CASE STUDY: CONTROLLING CLINICAL MASTITIS IN A DAIRY HERD USING A MULTIVALENT VACCINE

Timothy W. May

Lambert Leonard and May Old Woodhouses, Shropshire, U.K.

Lambert Leonard & May

First in the field

INTRODUCTION

Mastitis continues to be a significant welfare and financial challenge to the worldwide dairy industry and has been estimated to cost the U.K. dairy industry in excess of £200 million annually (Bradley, 2002). Despite the existence of well established preventative measures for the control of the major mastitis pathogens, the incidence of clinical mastitis in the U.K. appears to have increased over the period 2009 to 2012 (Biggs, 2012).

MATERIAL AND METHODS

In September 2010, a 300-cow 8,500 litre 305-day average commercial Holstein-Friesian dairy herd in Shropshire, U.K. undertook an investigation in an attempt to address a consistently high level of lactation-acquired mastitis of environmental origin. Several changes were made as a result: brisket boards were fitted into the lime ash-bedded mattress cubicle stalls to improve cow positioning and reduce faecal soiling of beds; passageway scrapers were run more frequently and crossovers between passageways were hand scraped clean at every milking; cow brushes were installed in the cubicle sheds; a more consistent pre-milking teat preparation routine was established using a mechanical teat-cleaning brush with 0.5% peracetic acid and thorough paper towel drying of teats; the 40-point GEA internal rotary parlour was tested with a move to narrower-bore rubber liners and improvements in regulator function; foot mats were installed for parlour operators to ensure a consistent 60-second lag time prior to cluster application.

Subsequent to these alterations, the incidence of clinical mastitis remained unacceptably high at between 80 and 90 cases per 100 cows per year and the decision was taken to vaccinate the herd against *E.coli*, *Staphylococcus aureus*, coliforms and *coagulase-negative Staphylococci* (CNS) using a commercially available product (Startvac®: Hipra UK Ltd.) The vaccination regime used consisted of an initial course of two doses of vaccine given one month apart followed by a booster dose every three months thereafter.

RESULTS

Following vaccination, the 12-month rolling clinical mastitis incidence dropped from 91 cases per 100 cows per year (July 2011) to 42 cases per 100 cows per year (September 2012) (Fig 1). The 12-month rolling percentage of the herd with a somatic cell count above 200,000 cells per ml of milk dropped from 26% to 23% over the same time period (Fig 2).

DISCUSSION

Environmental pathogens now account for the majority of clinical mastitis on dairy farms (Laven, 2011). The prevention of environmental infections at farm level is often more complicated than reducing the transmission of contagious pathogens and requires farm-specific knowledge together with sustained compliance, belief and motivation amongst farm staff. Enhancement of the cow's immune response to challenge from mastitis pathogens through the use of vaccination may help in the control of certain intramammary infections and should be considered alongside more conventional control measures aimed at reducing the pathogen load at the teat end.

The economics of vaccine use dictate that at a relatively conservative average cost of £200 per clinical case (Esslemont & Kossaibati, 2002), at U.K. prices the overall incidence of mastitis must be reduced by 10 cases per 100 cows per year in order to cover the costs of vaccination. In the 300-cow herd described, the incidence reduced by 49 cases per 100 cows per year.

Figure 1. Incidence of clinical mastitis (12 month rolling mean) from March 2011 to September 2012. S1, Vaccine 1st dose; S2, Vaccine 2nd dose; SB, Vaccine booster dose.

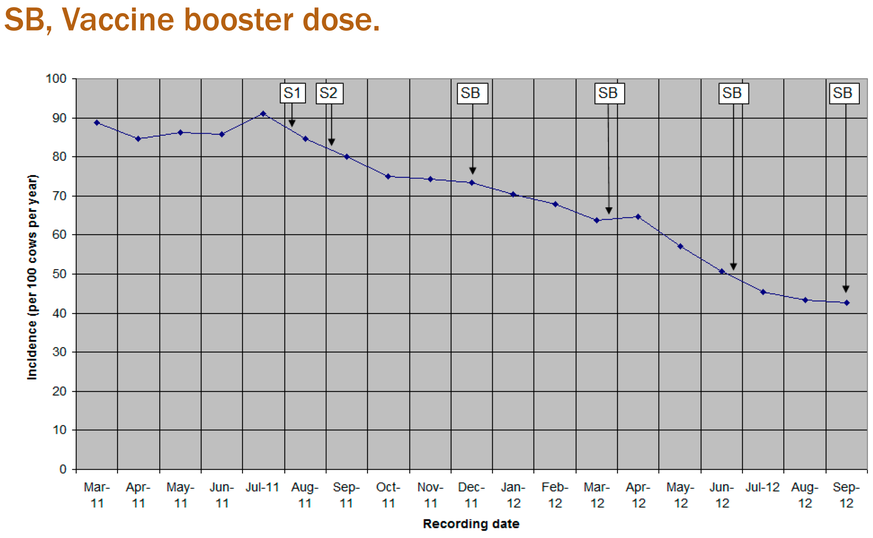
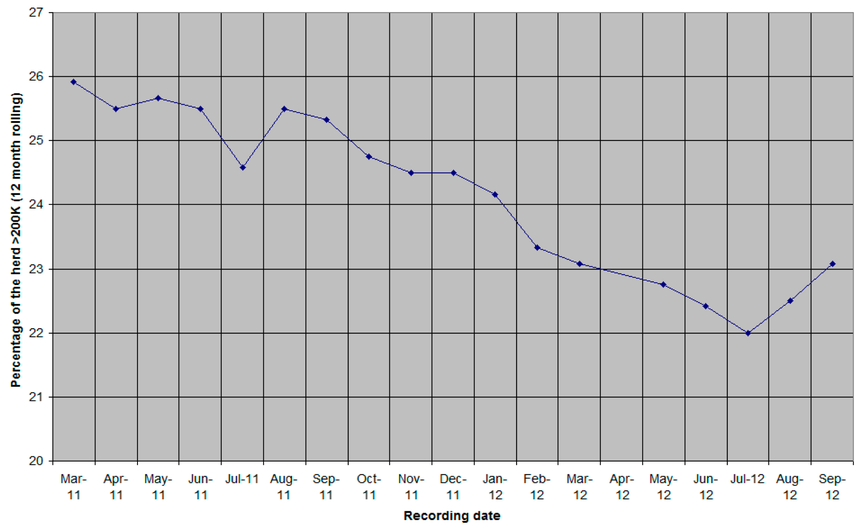


Figure 2. Percentage of the herd with somatic cell count greater than 200,000 cells per ml (12 month rolling mean) from March 2011 to September 2012.



REFERENCES

- Biggs, A. 2012. The National Mastitis Survey 2012. Proc of the British Mastitis Conference 2012 pp39-57.
- Bradley, A.J. 2002. Bovine mastitis: An evolving disease. Vet. J. 164(2):116-128.
- Esslemont, R.J. and M.A. Kossaibati. 2002. The Costs of Poor Fertility and Disease in UK Dairy Herds. Daisy Research Report No.5.
- Laven, R. 2011. Disease Facts – *Streptococcus uberis* mastitis. UK Vet Livestock.16:39.