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Evaluation of Lactalign cluster support device

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Background

A common objective of machine milking is to milk cows quickly, gently and completely. Achieving complete milking necessitates even milking across all quarters which can be difficult to achieve in many commercial milking systems.

There is wide spread consensus that even milking can only be achieved when a milking cluster is presented squarely under the cow with equal weight distribution on all quarters.

Achievement of satisfactory cluster position can be particularly problematic on parlour configurations where the cow is presented at 90^0 to the kerb, such as rotary abreast or rapid exit parlours. Ensuring the length of long milk and pulse tubes are correct, fully extending the ACR cord and taking time to present the milking cluster without twisting can all be advantageous. However, irrespective of this, achieving satisfactory cluster position can prove challenging.

There are a number of cluster support devices available on the market supplied by OEM's or independent manufacturers. In my experience, while these can be very effective at the point of installation, they have significant on-going service and maintenance costs (Dairymaster tube support, GEA PosiArm, Lyntech). Other examples require significant milking staff input to position the cluster correctly and are often not removed cleanly from behind the cow after milking leading to equipment damage (Boumatic bobby pin).

Poor cluster presentation on farms can lead to liner slippage and incomplete milking. Over a relatively short period of time, particularly in well managed herds where the ACR flow rate is set to remove the cluster at a relatively high flow rate, this can lead to un-even udders and the development of light quarters.

Regular criticism of cluster presentation and completeness of milking at Washfold Farm led to the inception and development of the Lactalign device.

Lactalign cluster support

The Lactalign cluster support is a joint development between J F Hudson and Metcalfe Farms. The cluster support has been through a number of development stages and refinements and was initially only installed on a small number of units at Washfold Farm for monitoring and development purposes.

Lactalign devices were installed on all 72 milking points at Washfold Farm on 28th December 2020.

Evaluation

Three milking time evaluations were carried out to assess the impact of the Lactalign cluster support.

The initial assessment was undertaken on 17th December 2020 prior to installation of all devices, followed by two further assessments on 22nd February 2021 and 13th April 2021 when the devices had been installed for 8 weeks and 14 weeks respectively.

The assessed criteria included;

1. Milk yield (measure of completeness of milking)
2. Milking speed (litres /min and attachment time)
3. Duration of milking session
4. Number of slips
5. Number of kick offs
6. Number of re-attachments
7. Cow behaviour (score cow response from no movement, mild lifting of feet to removal of cluster)
8. Mastitis incidence by quarter
9. Teat end condition

Visual assessments were undertaken during the second milking of the assessment day (12.30 – 4.30pm) and milking performance data was collected from Boumatic SmartDairy software from the morning milking of the assessment day.

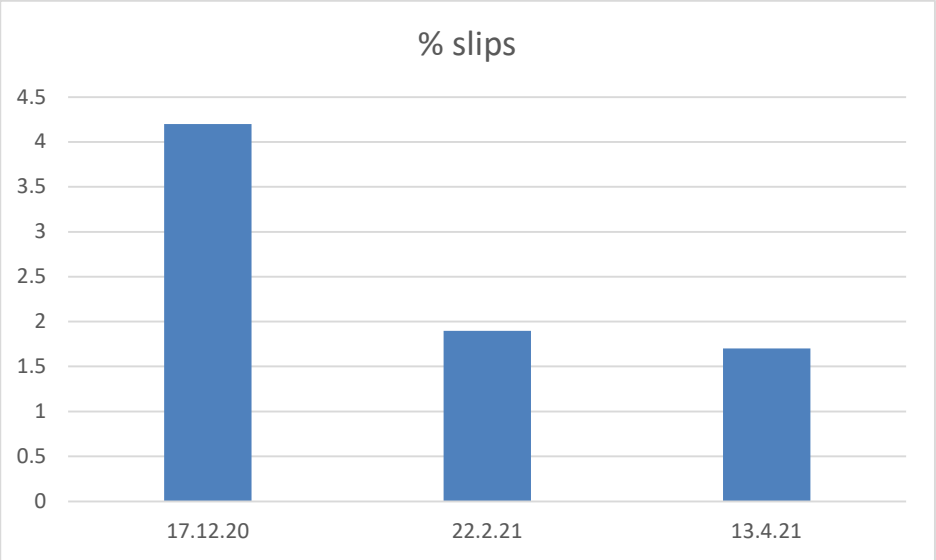
Results

Detailed examination of milk yield and milking speed data showed no measurable difference after the Lactalign devices were installed.

Milk flow rates and milking duration remained relatively un-changed.

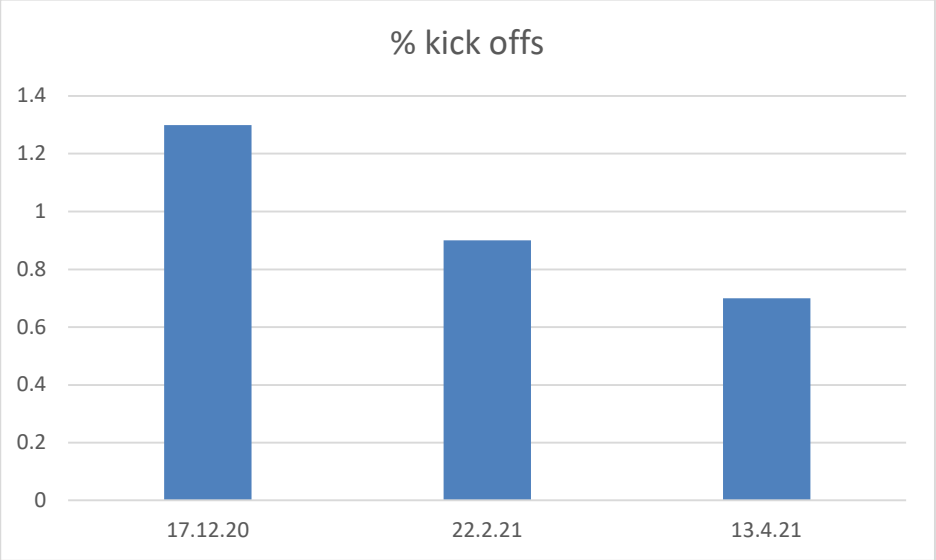
There was a measurable reduction of 59.6% in the number of liner slips noted at each milking once the Lactalign device was installed (Figure 1).

Figure 1 – Liner slips as a % of total milkings



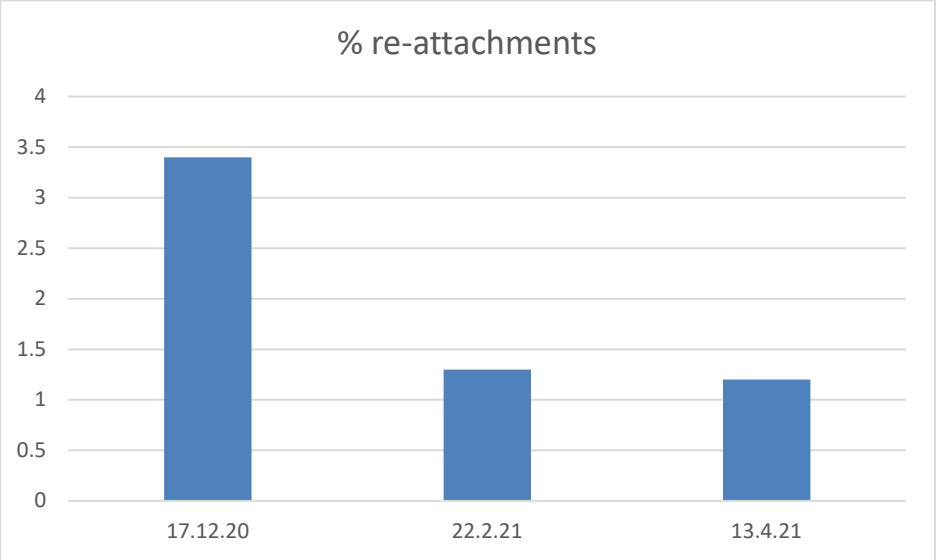
There was a measurable reduction of 47% in the number of kick-offs (Figure 2).

Figure 2 – Unit kick-offs as a % total milkings



There was a reduction of 65% in the number of re-attachments (Figure 3).

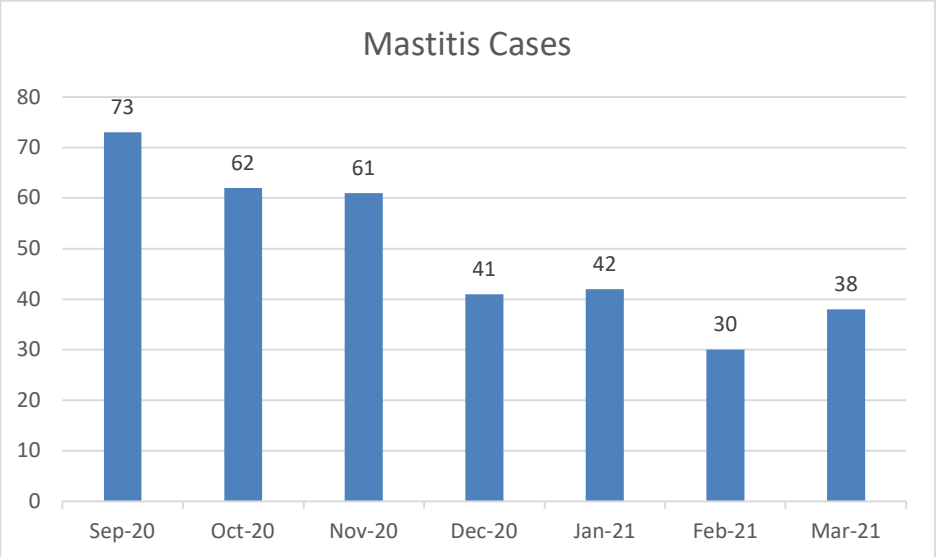
Figure 3 – Unit-re-attachments as a % of total milkings



Visual observations did not detect a measurable difference in cow behaviour. However, the reduction in both kick-offs and re-attachments would strongly indicate there is an improvement in milking comfort.

Mastitis cases were assessed from September 2020 to March 2021 (Figure 4).

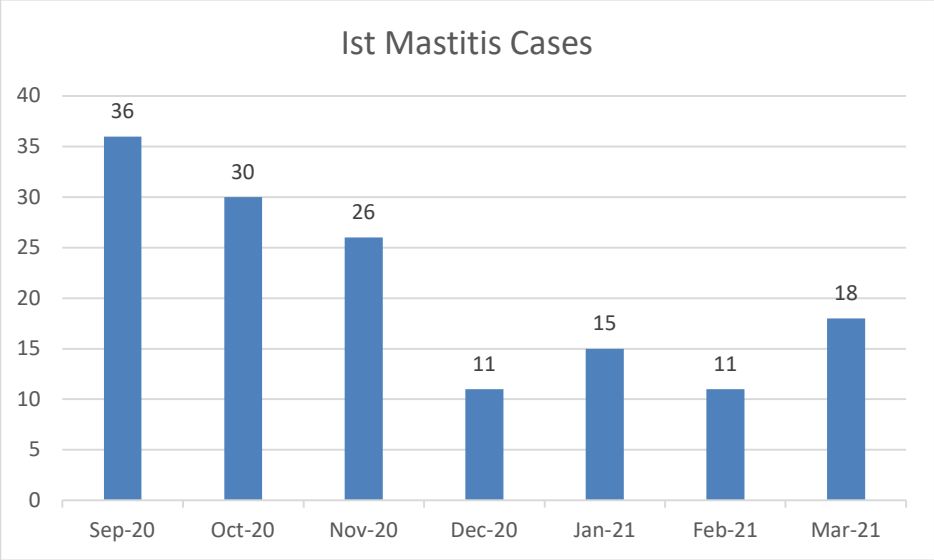
Figure 4 – Mastitis cases / month



During this period of time, a number of mastitis management changes were implemented which led to a marked reduction in overall mastitis cases.

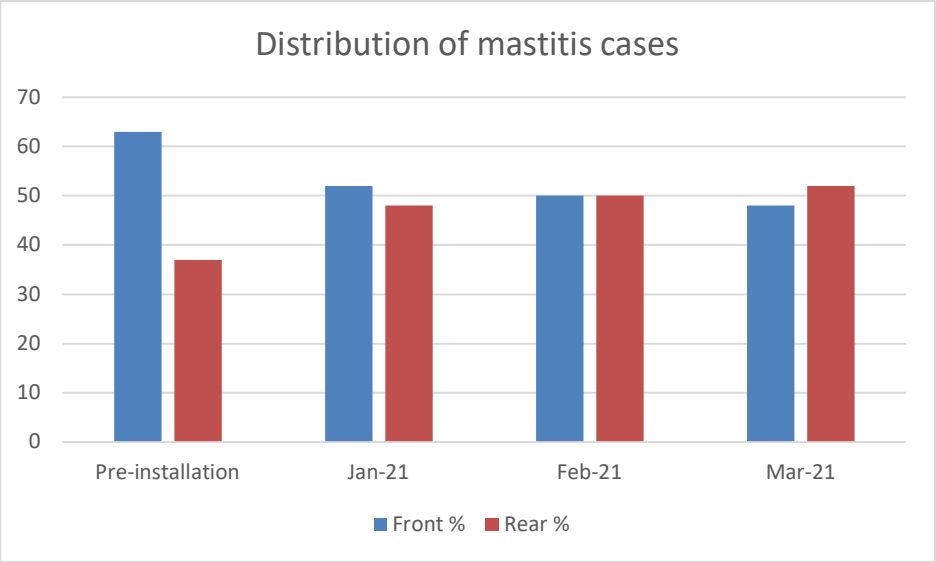
For the purpose of the evaluation, the most relevant cases were considered to be 1st cases of a lactation origin (>30Days in milk). These were considered to be the most influenced by cluster presentation (Figure 5).

Figure 5 – Index mastitis cases / month



Although the overall reduction in mastitis cases and the improvement in index cases is most likely to be due to the impact of other management changes, there is a marked re-distribution of mastitis cases between front and rear quarters during the period of the evaluation (Figure 6).

Figure 6 – Distribution of mastitis cases between front and rear quarters.



Teat ends were scored in accordance with TCI guidelines and no measurable difference was detected during the period of the evaluation (Figures 7 and 8).

Figure 7 – Hyperkeratosis scores 17th December 2020

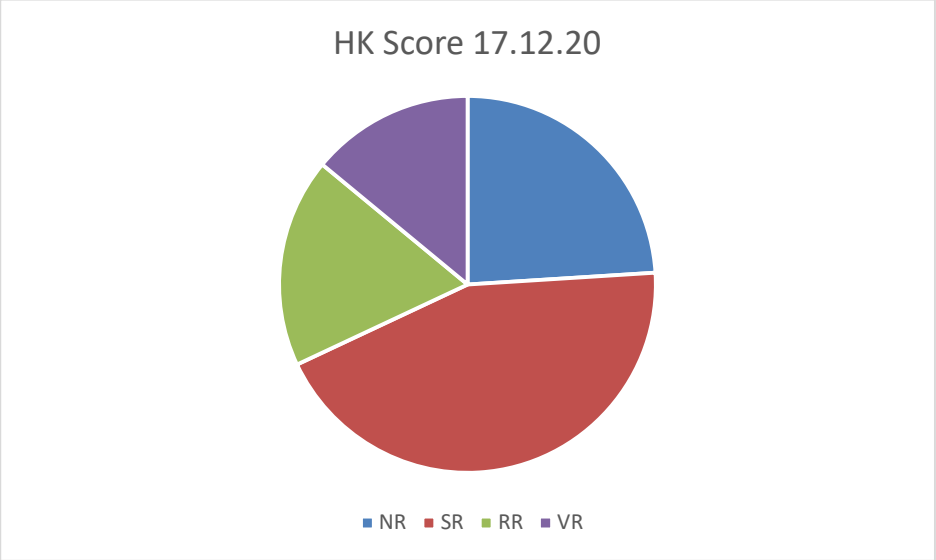
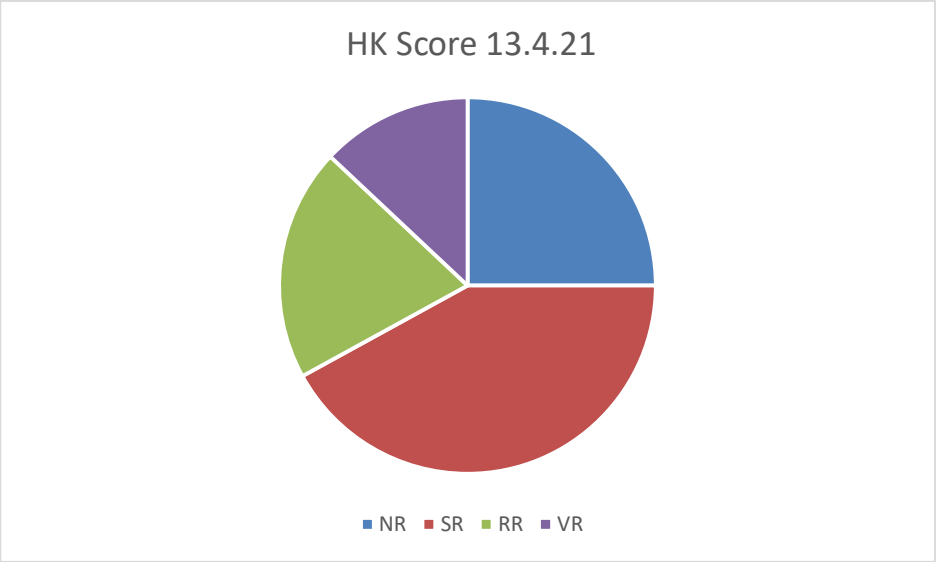


Figure 8 – Hyperkeratosis scores 13.4.21



During the period of the evaluation, two Lactalign devices were replaced due to un-even wear on the device. No devices have been reported broken or damaged and on inspection, the worn Lactalign devices were still fully functionable.

Conclusions

The lactalign devices have produced a measurable reduction in liner slippage, kick-offs and manual re-attachments. All of these factors will lead to smoother, more efficient milking.

Although it was not possible to demonstrate any improvement in milk yield or milking speed, the re-distribution of mastitis cases between front and rear quarters is considered to be highly significant.

Running an evaluation on a commercial dairy farm, rather than a controlled study where external factors can be controlled, can make the identification of real effects more complicated. However, in light of the re-distribution of index mastitis cases during the course of the evaluation, it would be reasonable to use this as a proxy for evenness of milking.

The robustness and simplicity of the device is attractive with no reported breakages or failures during the evaluation. On-going maintenance and service costs appear to be minimal.

It was quite clear during the evaluation that some care is required when utilising the device to achieve the maximum benefit. Care is required to ensure the long milk and pulse tubes are the correct length, the pipes are not twisted, the tubes are rested in the correct notch with the ACR cord sharing the same notch or the notch below. Some initial input in terms of staff training should be expected.

Metcalfe Farms were expecting and willing to reduce the rotation speed of the parlour while the milking staff became accustomed to using the device. In practise this was not required and the parlour continued to rotate at 10.0 seconds / stall.

This evaluation demonstrated that this relatively simple, robust tube support device can reduce liner slippage, kick off and re-attachments. Although not possible to state categorically that evenness of milking is improved, the re-distribution of index mastitis cases between front and rear quarters suggests this is highly probable.

Although the device was evaluated on a rotary abreast parlour, it would seem probable that it could be adapted to operate satisfactorily in a 90^0 rapid exit parlour. When considering the wider rotary parlour market, the routing of the long milk and pulse tubes will need to be considered and may require minor design modifications.

For a one off purchase with minimal on-going running cost, a price point in the region of £120 – 130 / milking point installed would seem achievable.