

## Effect of transitioning to automatic milking systems on producers' perception of farm management and cow health

C. Tse<sup>1</sup>, H.W. Barkema<sup>1</sup>, T.J. DeVries<sup>2</sup>, J. Rushen<sup>3</sup>, and E.A. Pajor<sup>1</sup>

<sup>1</sup>Faculty of Veterinary Medicine, University of Calgary, Calgary, AB; <sup>2</sup>Department of Animal Biosciences, University of Guelph, Guelph, ON; <sup>3</sup>Faculty of Land and Food Systems, University of British Columbia, Vancouver, BC

### Why is this important?

Automatic milking systems (AMS) continue to gain popularity in the Canadian dairy industry. According to the Canadian Dairy Information Centre, as of 2020, nearly 16% of the farms in the Canada use AMS. In 2015, this number was 6.8%. The industry continues to see major growth in uptake of AMS.

Benefits of adopting an AMS include increased milk production, improved cow comfort, a more flexible lifestyle for producers, less labour for milking, and improved cow health. However, an AMS has higher capital costs, requires producers or employees to be on-call 24/7, and changes management to be more data-based. As such, depending on the management capabilities of an individual producer, AMS can vary in profitability or labour savings.

Few studies have captured how AMS has affected North American farms as a whole, including aspects of cow health, milk parameters, management, housing, etc.). Furthermore, there has been little focus on producers' perceptions of change with the transition to AMS and describing how these individuals adopted AMS technology on-farm. Therefore, the objective of this study was to determine how producers perceive the transition to AMS in terms of resulting changes in housing, farm management, and cow health.

### What did we do?

This study used a survey that was distributed to participating AMS farms in BC, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, and Nova Scotia. Participating farms were surveyed by telephone, email, and in person from May 2014 to the end of June 2015.

The survey was developed to obtain information on factors that may have been affected by transitioning to AMS (changes to the facility, employee management, milk production and quality, milking labour management, current milking statistics (average number of milkings per day), cow training, challenges and solutions experienced during transition, changes in quality of life, level of satisfaction with their AMS, and cow health- and milk-recording programs.

There were 217 respondents to the general survey and 69 respondents completed the follow-up questions.



## What did we find?

The range of time since transitioning to AMS was 1 to 170 months among survey respondents and the lactating herd size ranged from 35 to 550 cows (average of 85 cows). When transitioning, 55% of producers built new barns and 71% changed housing systems (with the majority switching from tie-stall to free-stall). Most farms (90%) used a free-flow traffic system rather than a directed traffic system. Herd size increased by about 10%, on average, after transitioning to AMS, with 40% of farms having 1 robot, 43% having 2, 10% having 3, and 7% having 4 or more robots. The average number of cows per robot was  $51 \pm 9$  and most producers (64%) managed their lactating cows in one group. Farms generally had a 1:1 cow to stall ratio. Rubber mats, mattresses, or water mattresses were more commonly used than deep bedding (78 vs. 22%), with most using bedding (straw/shavings) on top of the base.

About 83% of AMS farms provided a TMR, with 36% adopting this feeding system at time of transition. Feed was delivered to cows 2x/day, on average, and pushed up 4x/day. Headlocks were more common than rails or other feed barriers.

Since transitioning, 66% of producers changed their health management practices, with most producers (80%) perceiving illness detection as easier with an AMS because of the amount of information the robots provide on each animal (e.g. udder health reports, cow weight, temperature, milking reports, activity, and rumination) and because of the alarms that notify producers of issues. Producers who found health detection more difficult indicated that this was due to no longer seeing every cow twice a day and relying on technology.

Rate of lameness after transition was reported to have decreased for 42% of producers. About 77% of farms found it easier to detect lame cows due to having more time to observe cows and the fact that lame cows become fetch cows.

Around 49% of producers reported that clinical mastitis decreased upon transition to AMS. The most common method of detecting mastitis was to rely on AMS reports on milk conductivity, blood in milk, change in production, and SCC for alarms.

Conception rate was reported to have increased for 63% of producers, with 90% of AMS farms using activity or behaviour monitors to detect heat. This method was new to 63% of AMS farms, who previously relied on visual observation to detect heat.

Finally, culling rate was reported to have stayed the same for 59% of producers, increased for 25%, and decreased for 16%. The most common reasons for culling after transition to AMS were reproduction issues, poor udder health, lameness, and teat placement or udder conformation.

## What does it mean?

Overall transition to AMS was perceived as successful. With necessary changes to housing to accommodate the AMS, farms were able to increase herd size while keeping cleaning and feeding practices the same. Producers did change health-management practices with AMS, but the majority reported health detection to be easier. Many producers reported an increased conception rate, a decrease in rate of clinical mastitis, and no change in culling rate after transitioning to AMS.

### Summary Points

- Automatic milking systems (AMS) continue to gain popularity among Canadian producers, with the majority perceiving the transition in a positive light.
- Producers reported that, following transition to AMS, they found health detection to be easier and that conception rates improved, clinical mastitis rate decreased, and detection of lame cows improved.
- Generally, feeding and cleaning practices within the barn stayed the same post-transition, although some producers adopted new housing (free-stall instead of tie-stall) or feeding systems (e.g. TMR vs. components) alongside transition to AMS.