The Dairy Group

PROCESS CONTROL IN PLATFORM MOUNTED TEAT DISINFECTION SYSTEMS

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INTRODUCTION

Post milking teat disinfection has been an important component of a mastitis control programme for over 50 years. Adoption of the technique, based on recommendations contained within the NIRD Five Point Mastitis Control Plan, played a significant part in the reduction of mastitis infections caused by the contagious mastitis pathogens.

The increased prevalence of environmental mastitis infections has seen the widespread adoption of pre-milking teat disinfection.

Post milking application of a teat disinfectant fulfils two roles. Firstly, to apply disinfectant to the teat end and barrel in order to disinfect all teat surfaces and destroy any bacteria present, soon after the cluster is removed from the cow. Secondly, to apply skin conditioning products to ensure the teat remains soft and supple and is able to cope with the rigours of machine milking. Poor teat coverage, with a post milking disinfectant, can lead to a reduction in teat skin condition, an increase in bacterial colonisation of the dry surfaces and adversely affect the ability to clean the teat.

For these objectives to be achieved, a teat disinfectant product must be applied in a timely fashion together with good coverage of the teat end and teat barrel. A study carried out in 2013 on 10 commercial dairy farms set out to assess the effectiveness of manual post milking teat disinfection using a hand operated vacuum spray lance against the objectives of barrel and teat end coverage. On average, 3.77 teat ends out of a possible 4.00 received teat disinfectant (94.0%). On average, 50.3% of the teat barrel surface received teat disinfectant. There was considerable farm to farm variation (19.8 - 83.4% coverage) highlighting the variability of operators (1).

EVALUATION METHOD

In an attempt to reduce variation and apply some process control to the activity, an evaluation was carried out using a rotary platform mounted teat disinfection system (Ambic Equipment Ltd Locate'n'Spray™).

Teat barrel and teat end coverage were assessed post application of the teat disinfectant product on two occasions, adapting the method described in 2013 (1). Teat ends were either covered with disinfectant (Hit) or not covered (Miss), as per 2013. The front and rear plane of each teat was then scored as either a Hit, when 50% or more of that surface was covered with disinfectant, or a Miss when less than 50% was covered. The percentage of Hits and Misses for all teats was then calculated.

Following the first assessment in December 2015 some minor changes were made to the operatic system by the manufacturer. As can be seen in the table of results, these lead to a small improvement in teat coverage.

RESULTS

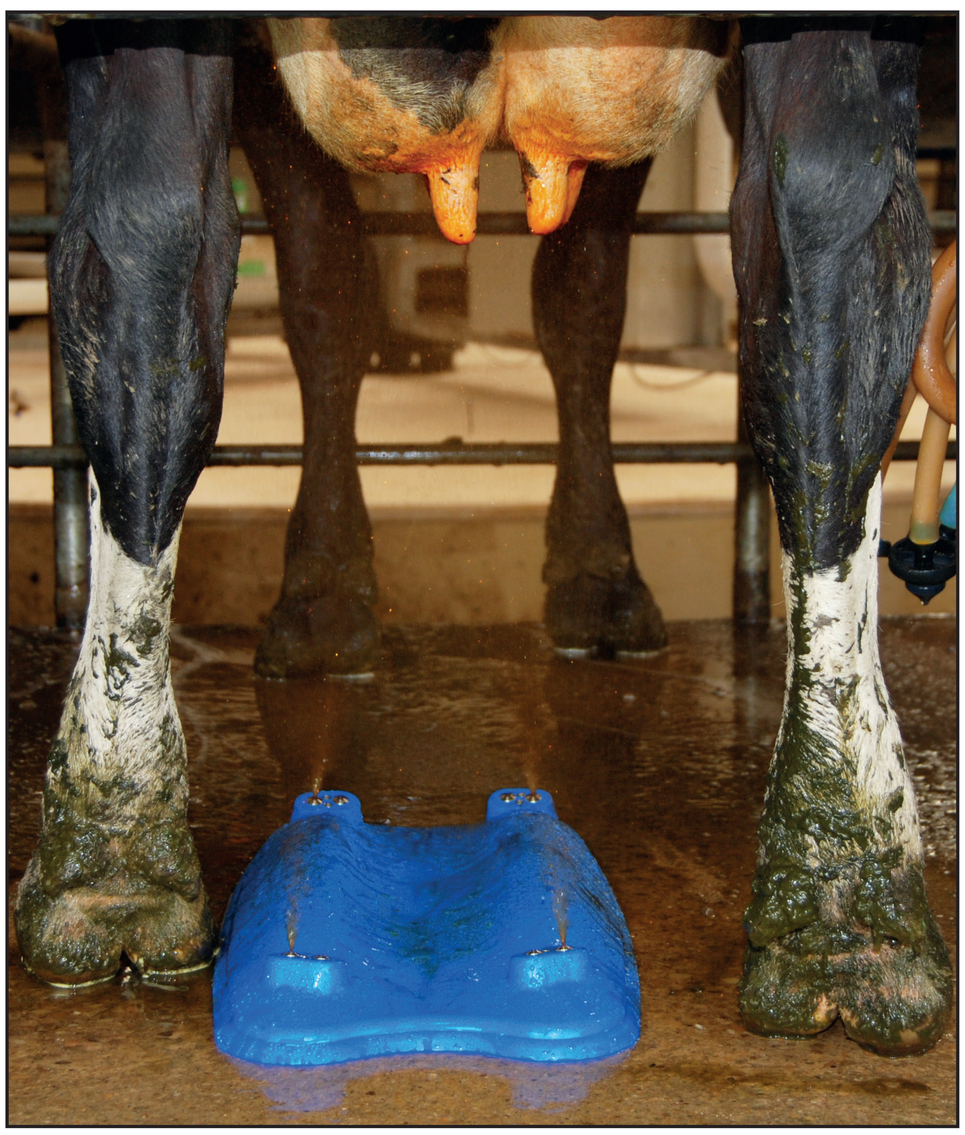
Table 1. Teat end coverage

	9th December 2015	26th January 2016
Teat	**Teat end coverage (%)**	**Teat end coverage (%)**
Back Left	98	98
Front Left	91	95
Front Right	93	95
Back Right	94	96
Udder average	**94**	**96**

Table 2. Teat barrel coverage

	9th December 2015		26th January 2016	
Teat and aspect	**Barrel coverage (%)**	**Teat Average (%)**	**Barrel coverage (%)**	**Teat Average (%)**
BL (rear)	93	88	95	92
BL (front)	82		89	
FL (rear)	92	83	94	88
FL (front)	74		82	
FR (rear)	89	86	93	90
FR(front)	83		86	
BR(rear)	93	92	93	94
BR(front)	90		94	
Udder average		**87**		**91**

Teat end coverage was measured at 96% and teat barrel coverage measured at 91%. These results for teat barrel coverage are significantly improved compared with manual teat spraying (91% v 50.3%).



CONCLUSION

This confirms that an automated system for applying teat disinfection, in a timely fashion after the cluster is removed, is capable of applying teat disinfectant more accurately and more consistently than a human operator using a vacuum operated teat spray lance.

In addition, the use of an automated teat disinfection system releases time during the milking process to better target labour to benefit udder health and milking management.

REFERENCE

1 Pocknee, B.R., Thornber N., Kingston C., Hiley R., Barker M., Cinderey M. and Carlsson A. (2013). Effectiveness of teat coverage with post milking teat disinfectant using a vacuum operated teat spray system. Proceedings of the British Mastitis Conference, Worcester, 2013, pp 45-46.