Grass growth model evaluation to manage grass supply on farm in the south of Ireland

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INTRODUCTION

• Increased grass growth key to meeting Food Harvest 2020 targets
• Grass can provide more than 70% of the diet of dairy cows in Ireland
• Grass growth influenced by:
  – meteorological conditions
  – management factors
  – soil type
• Variable grass growth → budgeting challenges
• Models can add to understanding of grass growth
• Grassland management requires improved grass growth predictions

OBJECTIVE

To evaluate three existing grass growth models for use in Ireland (Johnson and Thornley, Jouven, Brereton) using measured grass growth data at Teagasc Moorepark over a 5 year period (2005-2009)

MATERIALS AND METHODS

• Data
  – Meteorological (2005-2009)
• Grass growth models
  – Johnson and Thornley (1983), J&T model
  – Jouven et al. (2006), J model
  – Brereton et al. (1996), B model
• Accuracy of the models – mean square prediction error (MSPE) which is the sum of three components:
  – mean bias
  – line bias
  – random variation

RESULTS

• The Johnson & Thornley model over predicted grass growth
• The Jouven model under predicted grass growth for most of the year, particularly in spring
• The Brereton model over predicted grass growth in summer and autumn

CONCLUSIONS

• Potential models to predict grass growth in Ireland are:
  – Jouven et al.
  – Brereton et al.
• Some modification of both is required
• Improved prediction of grass growth will allow increased grass utilisation, thus facilitating the achievement of Food Harvest 2020 targets in a sustainable manner

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