Livestock Systems Department

Title
Integration of PRECISIONDAIRY within agricultural systems

Abstract
The potential benefits of PLF include increased efficiency, reduced costs, improved product quality, reduced environmental impact, and improved animal health and welfare (Bewley, 2012), thereby facilitating a holistic approach to sustainable farming (i.e. economic, environmental, stakeholder perception, and food security). Unfortunately, however, the development of PLF has, for the most part, been driven by the availability of technologies developed for other purposes, rather than a specific identified need in dairy farming. Because of this lack of a market driven approach, uptake of PLF has not been aggressive, despite the availability of multiple technologies, because the value proposition has been unclear. In addition, many of the PLF technologies available operate in isolation and are incapable of communication with each other, since the platform infrastructures that can integrate outputs from a number of sensors do not exist; in fact, the application of large scale networking and data management and processing solutions has been neglected. This limits the value from investment in multiple technologies.

In addition to these limitations in the approach to-date, pasture-based systems present a unique set of problems and opportunities. Dairy farmers that rely on pasture as their primary source of feed require accurate real-time measurement of pasture biomass to optimise cow nutrition and grazing management, as well as individual cow indicators of animal production and health to ensure animal welfare is optimal (Donnelly et al., 2005; Eastwood et al., 2010). This is much more complex than international dairy systems, where cows are primarily fed a mixed ration in confined housing; in these systems, the accurate mixing of feed ingredients and the proximity of cows to the 'technology hub' makes currently available PLF technologies more useful.

With the right mix of technologies identified for purpose, PLF within Irish pasture-based systems has the potential to significantly increase the efficiency and sustainability of milk production. In addition, PRECISIONDAIRY will deliver a novel platform for the networking and data filtering communities, allowing the integration of information from multiple technologies to provide better decision making capacity.

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Programme/Subprogramme/RMIS Number:
AGRIP – Moorepark Livestock Systems-Precision Farming Systems-6657

Start Date: 1/9/14 **End Date:** 31/8/18