The objective of this research was to examine changes in teat end hyperkeratosis and the effectiveness of the Milpro P4C®-TM system on teat end hyperkeratosis during the transition from one standard pulsation system to an individual quarter pulsation milking system. To examine teat end hyperkeratosis, this study was evaluated after cluster removal using the classification system outlined by Mein et al. (2001) where N signifies no ring; S signifies a smooth, raised ring; R signifies a rough ring; and VR signifies a very rough ring. Scoring periods were classified for 69 cows (48 Holstein, 12 crossbred, and 9 Jersey) relative to installation of the Milpro P4C®-TM system. The effects of position and scoring period on teat end hyperkeratosis classification were significant (P < 0.01). Hyperkeratosis scores improved for Holstein cows from PRE1 to PRE2 (1.75 ± 0.10 and 1.63 ± 0.10, respectively, P < 0.04), PRE1 to POST2 (1.75 ± 0.10 and 1.59 ± 0.10, respectively, P = 0.02), PRE1 to POST2 (1.75 ± 0.10 and 1.53 ± 0.10, respectively, P < 0.01), PRE1 to POST3 (1.75 ± 0.10 and 1.42 ± 0.10, respectively, P < 0.01), PRE1 to POST3 (1.64 ± 0.09 and 1.42 ± 0.10, respectively, P < 0.01), POST1 to POST3 (1.59 ± 0.10 and 1.41 ± 0.10, respectively, P < 0.01), and POST2 to POST3 (1.53 ± 0.10 and 1.42 ± 0.10, respectively, P < 0.01). Hyperkeratosis scores for front teats were significantly higher than for right rear and left rear teats (1.5 ± 0.09, 1.37 ± 0.09, and 1.36 ± 0.09, respectively, P < 0.01). Hyperkeratosis scores tended to increase from PRE2 to POST3 (1.34 ± 0.21 and 1.63 ± 0.22, respectively, P = 0.05) and POST3 to POST3 (1.32 ± 0.21 and 1.63 ± 0.22, respectively, P = 0.04).

RESULTS AND DISCUSSION

Table 2: Least squares means (± SE) teat position relative to the installation of an individual quarter pulsation milking system.

<table>
<thead>
<tr>
<th>Teat Position</th>
<th>Left Front</th>
<th>Left Rear</th>
<th>Right Front</th>
<th>Right Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teat end hyperkeratosis score (± SE)</td>
<td>1.62 ± 0.09a</td>
<td>1.36 ± 0.09ab</td>
<td>1.58 ± 0.09ab</td>
<td>1.37 ± 0.09ab</td>
</tr>
</tbody>
</table>

1Least squares means within rows differ significantly (P < 0.05).
2Nonsignificant interactions (Table 1).

CONCLUSIONS

These results demonstrate an improvement in teat end condition for Holstein cows after installation of an individual quarter pulsation milking system. The changes in teat end hyperkeratosis observed in this study may be attributed to decreased overmilking. Individual quarter pulsation systems may improve teat end condition.

ACKNOWLEDGEMENTS

The authors extend thanks to Milkline for donating the Milpro P4C® milking system to the University of Kentucky. We appreciate the technical guidance and advice provided by Massimiliano Inniti and Perracienda Coniglio. We would also like to thank Barbara Wadsworth for her help calibrating the system. Finally, we express our extreme gratitude to Joe Clark, UK Coldstream dairy manager, for maintaining the system.

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