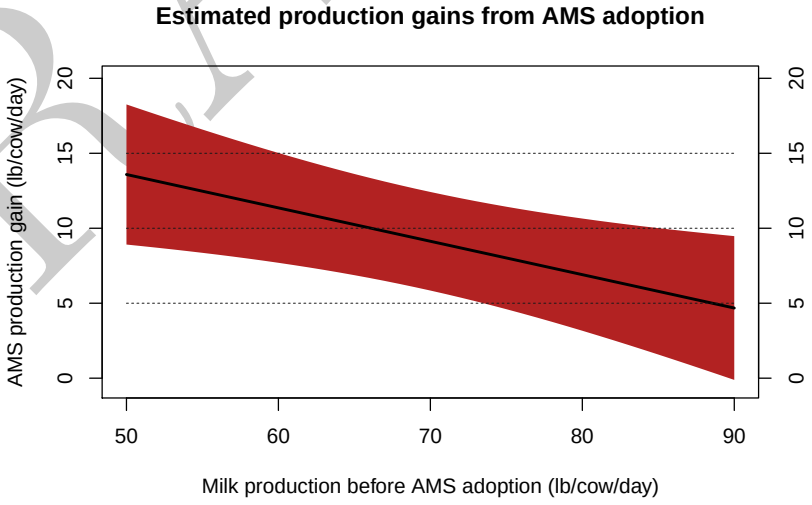
Impact of AMS Adoption on Milk Production and Quality

Major changes in production technology such as the adoption of automated milking systems (AMS) will most likely affect milk production. In most cases it is the main motivation for adopting new technology. When adopting AMS most dairy producers expect a gain in production, but exactly how much can be realistically expected and what are the key factors determining those gains? To help answer these questions, this fact sheet analyses the production impacts of AMS technology as reported by 89 dairy producers from the US.

Key factors affecting changes in production

Most farms will bring in various changes to their operation as they adopt AMS, including potential changes to housing, bedding, and feeding. Identifying what changes in production is due to the new bedding, ventilation, or milking technology becomes challenging. Based on the survey responses, we found that switching bedding material can boost production. Our results suggest that adopting waterbeds had a significant positive impact on production among our respondents. Similarly, those that are adopting TMR concurrently with AMS can expect additional gains in production. Opting for new housing instead of retrofitting current building also translates in higher expected production gains.

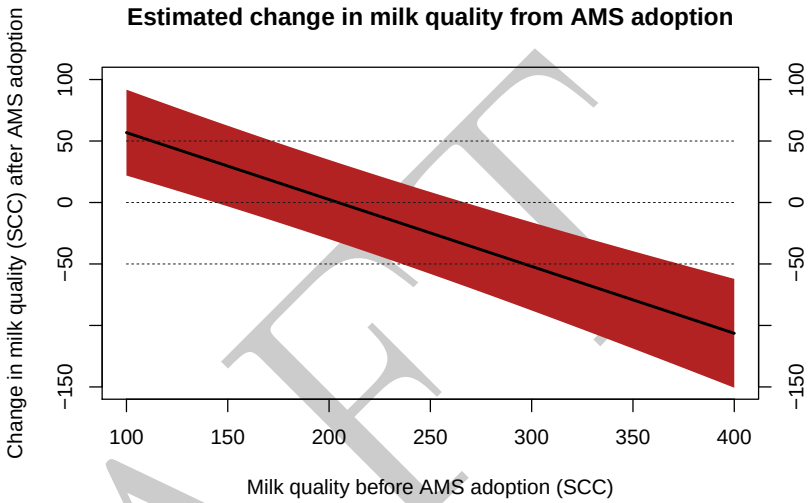
The biggest factor affecting the production gains remains the initial productivity of the herd. This figure makes clear that production gains are much more modest for herds that were already highly productive. Someone adopting AMS with a 50 lb/cow/day herd can expect production to rise by 13.6 lb/cow/day. For someone starting with a 90 lb/cow/day herd the expected gains from adopting AMS drop to 4.7 lb/cow/day.



Note that a steep learning curve for AMS management was reported. Most producers indicated that they needed about 6 to 12 months to operate AMS at a satisfactory level. As a result, the gains shown above represent the expected long term production gains realized after the first year of installation, and are based on the assumptions that the herd was originally milked twice a day, that the AMS technology is installed in a new building (not retrofitted), and that there was no change in bedding.

Impact on Milk Quality

In theory, the effect of AMS on milk quality could go either way. While AMS provides a consistent milking routine, some pointed out that it cannot adapt the routine to the level of cleanliness (or dirtiness) of each cow as an attentive milker could. Therefore, the argument could be made that careful milkers can outperform the AMS. In the same way, the AMS might provide significant improvement on less careful/consistent milkers.



This idea is born out by the data from the survey. Those that started with higher milk quality saw a deterioration after adopting AMS (e.g. from 100,000 to 150,000SCC). But those with lower initial milk quality saw improvements.

This analysis also accounted for the impact of factors such as bedding and housing. No significant differences in milk quality was found between main bedding types (sand, waterbeds, bedded pack). But those that build new housing when adopting AMS had a slightly higher milk quality after AMS adoption (about 28,000SCC lower). It might reflect the impact of building features other than bedding material(e.g. cleaning system, stall size, stocking rate).

Impact on Milk Components

Finally, no significant impact of AMS adoption on milk components was found. When analyzing the impact of AMS adoption on energy corrected milk(ECM) production, the results were similar to those reported above.

The Survey

The survey was jointly conducted by the Dairy Extensions of Wisconsin, Minnesota, and Pennsylvania. We thank those who provided their inputs to our survey, and we continue to invite others who are also operating automatic milking systems (AMS). The online survey is available at z.umn.edu/DairyRobotSurvey.

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