

Producers' perceptions: The impact of automatic milking system (AMS) on milking labor management, milk quality, and water and electricity consumption⁽¹⁾

Yi-Hsin Yeh⁽²⁾ Ming-Kuei Yang⁽²⁾ Jen-Wen Shiau⁽²⁾ and Po-An Tu⁽²⁾⁽³⁾

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Abstract

In Taiwan, dairy farms have increased their herd size, but labor shortages and aging are causing problems. These issues could be resolved by using an automatic milking system (AMS). Mechanization and automation will be the future management model for dairy farms. Our study examined 8 dairy farmers' experiences with AMS, discussing labor management, milk production, somatic cell count, total bacterial count, water and electricity costs, maintenance costs, and other items. In addition, we calculated the changes in labor cost per kg milk and daily milking labor cost per cow before and after AMS adoption. In order to collect data, we used an online questionnaire, a telephone interview, or an in-person interview. A total of 8 out of 10 AMS users participated in the survey. Means, standard deviations, medians, and quartiles were calculated for each item. The Wilcoxon signed Rank test was used to compare two medians of variables. Labor significantly decreased before and after installation of AMS, including time of each milking ($P < 0.01$) and labor of each milking ($P < 0.05$); however, daily cows milked per labor increased ($P < 0.05$). After AMS installation, monthly labor cost of milking ($P < 0.05$) and labor cost per kg milk ($P < 0.05$) significantly decreased. Daily milking frequency ($P < 0.01$) and monthly milk yield for each farm ($P < 0.05$) significantly increased. Each milking visit increased average daily milk yield by 5.2 kg per cow ($P < 0.01$), whereas each increased cow/robot reduced average daily milk yield by 1.1 kg per cow ($P < 0.05$). Installation time period had a tendency of negatively correlating with average total bacterial count for bulk tank milk ($P < 0.1$). Water consumption ($P < 0.01$) and maintenance costs ($P < 0.01$) increased significantly after AMS installation. The installation of an AMS does not influence the somatic cell count or the total bacterial count significantly either in the summer or the winter. Overall, the number of workers decreased only slightly after AMS installation. Those workers were usually assigned other tasks by the farm owner.

Key words: Automatic milking system, Labor, Milk quality, Water and electricity consumption.

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(2) Northern Region Branch, MOA-TLRI, Miaoli 36843, Taiwan, R. O. C.

(3) Corresponding author, E-mail: tpa@mail.tlri.gov.tw.