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Associations between farmer participation in veterinary herd health management programs and farm performance

M. Derks,*[1] T. van Werven,* H. Hogeveen,*† and W. D. J. Kremer*
*Department of Farm Animal Health, Faculty of Veterinary Medicine, Utrecht University, Yalelaan 7, 3584 CL Utrecht, the Netherlands
†Business Economics Group, Wageningen University, Hollandseweg 1, 6706 KN Wageningen, the Netherlands

ABSTRACT

In the past few decades, farms have increased in size and the focus of management has changed from curative to preventive. To help farmers cope with these changes, veterinarians offer veterinary herd health management (VHHM) programs, whose major objective is to support the farmer in reaching his farm performance goals. The association between farm performance and participation in VHHM, however, remains unknown. The aim of this paper was to compare farm performance parameters between participants and nonparticipants in VHHM and to differentiate within participation to evaluate the possible added value of VHHM on the farm. Five thousand farmers received a questionnaire about the level of VHHM on their farm. Farm performance parameters of these 5,000 farms were provided. For all respondents (n = 1,013), farm performance was compared between participants and nonparticipants and within level of participation, using linear mixed and linear regression models. Farmers who participated in VHHM produced 336 kg of milk/cow per year more and their average milk somatic cell count (SCC) was 8,340 cells/mL lower than farmers who did not participate in VHHM. Participating herds, however, had an older age at first calving (+12 d), a lower 56-d nonreturn rate percentage (−3.34%), and a higher number of inseminations per cow (+0.09 inseminations). They also had more cows culled per year (+1.05%), and a lower age at culling (−70 d). Participants in the most-extended form of VHHM (level 3) had a lower SCC (−19,800 cells/mL), fewer cows with high SCC (−1.70%), fewer cows with new high SCC (−0.47%), a shorter calving interval (−6.01 d), and fewer inseminations per heifer (−0.07 inseminations) than participants in the least-extended form of VHHM (level 1). Level 3 participants, however, also had more cows culled per year (+1.74%) and a lower age at culling (−103 d). Discussing specific topics with the veterinarian (milk production, fertility, and udder health) had only marginal effects on improving the farm performance parameters related to those topics. Given the relevance of fertility on the farm and the focus on longevity by society, it is important to determine underlying reasons for the negative associations of these topics with participation in VHHM. A longitudinal study could provide answers to this. For now, veterinarians should be aware of the associations. The increased milk production and milk quality could help the marketing of VHHM to farmers.
Key words: veterinary herd health management, dairy farmer, veterinarian, farm performance

INTRODUCTION

With regard to the herd size and management of dairy farms over the past few decades, some trends are apparent. Dairy farms have been coping with increased costs and have, therefore, needed to improve productivity. Apart from having more cows, cows have also been selected for higher levels of milk production (Noordhuizen and Wentink, 2001). This intensification led to more cows per farmer (and thus less individual attention) and more production-related problems (e.g., subfertility and subclinical disease; Shanks et al., 1978). The focus of dairy management has changed from curative to preventive (Cannas da Silva et al., 2006; LeBlanc et al., 2006). Individual sick cows have become an indicator for the herd, instead of a problem standing on its own. But even though modern dairy farmers are more aware of the costs of diseases on the farm and are willing to prevent disease, they do experience difficulties with the (early) detection of those disorders (Cannas da Silva et al., 2006). Monitoring and managing herd health has, therefore, become an important and challenging issue on the dairy farms.

Given their knowledge on epidemiology, farm management, and pathology in cows, veterinarians have always been an important sparring partner for dairy farmers regarding herd health. This started in the 1960s with mastitis control (Bramley and Dodd, 1984), followed by herd fertility schemes (Bramley and Dodd, 1984; Esslemont et al., 1985; Esslemont et al., 2001),

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[1]Corresponding author: m.derks@uu.nl

disease prevention (De Kruif and Opsomer, 2004) and, finally, quality control programs ((Esslemont et al., 1985; Noordhuizen and Wentink, 2001; De Kruif and Opsomer, 2004) Nowadays, most veterinary practices offer veterinary herd health management (**VHHM**) to the farmer, during which they monitor herd health status and provide (preventive) advice (Derks et al., 2013). In the literature, VHHM is described as regularly scheduled farm visits, where data are recorded and analyzed and advice is provided. Veterinary herd health management follows a fixed structure of goal setting, advice, action, and evaluation (Brand et al., 1996). The major objective of VHHM should be to support the farmer in reaching his targets of farm performance (Noordhuizen, 2001; Noordhuizen and Wentink, 2001; De Kruif and Opsomer, 2004).

In practice, however, the execution of VHHM is more diverse. The goals of the farmer are not always clear to the veterinarian (Kristensen and Enevoldsen, 2008; Hall and Wapenaar, 2012). Also, not all farmers attend the full VHHM program; levels of participation can be determined. Some farmers only have their cows checked for pregnancy, whereas others discuss more topics with their veterinarian (Derks et al., 2013). Also, even though the literature states that VHHM is becoming more and more important (Noordhuizen, 2001; Noordhuizen and Wentink, 2001; De Kruif and Opsomer, 2004), few numbers are actually available in practice. Lievaart and Noordhuizen (1999) found a participation rate in the Netherlands of 37.2%. Hall and Wapenaar (2012) found that in the United Kingdom, large differences existed between practices: 40% of the practices had less than 25% of their farmers enrolled in a VHHM program, whereas 30% of the practices had more than 50% of their farmers enrolled.

The difference in participation can perhaps be explained by the fact that the effects of participation in VHHM on farm performance and economics remain largely unclear. In the 1970s, a large Dutch field study showed that VHHM provided considerable financial benefits for the farmer (176 Dutch guilders per cow improvement in income feed cost margin), and that performance on fertility improved and the percentage of culled cows decreased significantly (Sol and Renkema, 1984). A follow-up study, however, published in the 1990s, found that after the program was finished, the differences between participants and nonparticipants became nonexistent again after a few years (Hogeveen et al., 1992). Results of the benefits of VHHM at present remain scarce. Hässig et al. (2010) found that, on farms in Switzerland, only marginal differences existed in farm performance between farms participating in VHHM and farms not participating in VHHM. Given the fact that VHHM is becoming more and more important for farmers and veterinarians, it is worthwhile knowing its (economic) benefits on the farm. Therefore, a need exists for more accurate numbers on the relationship between VHHM and farm performance, and on the relationship between the level of VHHM and farm performance. The aim of this paper was to compare farm performance parameters between participants and nonparticipants in VHHM and to differentiate within level of participation to evaluate the possible added value of VHHM on the farm.

MATERIALS AND METHODS

Study Design

In September 2011, 5,000 randomly selected dairy farmers with at least 40 milking cows, participating in monthly milk production registration (**MPR**) received a questionnaire per e-mail. The questionnaire was concerned with the participation in and execution of VHHM on the farm. Farm performance data from all 5,000 farmers was provided to the researchers by CRV BV (Arnhem, the Netherlands), a cooperative firm that, among other tasks, performs MPR for farmers. The results of the questionnaire were summarized, and farm performance was compared in 4 steps.

Data Collection

Questionnaire. The questionnaire (in supplementary materials, available online at http://dx.doi.org/10.3168/jds.2013-6781) was designed using the Tailored Design Method (Dillman, 2000) to improve understandability and response rate. Farmers were asked to indicate whether they participated in VHHM, and if they did, with what frequency. Next, they were asked which of 9 topics (fertility checks, advice on fertility, milk production, udder health, nutrition, young stock rearing, housing, claw health, and analysis of production numbers) were addressed during VHHM. Also, for each topic, farmers were asked to indicate with what frequency the topic was addressed (always, regularly, when problems arise, or never). Topics were chosen based on former research (Derks et al., 2011, 2012a,b). The questionnaire was introduced to farmers by an introduction letter through the mail; the questionnaire itself was sent 1 d later by e-mail.

Farm Data. All farmers selected for this study were participating in the MPR by CRV BV. The MPR is recorded every 4 to 6 wk. Participants receive information based on milk yield, SCC, and fertility parameters of individual cows and on a herd level. For this study, data on farm size (number of cows), fertility [calving interval (**ClvI**), age at first calving (**AFC**), heifer