency represents a dominant criterion of whole economic activities. In what looks the agricultural productive buildings, the analysis of economical efficiency is done by through the way which in the agricultural unit is insured with buildings and how are used these in the process of production. The analysis of structure of agricultural productive buildings has as the aims the settlement weight of each groups, making appreciations about preoccupation unit for the growth of these weight and of the about the development tendency unit. In the present paper were analyzed some indicators of the economic efficiency for the productive buildings of the end their evolution in 2001÷2009 period.

Key words: livestock, cows, productive surface, efficiency, sustainability

The growth of the cattle and dairy cows default, must comply with European regulations aimed at specific production, processing and marketing of this important food - milk. It should be noted that this sector has to face fierce competition from European competitors. From these points of view, policy makers at national and local levels, and farmers associations should take urgent, appropriate administrative and technical measures.

In construction, as is the case with other investment objectives in agriculture, cannot talk about an absolute economic efficiency, because they can determine exactly what is due to their increased production. This is precisely why a certain construction should be seen as bending point. First, a building can be effective in that it is individualized with a higher payload, the cost of a lower square meter built area, relief of physical labour by avoiding crossing paths and access roads for transport, evacuation, etc (Sorvala S., Puumala Maritta, Lehto M., Kymäläinen Hanna-Riitta, Sjöberg Anna-Maija, 2008). Must be necessarily result in a favourable ratio between the specific consumption of materials and its maintenance. On the other hand, the very economic efficiency is a ratio between the size of investment and results. Findings of this report are not only in a relative way in comparison with other possible variants of the construction with the same destination and production activity (Antohi E., Şerbănoiu I., 1995; Lazăr D., 1969).

In terms of productive agricultural buildings, their economic efficiency analysis can be done from two perspectives: that of choosing the type of constructions, how the unit of analysis is ensured by construction and agriculture respectively, of their use in the production process (Coelli T.J., Rao D.S.P., O'Donnell C.J., Battese G.E., 2005). If it is intended to adopt the type of construction, it must be accompanied by rigorous calculations of economic efficiency.

In this sense, construction of different versions developed to choose the one that offers several advantages. Since an entire building requires the use of necessary technical equipment mechanization, and during their operation needs some repairs to the amount taken into account the specific investment and the amount of technical equipment (installations), current and capital costs of building repairs and installations and the residual value of construction and technical resources as labour costs. If it is envisaged that the second part - to ensure the construction and use of establishment - must calculate and analyze other indicators which are presented below (Webster A.J.F., 2008).

Livestock buildings is part of a series of Efficiency Checklists and Topics that can help to assess all areas of the farming operation for energy efficiency and find ideas to save energy and reduce costs.

Confined livestock structures need ventilation to remove heat and moisture and maintain air quality. The amount of ventilation needed varies depending on air temperatures inside and outside the building, amount of moisture to be

removed, odours to be controlled, and the heat produced by the animals and equipment.

To reduce energy requirements for ventilation equipment, determine the number of fans needed to do the job and operate only those fans for as short a time as possible.

Less ventilation is usually required in winter than in spring or fall and much less than in summer. Summer ventilation needs are usually high due to heavy heat loads.

Winter ventilation needs are usually low because buildings need only enough air exchange to remove moisture and maintain air quality. Fan efficiency is reduced if obstructions are located near or in front of fans.

Natural ventilation uses airflow passages that allow clean air to enter a building and displace stagnant or dirty air. The difference in building pressure and atmospheric pressure, caused by wind passing over the building and by thermal buoyancy of air, creates the air movement. Using natural ventilation wherever possible will save energy by reducing the number of ventilation fans needed for an air exchange. Natural ventilation is typically used on open-sided buildings with curtain sidewalls and open roof peaks such as dairy free stall barns. The curtain sidewall can be closed during cold or inclement weather to protect the animals.

It is important to size fans correctly for building ventilation. Fans that are larger than necessary waste energy and produce a cold air blast in the winter, while undersized fans will not adequately exchange building air. Air inlet size should be equal or larger than that required for the fan capacity, or the fans will operate at a higher static pressure than necessary and use additional energy.

Automatically controlled ventilation systems reduce unnecessary fan operation and provide more uniform climate control. Variable speed controllers can be used to control the amount of air exhausted by slowing or increasing the speed of a single fan based on the building temperature.

Several advances in technology have improved energy efficiency for livestock buildings such as efficient space heating, heat lamps, creep pads, and more energy efficient milking equipment (Neuman, L.W., 1997).

MATERIAL AND METHOD

The present study is the result of an approach to investigation and critical interpretation of comparative studies at national and international developed on the theme explored were analyzed against specific European regulations covering the production, processing and selling milk.

Highlighting the practical aspects of studies are based on survey conducted in the period 2001 ÷ 2009 the livestock unit profile C.S Agrocomplex A.S Lunca - Pascani, located in the county of Iasi.

RESULTS AND DISCUSSIONS

Located in Iasi County, S.C. Agrocomplex S.A. Lunca-Pascani was established under Law no.15/1991 the reorganization of state enterprises and their transformation into commercial companies.

As a result, farmer IAS Agrocomplex Meadow became the Pascani G.L.no.266/1991, C.S. Agrocomplex A.S. Lunca Paşcani.

Unit of capital is entirely private. C.S. Agrocomplex Lunca - Pascani A.S. is organise in production farms and specialized service sectors farm production, as follows:

- three vegetal farms;
- a dairy cows farm for milk;
- a service sector with profiles of farm machinery repair and enforcement of specific services to farms farming unit;
- the supply, sale, transport, aiming to ensure the necessary materials for industry, sale of farm products by means of transport and management activities was described previously.

Constructions of dairy cows to increase are different in terms of capacity, namely: shelter with a capacity of 200 seats and another with 400 seats, what causes the unit to full capacity of 600 seats.

In terms of constructive, these buildings were productive following characteristics:

- the height floor with h = 2.60 ÷ 3.00 m;
- surface being constructed 1,251.34 m^2, respectively 1,453.60 m^2;
- useful area by 1,206.18 m^2, respectively 1,405.25 m^2;
- reinforced concrete foundations, pillars and beams of reinforced concrete, masonry walls, concrete roof structure.

In terms of employment of such capacity building (*table 1*), over the period analyzed and showed the following:

- in 1997 and 1999-2001 period, were slightly overcrowded shelters, the maximum recorded in 1999
- in 2002-2004 period, there was a downward trend in the number of animals
- overall, over the period examined was found that in 2005 the number of cows housed in buildings designed were about 20% less than in the reference year 1997 and 17% less than the entire drive capacity.

For an analysis in terms of ensuring the productive machinery required presentation of some data in *table 2* (Vasilescu N. et al., 1983):

Table 1

Evolution of the number of animals from shelters in C.S Agrocomplex A.S. Lunca-Pascani between 2001 ÷ 2009

Category shelter	Capacity	Average number of animals housed								
		2001	2002	2003	2004	2005	2006	2007	2008	2009
Cows shelter	200	200	200	200	200	200	199	210	206	230
Shelter bulls	200	200	200	206	193	203	218	164	138	186
- maternity cows	50	45	47	50	46	52				
- calves 0 - 6 luni	50	60	55	52	51	59				
- calves 6 - 12 luni	50	38	41	46	50	42	87	33	28	44
- female cows 12-18 luni	50	57	57	58	46	50	60	50	43	60
							71	81	67	82
Cattle shelter	200	210	192	212	209	210	76	90	88	83
- calf heifers	50	55	48	50	49	50	20	45	46	43
- cows in dry period	50	45	47	52	46	59				
- breeding vines for sale	50	42	44	48	50	47				
- youth fattening	50	68	97	62	64	54				
							56	45	42	40
TOTAL	*600*	*610*	*592*	*618*	*602*	*613*	*493*	*464*	*432*	*499*

Table 2

The level of data needed to calculate indicators for analysis to ensure the building productive

Specification	M.U.	Year				
		2005	2006	2007	2008	2009
Production capacity goal	cap	600	600	600	600	600
Productive surface	m^2	2.611	2.611	2.611	2.611	2.611
Number of animals	nr.	527	543	544	464	499
Number of mechanised operations	nr.	4	4	4	4	4
Suitable number operations to mechanize	nr.	4	4	4	4	4
Productive capacity occupied	nr.	610	618	613	464	499
Existing productive capacity	nr.	600	600	600	600	600

Among the economic indicators analyzed ensuring the construction reflecting mention: construction production index insurance, animal density, and main index mechanized operations. (Cucu I., 1998). Building productive use is reflected by another indicator, namely the employment index of production capacity. The values of these indicators are presented in *table 3*.

Table 3

Some indicators on insurance and building productive use in the period 2005 ÷ 2009

Indicator	M.U.		Year	The value of indicator	
Construction production index insurance (Ia)	%		2005	100	
			2006	100	
			2007	100	
			2008	100	
			2009	100	
Stoking density (Da)	cow/m^2	m^2/cow	2005	0,878	1,138
			2006	0,905	1,107
			2007	0,906	1,102
			2008	0,773	1,293
			2009	0,831	1,202
Index of mechanization of major operations (Im)	%		2005	100	
			2006	100	
			2007	100	
			2008	100	
			2009	100	
Employment index of production capacity (Io)	%		2005	101,666	
			2006	103,000	
			2007	102,166	
			2008	77,333	
			2009	83,166	

In terms of construction insurance index shows that over the period analyzed its value remained constant. The same constant value at 100% and keep the main index mechanized

operations for the period under review because the number of mechanized operations is equal to the number of suitable operations to mechanize.

Given the high cost of livestock buildings, livestock density is expressed as the number of animals which return per acres. During the period under study finds an upward trend in the value of this indicator, then its value will fall below the reference value in year 2001. This was due to fluctuation in the number of sheltered animals in the housing unit.

Employment index of production capacity showed a swing in the period under review, following that in 2009 its value is approximately 20% lower than in 2001.

CONCLUSIONS

C.S. Agrocomplex A.S. is in the process of adapting to new economic environment in which they operate and are facing serious organizational problems.

The market economy requires a strong organization with a creative, flexible and dynamic so as to facilitate the deployment of profitable operation.

They are considering funding a program and a sustainable production structures based on the number of existing dairy heritage unit, requirement in view of the market in the field of agriculture, dairy breed potential of the unit, average yields achieved in recent years, construction and agricultural buildings that production capacity.

Ensure sustainability taking into account the unit external competitors, range of products required by the introduction of environmental quality to improve and attract new customers, investment in the technical apparatus, improvement and application of sustainable technologies, development of marketing studies and implementing promotional measures to increase market share.

BIBLIOGRAPHY

Antohi, E., Şerbănoiu, I., 1995 - *Management operaţional. Studiu de caz*, vol. I, Centrul de Multiplicare, Universitatea Tehnică "Gh. Asachi", Iaşi

Botănoiu, D., Bidilean, O., 2002 - *Producţia agricolă şi comerţul exterior în România*, Simpozionul Naţional de Istorie şi Retrologie Agrară, Slobozia

Coelli, T.J., Rao, D.S.P., O'Donnell, C.J., Battese, G.E., 2005 - An introduction to efficiency and productivity analysis, Springer, New York.

Cucu, I., 1998 - *Construcţiile din unităţile zootehnice şi modul de exploatare a acestora în prezent şi în viitor*, Cercetări agronomice în agricultură, vol. 1 - 2, Iaşi.

Lazăr, D., 1969 - *Cu privire la determinarea eficienţei economice a investiţiilor în construcţii agricole*, Cercetări de Economie agrară, Institutul Agronomic, Cluj Napoca.

Neuman, L.W., 1997 - Social Research Methods: Qualitative and Quantitative Approaches. 3rd edn. Allyn Bacon, Boston

Sorvala, S., Puumala, Maritta, Lehto, M., Kymäläinen, Hanna-Riitta, Sjöberg, Anna-Maija, 2008 - *Water sources and quality at livestock farms in Finland*, Journal of Food, Agriculture & Environment, 6(2).

Vasilescu, N. şi colab., 1983 - Organizarea, planificarea şi conducerea întreprinderilor zootehnice, Editura Didactică şi Pedagogică, Bucureşti.

Webster, A.J.F., 2008 - *Management and environmental factors influencing the energetic efficiency of beef production*, Canadian Journal of Agricultural Economics, 18(1).