

Competence centre for dairy products in Burgundy October 2009

The trials were conducted on farms belonging to Fontaines and Semur-Châtillon agricultural schools.

Simplifying milking hygiene: any savings in time?

Current milking hygiene practised and recommended for the last 25 years has focused in particular on cleaning the teats with a liquid solution, followed by wiping. The methods recommended have proved beneficial for teat health and for milk quality in general. By using individual dip cups, around 50% of new teat infections can be prevented. By pre-treating with an appropriate solution, this rate can be improved as long as the animals are not too dirty.

Preparing the teats also has a stimulating effect on the cow, which is favourable for milk ejection thus reducing milking time.

However, these hygiene methods tend to lengthen the overall milking time, not to mention the fact that herds are becoming increasingly larger.

For this trial, we tested alternative methods that might accelerate milking times as well as the effect this might have on milk quality.

Trial: browns and reds...

The trial was conducted simultaneously at both locations with identical test protocols:

- On the farm of the Fontaines school (Saône-et-Loire) with Montbéliarde cows.
- On the farm of the La Barotte school (Côte d'Or) with brown cows.

4 teat preparation methods were compared: pre-treatment + first milk streams (reference method), only first milk streams, no preparation, wood wool + first milk streams.

The 4 methods are being used on 16 cows representative of the herd (in terms of milk production) for 8 weeks over 4 two-week periods.

Milking speed: differences between methods and between breeds

It can generally be stated that the milking time per cow for the simplified methods (no preparation and first milk streams only) is around 30 seconds longer in relation to the reference method. The "no preparation" method resulted in the longest milking time for both breeds.

These results correspond to those achieved with the Prim' Holstein breed.

Average milking time per cow by preparation method

	No preparation	First milk streams	Wood wool + first milk streams	Pre-treatment + first milk streams (reference method)
Average milking time (per cow) Montbéliarde	7 min. 55 sec.	7 min. 30 sec.	6 min. 58 sec.	7 min. 25 sec.
Average milking time (per cow) Brown	7 min. 30 sec.	7 min. 23 sec.	6 min. 53 sec.	6 min. 49 sec.

Using the “wood wool” method shortens individual milking times compared with the reference method (pre-treatment) for Montbéliardes, while no difference in milking times between these two methods was noted for the brown race.

A closer analysis of the data, however, reveals a significant time saving (of about 1 minute) particularly among those animals with longer milking times [less than 2.2 kg of the maximum milk production], whereby the milking time does not differ significantly between “pre-treatment” and “wood wool”.

Stimulating effect...

Preparation of the teats favours the release of oxytocin; this stimulation creates a better milk stream during the first minutes of milking. It was noted for both breeds that effective stimulation [pre-treatment or wood wool] results in an additional 1 kg of milk in the first 2 minutes compared with methods involving no preparation.

Even if these differences are not significant, wood wool appears to have a superior stimulating effect over the reference method [pre-treatment]. In addition, a cow prepared with wood wool reaches its maximum milking rate more rapidly.

Stimulation of this type is particularly effective on animals with long milking times, which explains the improvement in efficiency among the Montbéliarde race.

Milk quantity collected during the first 2 minutes of milking

	No preparation	First milk streams	Wood wool + first milk streams	Pre-treatment + first milk streams (reference method)
Milk quantity in 2 minutes [kg] Montbéliarde	3.82	4.09	5.02	4.73
Milk quantity in 2 minutes [kg] Brown	5.61	6.12	6.95	6.82

Milk quality

Cells

The teat preparation method does not affect the cell rate in the milk. However, the period of application of each method [2 weeks] is too short to establish whether they have a positive or negative influence on udder infections. For this purpose, the methods would have to be compared over a minimum period of 4 to 6 months.

Quantity of somatic cells by preparation mode

	No preparation	First milk streams	Wood wool + first milk streams	Pre-treatment + first milk streams (reference method)
Cells [in thousands/ml] Montbéliarde	37	32	38	47
Cells [in thousands/ml] Brown	120	73	74	73

Butyric acid

The analysis of the butyric spores in the milk was carried out at the La Barotte location. Contamination resulting from butyric spores is a good pointer towards hygiene and, in our case, a good indicator of the efficacy of the cleaning method. Contamination with butyric spores was highest with the simplified methods. These results confirm the importance of cleaning teats before milking. Wood wool provides results close to those of the reference method and shows that effective teat cleaning is possible with this product.

Butyric spores in the milk by preparation method

	No preparation	First milk streams	Wood wool + first milk streams	Pre-treatment + first milk streams (reference method)
Butyric acid [spores per ml]	1,932	1,394	722	779

Conclusion

Among the three alternative methods tested, although the simplified methods [no preparation and first milk streams alone] reduced preparation time, they lengthened milking time due to the lack of stimulation. Even if they reduce the total milking time, these techniques can be deleterious to the quality of the milk produced.

Wood wool reduces individual preparation time by 6 seconds compared with the pre-dipping technique and, with the animals of the Montbéliarde breed, individual milking time are reduced by around 25 seconds. Overall, an estimated 10 minutes milking time can be saved for a herd of 65 Montbéliarde cows and around 5 minutes for brown cows.

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A milk farmer's most valuable asset is, without any doubt, the precious cattle. Simply on account this very fact, the cattle deserve attentive, careful and natural cleaning of their udders. That you – as a farmer – can ultimately also benefit is obvious