ELSEVIER

Livestock Science 103 (2006) 158–168

LIVESTOCK SCIENCE

www.elsevier.com/locate/livsci

Farmers' attitudes towards techniques for improving oestrus detection in dairy herds in South West England

Chris Garforth *, Kevin McKemey, Tahir Rehman, Richard Tranter, Richard Cooke, Julian Park, Peter Dorward, Chris Yates

School of Agriculture, Policy and Development, The University of Reading, Agriculture Building, PO Box 237, Reading, RG6 6AR, UK

Received 7 October 2005; received in revised form 1 February 2006; accepted 14 February 2006

Abstract

Unidentified heats contribute to declining fertility rates in English dairy herds. Several techniques have been advocated to improve heat detection rates. Despite demonstrable technical efficacy and cost-effectiveness, uptake is low. A study in South West England used the Theory of Reasoned Action (TORA) to explore dairy farmers' attitudes and beliefs towards heat detection techniques. Few farmers were convinced that following prescribed observation times, milk progesterone testing and using pedometers would fit their system or improve on their current heat detection practices. Perceived difficulty of using a technique was not a constraint on adoption. Without promotion that addresses identified barriers and drivers to adoption, little change in current practice can be expected.

Keywords: Dairy herds; Oestrus; Farmer attitudes; Adoption; Theory of Reasoned Action; England

1. Introduction

Dairy farmers in England are under financial pressure. Not only have milk prices fallen (down by 25% since 1994), but they are having to face the cost of compliance with new environmental and health regulations such as designation of Nitrate Vulnerable Zones over 50% of England (Defra et al., 2005). Increasing technical and economic efficiency is crucial for farms to remain viable. Recorded differences in the financial performance of English livestock farms suggest a "potential payback to improved knowledge transfer, not only to bring the bottom third up to average performance, but also to ensure that the top third performers continue to exploit scientific and technological advances" (ADAS et al., 2002). It has been accepted for many years, in countries as diverse as the Netherlands, the UK and the USA, that poor reproductive performance leads to financial losses on dairy farms (Herschler et al., 1964; Rounsaville et al., 1979; Bailie, 1982; Dijkhuizen et al., 1985; Campos et al., 1995; Plaizier et al., 1997; Meadows et al., 2005).

* Corresponding author. Tel.: +44 118 378 8134; fax: +44 118 926 1244.

E-mail address: c.j.garforth@reading.ac.uk (C. Garforth).

1871-1413/$ - see front matter © 2006 Elsevier B.V. All rights reserved.
doi:10.1016/j.livsci.2006.02.006

Heat detection in dairy herds is one potential area for improvement. Esslemont and Kossaibati (1997a,b) concluded that poor heat detection was the main reason for the estimated £200 million per year lost by the UK dairy industry from missed heats, which, in turn, contribute to low and declining levels of fertility in dairy herds. Low fertility accounts for 36.5% of involuntary culling (Esslemont and Kossaibati, 1997a,b) and 24.3% of all disposals of adult dairy cows (Whitaker et al., 2004). Laven (2004) suggests that oestrus is more difficult to detect than 25 years ago because heats have become both shorter and weaker. Similar conclusions emerge from recent Irish research (Mee, 2004; White and Sheldon, 2001).

While visual observation has been the dominant method to detect cows in oestrus, worldwide research (Lehrer et al., 1992; Senger, 1994; van Eerdenburg et al., 1996; Heres et al., 2000; Nebel et al., 2000) has enabled the development of several aids and techniques to improve oestrus detection. These include, for example: milk and body temperature measuring (Fordham et al., 1988), tail painting (Kerr and McCaughey, 1984), observing cows' behaviour at specific times of the day (Heres et al., 2000), milk progesterone testing (MPT) kits (Noakes, 1997), synchronization of oestrus using $PGF_2\alpha$ or its synthetic analogues (Xu et al., 1998), computer-based pedometer systems (Maatje et al., 1997) and pressure sensing radio telemetry (Nebel et al., 2000).

Turning to the UK situation, three of these techniques–observation times, MPT kits and pedometers–have been advocated to dairy farmers in recent years. Several authors have set out guidelines for time spent observing cows. For example, Esslemont and Kossaibati (1997b) suggested three 30-min observations a day at 6 a.m. to 8 a.m., 12 noon to 2 p.m. and 9 p.m. to 11 p.m. The levy-funded Milk Development Council (MDC) reported 'on-farm milk progesterone testing kits' could achieve 98% accuracy but had been adopted by less than 1% of dairy farmers (MDC, 1996). They also reported that the more expensive pedometer-based systems which could achieve 80% accuracy had also been adopted by less than 1% of English and Welsh dairy farmers. These efficiency and uptake rates are prima facie evidence that available techniques and technologies could give better results than the current average national rates for heat detection and beg the question: why are more dairy farmers not using them?

This paper presents findings from a study of English farmers' attitudes and behaviour towards oestrus detection. The aim was to find reasons for low uptake of these detection techniques and improve the design of future knowledge transfer activities in this field.

2. Methods

The theoretical framework for the study was based on the social-psychology Theory of Reasoned Action (TORA) (Ajzen and Fishbein, 1980). A person's *intention* to behave in a particular way–here, to adopt a technique to aid heat detection–is determined by their *attitude* towards the behaviour and the influence of other people's views (the individual's *subjective norm*). Attitude is the product of *outcome beliefs* (how strongly one believes the behaviour will lead to a set of outcomes) and *outcome evaluations* (how important each of these outcomes is to the individual). Subjective norm is the product of *subjective beliefs* (how strongly one feels that a set of other people and organisations (*salient referents*) would approve or disapprove of one behaving in this way) and *motivation to comply* with the views of each of those referents (Fig. 1). Specific *referent subjective norms* and *outcome attitudes* which correlate strongly with intention can be considered influential, acting as *cognitive drivers or barriers* which encourage or discourage adoption of the particular behaviour. TORA has been used extensively in the health sector and recently in natural resource management and agriculture to explore the reasons why people behave in the ways they do (e.g. Bennett et al., 1999; McKemey and Sakyi-Dawson, 2000; Heong and Escalada, 1999).

The research methods and materials are described fully by Garforth et al. (2004). Data were collected from dairy farmers in SW England (the counties of Cornwall, Devon and Dorset) in two stages. First, focus group discussions and telephone interviews identified nine commonly held outcome beliefs in respect of heat detection techniques (Box 1) and eight salient referents whose views influence farmers' decisions (Box 2). The basic components of the TORA model–the strength of, respectively, intention, outcome beliefs, outcome evaluations, subjective