

CRITICAL SUCCESS FACTORS AND INFORMATION NEEDS WITH RESPECT TO ANIMAL HEALTH ON DAIRY FARMS

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Un des problèmes majeurs pour le suivi et le contrôle de la santé animale, et de ce fait pour les concepteurs et utilisateurs de systèmes d'information à l'échelle de l'élevage, est de déterminer les facteurs critiques de succès pour les éleveurs et leurs besoins d'information. Ces éléments sont généralement liés à leurs objectifs et stratégies d'élevage quant aux décisions importantes en matière de santé animale. Une fois que les facteurs critiques de succès et les besoins d'information des éleveurs sont identifiés, il est nécessaire de se poser la question de savoir s'ils sont comparables d'une région à l'autre et constants au cours du temps.

Dans cet article, nous décrivons une série de 13 ateliers de travail réalisés avec des éleveurs de vaches laitières des Pays-Bas et du Michigan (USA), destinés à définir leurs objectifs, leurs facteurs critiques de succès et leurs besoins d'information. Les ateliers ont eu lieu en 1993 et répétés en 1995. Le nombre total de participants aux ateliers a été de 73 en 1993 et de 108 en 1995, 26 éleveurs ayant participé aux deux. Les résultats de cette étude montrent que les facteurs critiques de succès et les besoins d'information en relation avec le suivi et le contrôle de la santé animale ont varié largement au sein des régions et entre régions, mais étaient constants au cours du temps si les éleveurs étaient considérés en groupe. Cependant des différences significatives ont été observées entre les réponses de 1993 et de 1995 si les éleveurs étaient analysés individuellement. Ce faible niveau de consistance a des implications quant à la fourniture d'information dans l'élevage. Les facteurs critiques de succès les plus importants sont ceux qui sont liés aux aspects financiers.

Dans l'article, le déroulement des ateliers est présenté et discuté. Puis sont envisagés les résultats des ateliers, pour lesquels les observations de 1993 sont comparées à celles de 1995. Une attention particulière est portée aux différences entre éleveurs en termes de facteurs critiques de succès et de besoins d'information en relation avec le suivi et le contrôle de la santé animale.

INTRODUCTION

The process of introduction and adoption of animal health monitoring and farm-level information systems is proceeding slower than expected (Beers et al., 1996; Huirne et al., 1997). An important reason for this is the lack of knowledge on system criteria that have to be satisfied for successful application. The last decades, the process of system development was mainly determined by extension workers, researchers and policy makers. The farmer, as the proposed user of the system, was hardly involved in this process. Therefore, user-oriented research was initiated a few years ago to focus much more on the information needs and decision-making processes of individual farmers.

A workshop for dairy farmers was developed by Wageningen Agricultural University and Michigan State University focused on assessing their critical success factors (CSF) and information needs. The workshops were applied in four experiments. In 1993, the workshop was conducted successfully three times both in The Netherlands and the USA, with in total 73 dairy farmers participating. In order to be able to study the consistency in responses, the three workshops in The Netherlands were repeated two years later, in 1995, with 40 participants. Finally, four follow-up workshops were carried out in The Netherlands at the end of 1995 to study the relationship between critical success factors and information needs in more detail (68 participants).

In this paper, the outline of the workshops is presented and discussed. The paper then continues with the results of the workshops, in which the findings in 1993 are compared with those found in 1995.

WORKSHOP SEQUENCE, FORMAT AND MATERIALS

The workshops were designed to determine CSF and information needs of dairy farmers. The workshop program and supporting materials center around exercises that encourage active participation. In the workshop, there are from 12 to 20 participating farmers. Prior to each workshop, participants completed a worksheet that provides summary information about their farm operation and their information system. After the introduction, in which the objectives and the time schedule are explained, the workshop began with participants introducing themselves and sharing some of their responses to questions on a 'farm information worksheet'. The workshops in experiments 1-3 had two major sections. The first section focused on more general aspects of their management, which are the basis of the decision-making processes of the farmer. This section included five exercises that help the participating dairy farmers define their business goals and management habits. In the second section of the workshop, focus was on sire selection, being one of the critical success factors of dairy

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farming (Huirne et al., 1997). The follow-up workshops (experiment 4) were especially focused on critical success factor (CSF) analysis. CSFs are those few areas where performance must be strong if business objectives are to be met (Rockart, 1979). To be useful, CSFs should be specific and truly critical to the success of the business. CSF analysis was used to help participants identify key information needs. Information requirements can be synthesized from a set of CSFs by identifying the information that is needed to monitor and improve performance in these key areas. CSF were split into four major categories: finance, milk production, roughage production and marketing. Per category, participants identified up to five CSFs from an extensive list of farm-related CSFs, and identified specific information needs related to each of the CSFs they have selected.

At the end of the workshop, all the completed worksheets were collected. They were used for preparing follow-up reports that were mailed back to the participants within a few weeks after the workshop. The worksheets served as a source of data for this research.

The workshops were conducted in 1993 in the USA (experiment 1), and exactly the same materials (but translated) were used in The Netherlands (experiment 2). The Dutch 1993 workshops were repeated (experiment 3), with exactly the same materials, at the same locations, and at the same time of the year (February) in 1995. Using exactly the same worksheets in both years enables the analysis of consistency in responses of the (26: see Table 2) farmers who participated both times. Finally, in the follow-up workshops conducted in December 1995 (experiment 4), new materials and exercises were used which focused in detail on the relationships between CSFs, business goals and information needs of individual farmers.

SELECTION OF THE PARTICIPANTS

Participants for the 1993 workshops were selected as follows. From the data bank of the Michigan State University Extension Agency (experiment 1), the Dutch Dairy Herd Improvement Association (experiments 2 and 3) between 50 and 150 addresses of farmers, spread over three regions in Michigan respectively The Netherlands, were randomly selected. The only criterium was that the farmers had at least 25 black-and-white dairy cows. In total, 24 (experiment 1), 49 (experiment 2) farmers participated. For the repeated workshops in 1995 (experiment 3), farmers who participated in experiment 2 were approached and invited. 26 farmers were able to come to the workshop for the second time. Furthermore, 14 'new' farmers (also randomly selected) were willing to participate. So, the experiment 3 had 40 participants. For the follow-up workshops in experiment 4, a random selection was made from the data banks of two commercial Accountancy Companies in the Northern part of The Netherlands, using the same criterium as in the other experiments. In the four workshops of experiment 4, 68 dairy farmers participated.

DESCRIPTION OF THE PARTICIPANTS

As described before, 73 dairy farmers participated in 1993 (experiments 1 and 2) and 108 in 1995 (experiment 3 and 4), and 26 of them participated in both experiment 2 and 3 (further denoted as "26-farmer group"). The age of the farmers varied between 22 and 60 (1993) and between 21 and 60 (1995) years. The average age was 40.6 years (1993) and 42.6 years (1995). Some other descriptive statistics of the participants in the four experiments are presented in Table 2. In general the farmers in experiment 1 (USA) operated larger farms than the farmers in experiments 2-4 (The Netherlands). The average size of the farms in the follow-up workshops (experiment 4) were slightly larger than in experiments 2-3, and also a large share of farmers used computers on their farms.

The 26 farmers that participated in experiments 2-3 differed between 1993 and 1995 with respect to ha of cropland, milk production per cow, and percent with partnership. The results of the 26-farmer group are slightly higher than the whole group. However, farm characteristics of all participants are above the national averages. This means that the workshop participants had relative large, well automated farms with above-average results.

CRITICAL SUCCESS FACTORS AND INFORMATION NEEDS

The participants identified up to five CSFs from an extensive list of farm-related CSFs for each of the four major categories, and identified specific information needs related to each of the CSFs they have selected. The relative importance of these categories was as follows (by method of direct rating): finance: rating of 39, milk production: rating of 24, roughage production: rating of 26, and marketing: rating of 11. So, financial related CSFs were by far most important.

Furthermore, the farmers had to score themselves with respect to their current performance on each CSF on a likert scale ranging from 1 (very poor performance) to 10 (perfect performance). Information needs were summarized as the proportion (%) of farmers which indicated to have enough information on a specific CSF. Table 1 gives an overview.

As can be seen in Table 1, the most important financial CSFs are net farm result (54%), margin per 100 kg of milk (54%), and fixed and variable costs (53%). The current performance of the farmers is relatively lowest (i.e., 6.3) on the fixed and variable costs CSF, indicating that farmers think that improvement is possible and necessary. With respect to this CSF the information supply could be improved a lot: only 66% of the farmers said that they have enough information.

Table 1: Overall top 5 of critical success factors in each category (% farmers mentioning a certain factor in his top 5), the farmer's current performance¹ per factor and information supply²

Critical success factor	Percent	Performance	Info supply
Financial factors			
Net farm result	54%	7.1	95%
Margin per 100 kg of milk	54%	7.3	100%
Fixed and variable costs	53%	6.3	66%
Equity	34%	6.7	82%
Net profit	25%	7.4	100%
Milk production			
Control of feed costs	63%	7.2	78%
Milk production per cow	46%	7.3	100%
Balancing feeding rations	44%	7.1	73%
Care for youngstock	43%	6.9	70%
Milk quality	38%	8.0	92%
Feed and roughage production			
Pasture quality	79%	7.2	86%
Quality own produced roughage	78%	7.4	98%
Timely mowing/harvesting	65%	7.5	68%
Planning cows using pasture	41%	7.2	73%
Fertilizer per ha	28%	7.6	83%
Marketing			
Cost price of milk	88%	7.2	86%
Growth of the farm size	57%	7.2	62%
Anticipate on changing markets in future	53%	6.2	44%
Costs of labor and machinery	47%	6.7	60%
Price purchased milk quotas	32%	6.9	85%

¹ Farmers scored their current performance on a scale of 1 (very weak) to 10 (very good)

² Measured as % of farmers who indicated to have enough information on the CSF

With respect to the milk production related CSFs, control of the feed costs is by far most important (63%). Although the current performance of this CSF is not bad, it could be improved, possibly by a better information supply (78% is not very high). In general farmers think that milk quality is very good (performance of 8.0). Moreover, farmers feel that they have enough information on the milk production per cow (100%).

There are two important CSFs in the field of feed and roughage production (Table 1): pasture quality (79%) and roughage quality (78%). The current performance and information supply of these CSFs are acceptable. 32% of the farmers would welcome more information on the timely mowing and harvesting CSF.

With respect to marketing related CSFs, the cost price of milk is by far the most important (88%). Improvements, however, in marketing related CSFs should be focused on the ability of farmers to anticipate on changing market conditions. A fairly large proportion of farmers (53%) indicated that their current performance is relatively low (6.2), while only 44% of them has enough information.

FINAL REMARKS

In general farmers do have a lot of information available on their most important CSFs and business goals. This is especially true for financial related CSF, but also for milk and roughage production related CSFs. Many farmers, however, indicated that they would like to have more (and more timely) information on monitoring and controlling of the cost of feed and labor, and the cost price of milk. Improvements are possible in these areas.

In order to meet the needs of individual farmers, the information supply of farmers should get a more individual character. The one-size-fits-all approach seems to be less and less appropriate. Information suppliers need to focus on CSFs, goals and information needs of individual farmers. As these issues vary widely among the farmers and over time, a more modular or thematic structure of farm reports and extension advice is desired. Furthermore, more timely information supply on important CSFs (e.g., through monthly or quarterly reports) is needed as well.

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