Use of Lactocorder® to Measure Milking Performance.

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Poster Presented at the 2004 meeting of the National Mastitis Council

Introduction

The optimum prep lag time has been the focus of research (Rasmussen et al., 1992). The prep lag time is defined as the time from the beginning of teat preparation to attachment of the milking unit (Reneau and Chastain, 1995). The Lactocorder® is an instrument that measures the milk flow rate, yield and duration of milking. It is inserted between the milking unit and milk pipeline by milk hose. It has been suggested that the Lactocorder can be used as a diagnostic tool for evaluating milking procedure problems (Wallace et al., 2003). The objective of this study was to determine if the Lactocorder® could detect differences in milk flow curves based upon the use of 3 different premilking cow preparation procedures.

Materials and Methods

Multiparous cows (n = 12) were randomly assigned to three premilking treatment groups using a switchback design. Premilking treatments were: No Preparation (NP) - immediate attachment when the cow entered the milking stall; Standard Preparation (SP) – forestrip 3 streams of milk per quarter, predip, wait 30 seconds, dry teats followed by attachment of the milking unit; and Delayed Preparation (DP) – the same procedure as (SP) with a four minute delay between drying of the teats and unit attachment. Immediately after attaching the last teat cup, the start button on the Lactocorder® was activated. Cows were milked twice daily and each cow received each treatment for ten milkings. Data obtained from the first milking after switching treatments was discarded. All treatments were applied by a single individual.

Results

The average time from stimulation to attachment was 0, 82 and 316 seconds for NP, SP and DP respectively. Analysis of variance was preformed on the data set. There was no significant difference in milk yield based on premilking treatments (Table 1). Characteristics of milking performance did not differ between SP and DP but maximum milk flow, average milk flow, milking time and the percent of bimodal inclines was significantly different for NP(Table 1).

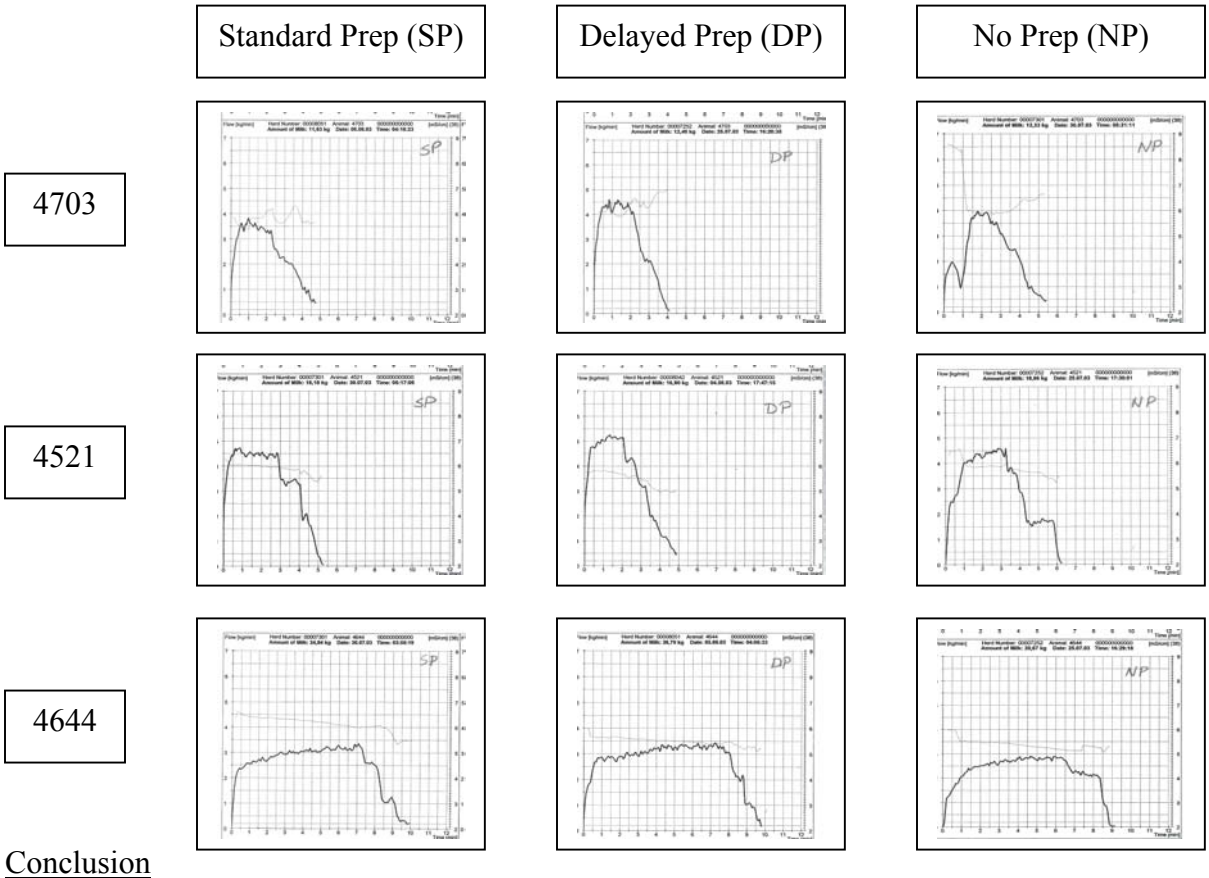
Table 1. Selected Measures of Milking Performance

	SP n=107	DP n=95	NP n=101	P-Value
Milk Yield kg (lbs)	18.2 (40.0)	19.0 (41.8)	18.9 (41.6)	0.476
Maximum Flow kg/min (lbs/min)	4.05 (8.91)[a]	4.29 (9.44)[a]	3.80 (8.36)[b]	0.010
Average Flow kg/min (lbs/min)	2.92 (6.42)[a]	3.09 (6.80)[a]	2.64 (5.81)[b]	0.001
Milking Time (mins)	6.38[a]	6.40[a]	7.31[b]	0.001
% Bimodality	2.8[a]	4.2[a]	35.6[b]	0.001

[a,b] Means with in rows with different superscripts differ ($P<0.05$).

Milk flow curves for individual cows were generally quite consistent regardless of treatment (Figure 1). Considerable variability in milking performance was noted among cows (Figure 1).

Figure 1. Milk flow graphs of three example cows for the last milking of each treatment.



Conclusion

The Lactocorder® was able to determine differences in milking performance of cows that received no preparation but no differences were apparent between cows that received standard or delayed preparation. This experiment was conducted on multiparous cows in a single high producing herd and further research is needed to determine if other classes of cows behave similarly. The large variability in milking performance among cows indicate the need to record a sufficient number of animals to be confident that the observed differences represent effects of cow preparation rather than animal variation.

References

1. Reneau, J.K., and J.P. Chastain. 1995. Premilking Cow Prep: Adapting to Your System. Proc. Regional Meeting of the Natl. Mastitis Council. pp 46.
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