



**HAL**  
open science

## Grass based dairy systems, data, and precision technologies

Laurence Shalloo, M. O'Donovan, L. Leso, J. Werner, A. Geoghegan, Luc Delaby, N. O'Leary

► **To cite this version:**

Laurence Shalloo, M. O'Donovan, L. Leso, J. Werner, A. Geoghegan, et al.. Grass based dairy systems, data, and precision technologies. 10. International Symposium on the Nutrition of Herbivores (ISNH), Sep 2018, Clermont-Ferrand, France. hal-01905563

**HAL Id: hal-01905563**

**<https://hal.science/hal-01905563v1>**

Submitted on 2 Jun 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - ShareAlike 4.0 International License

**Review: Grass based dairy systems, data, and precision technologies**

L. Shalloo<sup>1</sup>, M. O 'Donovan<sup>1</sup>, L. Leso<sup>3</sup>, J. Werner<sup>4</sup>, E. Ruelle<sup>1</sup>, A. Geoghegan<sup>1</sup>, L. Delaby<sup>2</sup> and N. O'Leary<sup>1</sup>

<sup>1</sup> *Animal & Pastureland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland*

<sup>2</sup> *Animal et les Systèmes d'Élevage, Domaine de la Prise, 35590 Saint Gilles, France.*

<sup>3</sup> *University of Florence, Department of Agricultural, Food and Forestry Systems, 50145 Firenze, Italy*

<sup>4</sup> *Institute for Agricultural Engineering, University of Hohenheim, 70599 Stuttgart, Germany*

E-mail: [Laurence.Shalloo@Teagasc.ie](mailto:Laurence.Shalloo@Teagasc.ie)

**Abstract**

Precision technologies and data have had relatively modest impacts in grass-based livestock ruminant production systems compared to other agricultural sectors such as arable. Precision technologies promise increased efficiency, reduced environmental impact, improved animal health, welfare and product quality. The benefits of precision technologies have, however, been relatively slow to be realised on pasture based farms. Though there is significant overlap with indoor systems, implementing technology in grass based dairying bring unique opportunities and challenges. The large areas animals roam and graze in pasture based systems and the associated connectivity challenges may, in part at least, explain the comparatively reduced use of such technologies in such systems. There are thus few technologies designed specifically to increase pasture utilisation with the exception of sensor and Bluetooth enabled plate meters. Terrestrial and satellite-based spectral analysis of pasture biomass and quality is still in the development phase. One of the key drivers of efficiency in pasture based systems has thus only been marginally impacted by Precision technologies. In contrast, technological development in the area of fertility and heat detection has been significant and offers significant potential value to dairy farmers, including those in pasture based systems. A past review of sensors in health management for dairy farms concluded that while the collection of accurate data was generally achieved, the processing, integration and presentation of the resulting information and decision-support applications were inadequate. The technologies value to farming systems is thus unclear. As a result, it is unclear if farm management is being sufficiently improved to justify widespread adoption of precision technologies. We argue for a user need-driven development of technologies and for a focus on how outputs arising from Precision technologies and resulting in decision support applications are delivered to users to maximise their value. Further cost/benefit analysis is required to determine the efficacy of investing in specific PTs, likely taking account of as yet to ascertained farm specific variables.