



PROJECT 2013-2018

AUTOMATIC MILKING SYSTEMS (AMS): FACTORS AFFECTING HEALTH, PRODUCTIVITY AND WELFARE



Principal Investigator:

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COLLABORATOR:

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Number of students trained
(MSc, PhD, Post-Doc):**2**

TOTAL BUDGET

\$352,763

INVESTMENT PARTNERS

Agriculture and
Agri-Food Canada

OBJECTIVES:

Identify and benchmark issues experienced by Canadian producers when adopting and using AMS systems, and the solutions they have developed in response to those issues.

Develop a method using automatically collected information on milking and cow activity which will identify cows at risk of, or experiencing, illness, lameness or poor adaptation to the AMS.

KEY OUTCOMES:

- 217 AMS producers participated in the General Survey (Part 1), and 69 of the respondents completed the more detailed follow-up questions (Part 2).
- Issues and challenges facing farmers in transitioning to automatic milk systems (AMS) were studied.
- Lameness is especially problematic for AMS herds, reducing productivity at the cow and the herd level. Although few cows in our study were severely lame, producers need to identify and reduce clinical lameness. Widening lying stalls, providing deep-bedded stalls, and scraping alleys more frequently were factors associated with reduced lameness prevalence and are potential ways to optimize productivity in AMS herds.
- Findings on changes that occur before illness such as variations in productivity and behavior to improve illness detection. Rumination behaviors often deviated before milk yield and that several variables could contribute to earlier or automated identification of disorders. Behavior and productivity changed differently in association with various health disorders, suggesting the potential to distinguish among health problems but these variables merit further investigation in larger studies of cows milked with AMS.
- A survey of producers using AMS was also conducted to assess the impact of automatic milking systems on milking labour management, milk production and milk quality.

On average, after adopting AMS, the number of employees (full- and part-time non-family labour combined) decreased from 2.5 to 2.0, whereas time devoted to milking-related activities decreased by 62% (from 5.2 to 2.0 h/day). Median milking frequency was 3.0 milkings/day and robots were occupied on average 77% of the day. Farms had a median of 2.5 failed or incomplete milkings/robot/day. Producers reported an increase in milk yield, but little effect on milk quality. Mean milk yield on AMS farms was 32.6 kg/cow/day. Median bulk tank somatic cell count was 180,000 cells/mL. Median milk fat on AMS farms was 4.0% and median milk protein was 3.3%. At the time of the survey, 67% of producers were current participants of a DHI programme. Half of the producers who were not DHI participants had stopped participation after adopting AMS.

LINK TO KTT TOOLS

VIDEO:

Lameness and health disorders in robotic milking systems. My Research in 180 Seconds, 2018 DFC Dairy Research Symposium. [youtube.com/watch?v=C98kYKUbKKw](https://www.youtube.com/watch?v=C98kYKUbKKw)