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Animal Reproduction Science 104 (2008) 189–200

ANIMAL REPRODUCTION SCIENCE

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Evaluation of a contract breeding management program in Ohio dairy herds: Test day summary and economic measures

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Received 14 July 2006; accepted 27 February 2007
Available online 3 March 2007

Abstract

A field study was conducted to assess the impact of a contract breeding program that was offered by a breeding co-operative and featured tail chalking and daily evaluation of cows for insemination by co-operative technicians; dairy employees no longer handled estrous detection and insemination activities. From early 2002 until mid-2004, herd-level test day summary records related to production and reproduction were obtained for 32 herds identified as well-managed client herds of the breeding co-operative. Using analyses that controlled for other predictors and random herd-level effects, average days to first service were less by 13 days ($P = 0.0037$) and estrous detection rate was greater by 12% ($P = 0.0011$) for program than for non-program herds. Although first service conception rate was slightly less and the program herds used 0.34 more services per conception ($P = 0.1488$) than non-program herds, the program herds averaged 16 fewer days before pregnancy ($P = 0.028$). Test day summary information and representative estimates of feed, milk, and semen prices were used in a spreadsheet-based model to estimate a partial budget annuity value for an average cow in each herd on each test day. Value of an average cow from a contract herd did not significantly differ from a non-contract herd, even though the analyses suggested an economic benefit for the program herds; the modeling did not, however, account for costs of the program implementation. Additional analyses did not find any significant associations between technician and on days to first service, first service conception rate, estrous detection rate, services per conception, or days open.

Keywords: Dairy reproductive management; Tailhead chalking; Reproductive efficiency

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doi:10.1016/j.anireprosci.2007.02.022

1. Introduction

Reproductive inefficiency is a major factor limiting the success of modern dairy herds (Lucy, 2001). Reduced pregnancy rates lead to longer calving intervals, which in turn lead to less herd milk production, removal of animals from the herd, limitations in strategic culling opportunities, potential reliance on purchased replacements, and increased veterinary costs (Britt, 1985; Esselmont, 1993; Rajala-Schultz et al., 2000).

A major reason for reproductive failure in dairy herds is the inefficient detection of estrus (Heuwieser et al., 1997). Nationally, it is estimated that estrous detection rate (EDR) is below 50% and that failure to detect estrus costs the dairy industry more than $300 million per year (Senger, 1994). The continuing trend for dairies to become larger has created a challenge for managers—the time demands of other numerous daily tasks including milking, feeding, cleaning, and care for sick cows compete with the time required for adequate observation periods for estrous detection (Lucy, 2001; Lucy et al., 2004). This time constraint is compounded by the fact that modern cows seem to be expressing estrus for shorter periods of time with decreased intensity (Dransfield et al., 1998; Walker et al., 1996). A number of aids have been developed over time to assist dairy producers in identifying cows for insemination, including back pressure-sensitive detectors that are activated when females are mounted (Gwazdauskas et al., 1990), tail paint and chalk marking (Kerr and McCaughey, 1984), pedometers (Peter and Bosu, 1986), and hormonal synchronization of ovulation (Pursley et al., 1997).

Recently in Ohio, at least one dairy breeding co-operative has begun offering a new contract breeding management program to its customers. This program, which is termed a full service technician program (FSTP), uses tailhead paint as an estrous detection aid. In addition, an artificial insemination (AI) technician visits the farm on a daily basis and assesses paint marks. Based on the status of the mark and other signs such as presence/absence of clear mucus discharge and the tone of the reproductive tract, a decision is made either to inseminate the cow or to keep her in the breeding pool. The FSTP liberates the producer from estrous detection and insemination, because daily tasks are performed by an outside contractor. At this time, there is limited information concerning the effectiveness of programs such as the FSTP.

The primary purpose of the present study was to evaluate the relationship between the FSTP and reproductive outcomes reported in Dairy Herd Improvement (DHI) Association records in a selected group of dairy herds from Ohio. Specifically, the association between FSTP and days to first service (DFS), first service conception rate (FSCR), estrous detection rate (EDR), services per conception for all (pregnant and non-pregnant) cows (SP_{cow}), and days before pregnancy (DBP) were assessed at the herd-level. A second objective was to estimate the economic effect of the FSTP in the study herds by using a spreadsheet-based model that calculates partial budget annuity values of average cows in herds described by DHIA test day summary records (Meadows et al., 2005). A third objective was to test if there was a relationship between AI technician and reproductive outcomes in the FSTP herds.

2. Materials and methods

2.1. Study herds

Data in the present study came from dairies that are clients of the breeding co-operative, which services approximately 1700 dairy clients in Ohio. At the time of the study, the breeding co-operative provided the FSTP to approximately 90 client herds. “Well-managed” herds ($n = 42$), as