LABOUR PRODUCTIVITY EFFECTS OF TECHNICAL IMPROVEMENT AT DAIRY FARMS STUDY

ANDRAS VANTUS[1], ENDRE HARSANYI[1], NANDOR CSATARI[1] ZOLTAN HAGYMASSY[1]
[1] ***University of Debrecen, Hungary***

Abstract: *The technical set-up of the dairy farms has been examined in Hajdú-Bihar County between 2002 and 2012. The data were gathered by methodical observation and oral interviews. During the last ten years, modernisation at the companies had different types. The technical improvements caused that the operations can be done with less time expenditure and more efficiency. The technical solutions devices of dairy farms for main operations have been classified. It has been established that the improved technical solutions affect the labour productivity. Nowadays this mentioned effect is especially important because good practise can be followed by other companies/firms thus their efficiency and competitiveness could be improved.*

Key words*: dairy farms, technical improvement, labour productivity*

INTRODUCTION

Nowadays, the concept of efficiency is used more and more often. In Hungary after 1990 the business operation system had changed: instead of production-oriented system (Nagy, 2006), to the cost management system (Felföldi, 2006). Among them the cost management production system, and the higher level of resource utilization is changed (Sulyok and Rátonyi, 2004). According to Nagy (2003), agriculture sector could provide the source of livelihood for the rural population. According to Pakurár (2008), although the agricultural population is constantly decreasing, this industry is still very important for rural population.

The technological innovation is one of the most important method of increasing the efficiency Dimény (2002). According to Husti et al. (2007), for competitiveness, overused, old machinery should be replaced. The farmers' opinion is that the farm size should be increasing in addition, and the technical and technological development is an important aim also (Polya, 2013), Gazdag (2012).

The profitability is influenced by the size of the cost impact (Gályász, 2006; Szucs, 2006). This is the key element of the wage. Therefore it is not indifferent how successful are the employees in their work (Dienesné and Gregory, 2009). It is a fundamental fact that human resources is the most important factor (Terjék, 2008), so the attitude is greatly influenced by the beneficial use of working time (Juhász et al., 2001; Bába and Berde, 2010), and). Human resources are key determinants of future economic competitiveness Russell and Taylor (2003) and Toth et al. (2005).

As a solution of the problem, farmers may use external support (Pierog and Szabados, 2012), and European Union grants Olah (2006).

While the organization is greatly influenced by the level of competitiveness (Balint Toth, 2010), therefore the organization should assess the technical background and, as far as possible to increase technical modernity.

MATERIALS AND METHODS

Investigations were performed in two dairy farms (F1 and F2) in Hajdú-Bihar county. Two major factors are assessed: supply of the human workers and technical equipments. Systematic data collection was carried out by monitoring, and by oral interviews with local

guide. The data collection was measured 10 years ago and after 10 years. It gives us possibilities to the exploration and evaluation of the changes.

RESEARCH RESULTS

While the human resources and the technical equipment are the major factors of effectiveness, we assessed the dairies and their changes over the last 10 years (Table 1). It can be seen that the the number of employees are significantly increased in the (F 1) farm, while the number of employees are slightly increased in the (F 2) farm

Table 1

The main data of the two farms

Farms	**F 1**		**F 2**	
Studied years	**2002**	**2012**	**2002**	**2012**
The number of workers	13	31	49	49,5
The number of cow	430	1081	1173	1740
Milking				
Milking equipment (No.)	2x12 Herring bone	40 carousel	2x2x12 Herring bone	80 carousel
Milk tank (lit)	13000	20500	28200	51000
Crowded gate (No.)	0	1	0	1
Foraging				
Mixer distributing trailer (No.)	1	3	2	2 (new)
Mucking out the litter				
Rest Box (pcs / Stable)	0	112	0	1056
Bale shredders demolition (pc)	1	2	0	2
Loader	1	3	1	2
Calving, calf rearing				
Cage Calf	32	232	300	300
Milk taxi (pc)	0	1	0	1
Care				
Happy cow unit (pc)	0	0	0	1
Fan (pc / Stable)	0	5	0	8
Transport				
Trailer (No.)	0	2	2	2
Guard-duty				
Guarding	Night care	Night care + security service	Night care	Night care + security service
Other Jobs				
Industrial washing machine (pc)	0	1	0	0
Heat engines (pc)	1	5	4	5
Farm Management Software	0	1	1	1

The number of cows has been increased in both large companies: the F 1 plant has been increased more than doubled, and the F 2 plant has been increased more than half times. Analyzing the technical developments it is concluded.

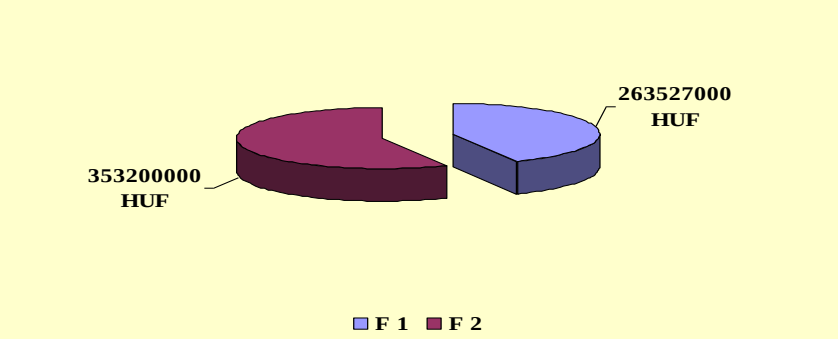
F1 Farm: All farm working operations and all aspects of utilization are improved significantly.

F2 Farm: The farm working operations and the aspects of utilization are improved, only 4 factors can not change.

In the farms - because of the increased number of cows –milking and technical tools are extended. Nutrition work, and the number of the feed mixer wagon are increased. The number of new purchases are also increased. Stable buildings and the milking process are developed because of the udder cleaning time is greatly depends on the level of contamination.

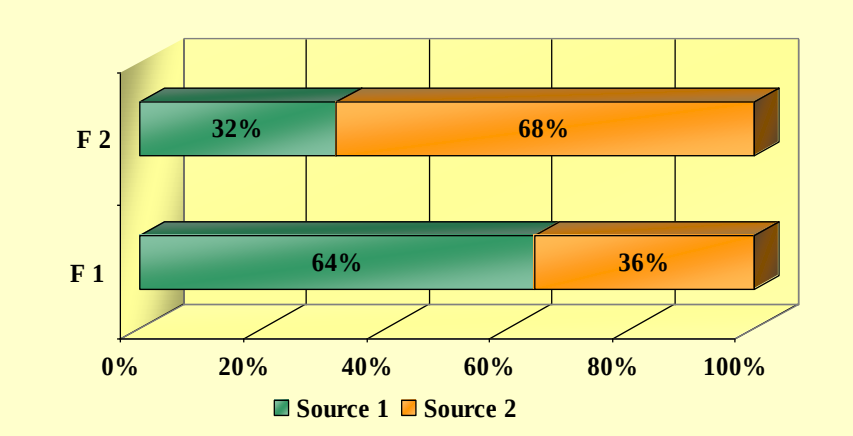
If the cows have higher comfort level, it will be reflected by the amount of milk. To achieve this comfort level, investments were made: stable buildings are constructed with fans and integument-care equipment are purchased. The number of calves in F 1 farm are increased significantly.

The above-mentioned developments, expansion, modernization are represented by Figure 1, and Figure 2.



Source: own studies

Fig 1 The amount of spent money under the period



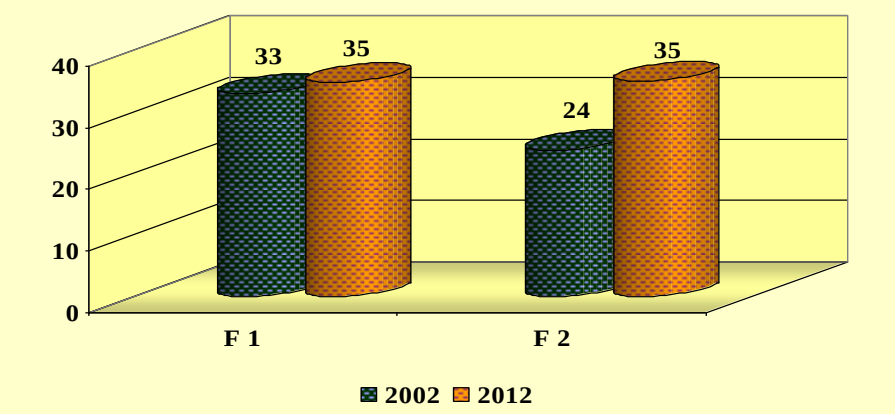
Source 1: application source Source 2: own resources

Source: own studies

Fig 2 The developed money spending, during the period

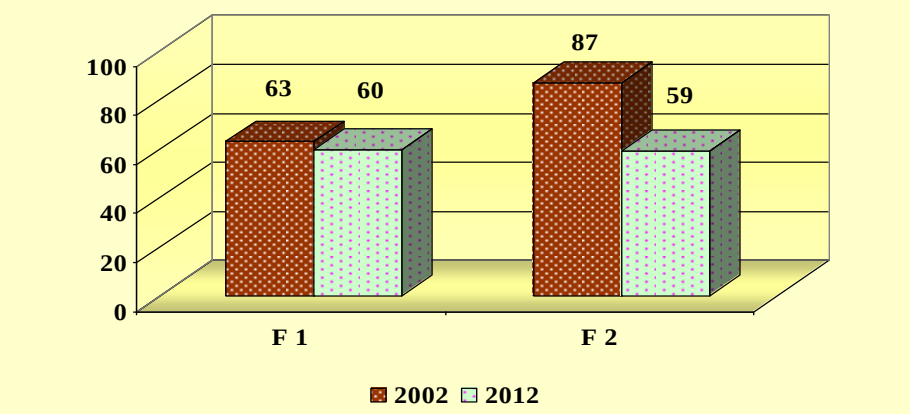
The presented developments have contributed to the improvement of labor productivity indicators (Figure 3 and Figure 4). It is not followed by the increasing of the number of workers.

The number of cows per workers is increased slightly in the F 1 farm, while the number of cows per workers is increased close to 50% in the F 2 farm.



Source: own studies

Fig 3 The number of cows per worker during the period



Source: own studies

Fig 4 The annual worked hours per cow

Another indicator of competitiveness 1 cow care hours per year has changed positively, because the amount of effective worker hours reduced. In conclusion, the improvements, and investments have contributed to increasing the economic competitiveness. The employment indicators also improved in this area.

CONCLUSIONS

• It can be concluded that the a number of technical factors have been changed significantly over the last 10 years.

• The application of the dairies has been developed and modernized. Total cost of the repair ratio has been decreased, because of the new technical equipments.

• Developments of own resources was a considerable large sum of money.

• The farm organization is improved in both farms. Labor productivity indicators are increased, which improves the cost-effectiveness.

• The number of employees is increased in the F2 farm.

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