Grassland Science Department

Title

Precision Nutrition for improved animal productivity, product quality and environmental sustainability

Abstract

Growth in the global population and changing diets are projected to bring about a 70% increase in global demand for food over the next 40 years; Ireland should capitalize on this potential and position itself as a globally renowned centre for food production. Alongside the need to increase food production there is the challenge of doing so in a manner that does not impact on the environment. Food Harvest 2020 proposes a 50% increase in Irish milk production by 2020. The competitive advantage of Irish milk production is based on the efficient production and utilisation of grazed grass; this competitive advantage is increasing in recent years due to rising energy and purchased feed costs. Pasture-derived dairy products have additional nutritional characteristics and are more sustainable in terms of animal welfare and the environment. Spring calving systems will predominate in Ireland for the foreseeable future. However there will be a requirement for higher quality milk to be supplied over a longer period to increase processing plant utilisation and the production of dairy products with higher value, such as cheese and infant formula. Similarly, there will be a requirement to reduce greenhouse gas emissions and nitrate losses to ground water. This project proposes to investigate different nutritional strategies to increase milk production and milk quality for the production of high value-added cheese and infant formula, in the period of grass shortage in spring and autumn. Strategies to reduce methane emissions from enteric fermentation by increasing grass quality and feed conversion efficiency will also be investigated. In light of the importance of grass a more accurate and user-friendly method of predicting grass nutritive value be investigated. Finally, an agreed model for Ireland to calculate dairy cow organic Nitrogen output will be devised.

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