

Editorial: Incorporating the automatic milking system into forage grazing management

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Editorial

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About 30 years ago, the first commercial automatic milking system (AMS) was installed and in operation in the Netherlands to reduce the human labour required for harvesting milk (de Koning, 2011). The AMS was then further developed and used worldwide to support dairy production, in particular in European, North American and Oceanian countries, with large herds. The AMS was developed mainly for indoor feeding systems, such as partial mixed ration (PMR) and total mixed ration (TMR) feeding systems (John *et al.*, 2016). However, for countries like New Zealand and Australia, where milk production relies heavily on forage-based grazing systems to keep feed costs low, incorporating AMS is more challenging than in intensive feeding systems because cows must walk long distances from grazing paddocks to the milking units.

Apart from reducing labour costs, the improvement in cow traffic, productivity and profit from AMS-forage grazing systems are also key goals that dairy farmers strive to achieve (Taing, 2016). In recent years, some published work both in refereed publications (e.g., Lessire *et al.* 2020) and technical notes (e.g., <https://future dairy.com.au/publications/#automaticmilking>) have highlighted the opportunities and challenges of using AMS in a forage grazing based dairy cow production system. Research in this space is vital to improve the understanding, and to support further development of AMS-forage grazing systems, with a major aim to optimise voluntary cow movement, reduce labour input and better utilise forage on the farm through rotational grazing systems. Further, more specific research questions are also of great interest to explore, such as what cow breed is suitable for AMS-forage grazing systems? Can genomic selection help to optimise cow suitability for AMS-forage grazing systems? How do grazing forage quality/quantity, forage allocation method, concentrate feeding and their interactions impact on cow traffic? How does changing environmental conditions impact on AMS-forage grazing systems? Does the AMS-forage grazing system produce less greenhouse gases than conventional milking systems?

Despite various production and animal-specific data being collected through the utilisation of monitoring technologies in conventional milking systems, the modern AMS automatically collects many production and animal-specific data in near real-time. This has a real potential to help producers to monitor, report, and validate production performance and in the future might enable carbon footprint calculation, which is an increasingly significant area to develop sustainable dairy production worldwide.

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