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# Electronic Animal Identification and Herd Management Systems

## Use and Experiences gained on Large Farms

*Electronic aids for herd management are becoming increasingly important on dairy farms. Herd management systems can provide helpful support in optimally using the already scarce working time, so that the farm manager can concentrate on the most important tasks in herd management. At the beginning of 2005, 20 dairy farmers with electronic herd management aids filled out a questionnaire about their experiences and the system enhancements they use. Through the purposeful implementation of electronic aids, working time can be saved, and above all, work organisation can be improved.*

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We would like to thank the DAAD for its financial support and the State Monitoring Association in Brandenburg for practical assistance.

## Keywords

Herd management systems, animal identification

## Literatur

References can be retrieved under LT 05510 at http://www.landwirtschaftsverlag.com/landtech/local/fliteratur.htm.

In large herds, it is always a challenge not to loose track of the production processes. This challenge is increasing because the number of workers is constantly decreasing and the bureaucratic tasks (quality assurance, regulations, dispatches, automatic data transfer to the breeding association, etc.) are constantly growing. Under current conditions even large farms with more than 300 dairy cows are managed by just one person. In order to make oversight possible on such a farm, the use of a modern herd management system is needed. A similarly structured study was carried out with smaller farms in 2004 in Austria.

The goal of this study is to see the level of complexity and the level of experience needed for herd management systems and how the use is assessed in terms of performance increases, lower work load, user friendliness, and possible expansion plans.

### Materials and Methods

In this paper, farms from the eastern German states are also included. The following selection criteria were used for these farms:

1. The farm must have a herd size of over 150 dairy cows.
2. The farm must use a herd management system with electronic animal identification.

The State Recording Association of Brandenburg suggested 33 farms which were interested in participating in the study and which met the criteria for participation. The data were statistically evaluated.

### Preparation of the Questionnaire

In order to provide a complete view of the use and complexity of the used herd management system by the participating farms, a questionnaire was prepared divided into five main topics:

1) basic farm data,
2) characteristics of and experiences with the herd management system,
3) management software used,
4) reduction of labour input and achieved performance increases and
5) expansion plans.

### Results

*Basic farm data*

Of the 33 farms included in the survey, 20 (60.6%) completed and returned the questionnaire and these could be statistically evaluated. The average herd size was 353 dairy cows (Range: 180-650 cows) per farm.

*Characteristics of and experiences with the herd management system*

The point of purchase of the herd management was generally around 1994, meaning that the systems are, on average, 11.5 years old. Within the framework of this study only three farms installed or improved their herd management systems in a number of steps and in intervals of several years.

With a total of 95%, collar transponders are the most frequent form of attachment, five percent use foot bands.

70% of the farms have on-demand feeding (two farms said that they want to eliminate their on-demand systems in the next few years). 95% of the farms have installed automatic milk recording devices and 25% have a conductivity measurement, too.

Only 10% of the farms studied have activity measurement systems to detect oestrus, and 25% have an electronic animal scale included in their system (*Fig. 1*).

The expansion levels of the herd management systems are very different: 45% of the farms have a concentrate feed station and milk measurement and only 35% of the farms additionally have conductivity and movement systems or weighing facilities.

The acquisition costs for the herd management systems were, on average, 41,638 Euros/farm, meaning a basic investment of 126 Euros/cow. In 94% of the farms with an on-demand feeding system, the stations had no crowd protection for the animals.

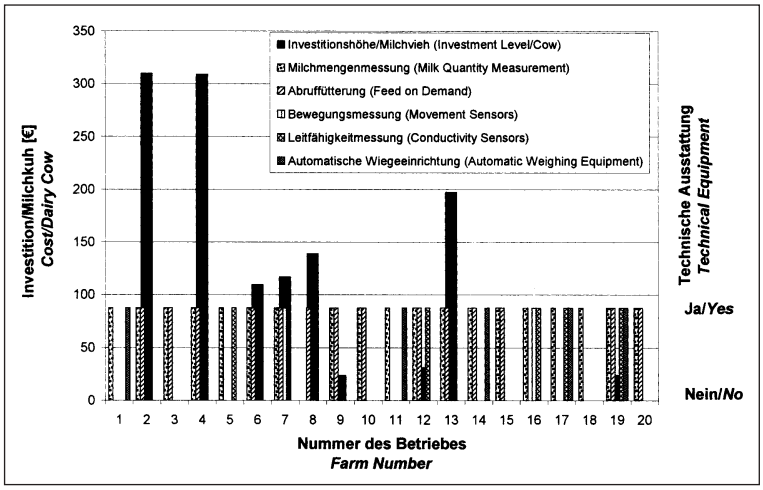


*Fig. 1: Extension and investment costs for herd management systems*

The farms studied had herd management systems from different manufacturers. Almost all manufacturers to be found on the market were mentioned: 53% of the farms had a DeLaval system, the second most popular (41%) was from Westfalia, followed by Boumatic in 6% of the farms.

For feeding, 25% of the farms feed concentrates exclusively with on-demand feeders, 45% use a combined system (basic rations and supplements with a concentrate automat), and 30% only use TMR (Total Mixed Rations).

The study of the reasons for use of a herd management system resulted in the following reasons: Lessening of work load (40%), increase of herd performance (40%), use of a new milking parlour (55%), other reasons (40%) (multiple responses were permitted for this question). Regular maintenance of the system was conducted by only 30% of the farms, while 35% of the farms allow their systems to be serviced on an irregular basis by the manufacturer or a maintenance firm, and 35% never service their system.

The frequency of functional problems in on-demand feeding was registered as an average of seven times per year (range 1 to 24 times) and with milk measurement on an average of 22 times per year (range 3 to 168). In the case of a breakdown, 50 to 90% of the problems and disturbances were corrected by 35.3% of the farmers themselves.

*Used management software*

With regard to data collection, it was established that in 95% of the farms milk recording, in 70% of the farms the amount of concentrates consumed, and in 10% of the farms the activity of the cows was automatically documented (multiple responses were permitted for this question). When asked about the use of the data collected (multiple responses were permitted for this question) 70% referred to animal health monitoring, 70% to feed monitoring, 75% for economic decisions, and 45% for oestrus detection.

In the study of the importance of the data from the perspective of the farmer, data were evaluated on a scale of 1 to 5 (1 very important, 5 not important). Milk recording was assigned a „1“ by 19 farms, and a „5“ by one farm.

In response to the question of satisfaction with the herd management system, 30% of the farms asked said they were completely satisfied with their system, while 60% were partially satisfied, and 10 percent had problems with the management software.

*Reduction of labour input and achieved performance increases*

31.6% of the farmers experienced an increase in of 10-20% performance through the use of the transponder system; 63.2% found an increase of between 0 and 10%, and 5.3% experienced no increase.

The labour input was reduced by 10 to 20% according to 31.6% of the farmers, between 0 and 10% by 31.6% of the farmers, and no reduction in labour input was experienced by 36.8% of the farmers.

*Expansion plans*

The readiness to expand the herd management system differs greatly among the farms. For 30% body temperature measurement, 25% activity measurement, 15% conductivity measurement, and for 5% weighing equipment would be of interest. With regard to the potential use of milking robots it was established that 25% of the farms would be interested in such a robot to reduce their manpower.

*Conclusion*

The results presented above are in accordance with the results obtained in the Austrian study on performance increases, with the use of transponder systems. Their were some slight variations with regard to the results on the reduction of labour input, satisfaction with herd management systems, regularity of servicing, and the elimination of disturbances. The remaining results were very different, resulting from the differing conditions in the two countries.

## Summary

The study of the usage, the usefulness, and the extent of complexity of the herd management systems showed that these have become well established in dairy cattle husbandry on different sized farms. The performance increases experienced by 94.8% of the farmers, and the reductions in working time experienced by 63.2% of the farmers show that their implementation makes sense. The study showed that on-demand feeding which was earlier the basic system in herd management systems has largely lost its significance in the studied farm sizes. Since the farms studied have an average dairy cattle herd of 353 cows, the use of TMR feeding has economic advantages in these sized herds so that the needs of the individual animal are also met in an appropriate manner.

Today, farmers place great priority on the gathering of information on their herds from a variety of sources. The trend is toward complex herd management systems in which the farmers have a current overview on the status of the total herd, which alert them to problems in the herd and which help monitor the farm processes. Thus farms with larger herds can get by with less personnel.