Comparison of grass utilisation performance of perennial ryegrass varieties

T. Tubritt\textsuperscript{1,2}, T. Gilliland\textsuperscript{2,3}, N. McHugh\textsuperscript{1}, L. Delaby\textsuperscript{4} and M. O’Donovan\textsuperscript{1}

\textsuperscript{1}Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork, Ireland
\textsuperscript{2}Queen’s University Belfast, Belfast, Northern Ireland
\textsuperscript{3}AFBI Hillsborough, Co. Down, Northern Ireland
\textsuperscript{4}INRA, AgroCampus Ouest, UMR 1348, Physiologie, Environnement et Génétique pour l’Animal et les Systèmes d’Elevage, 35590 Saint Gilles, France
Previous studies have found that perennial ryegrass varieties differ in the level of grazing utilization (Cashman et al.)

Poor grazing efficiency results in:

- Reduced feed DM intake
- Reduced leaf proportion in sward
- Mechanical sward correction

Objective was to understand the grazing efficiency of varieties and its relationship to grazing DM Production
Materials and methods

- 30 varieties from DAFM Irish Recommended list were sown in $8 \times 4.5\text{m}$ plots in 3 replicates
- Varieties ranged in ploidy and heading dates
- Varieties were rotationally grazed by dairy cows from March to November 2017 with 11 grazings
Materials and methods

- **Grass Measurements**:
  - DM yield: harvested by an Etesia motor and weighed in each plot
  - Pre/post-grazing height: measured by a rising plate meter
  - Grass Quality: Samples freeze dried, milled and scanned by NIR
  - Morphological canopy measurement: Tiller and sheath heights, leaf/stem/dead proportions measured at each grazing
  - Data analysed using SAS (2003) – Variables for block, variety and grazing event
Results – Grazing Season 2017

1cm post-grazing height difference was recorded between the varieties (3.7cm vs. 4.7cm) over the entire grazing season.
Results – Grazing Season 2017

• Pre-grazing height was found to have a significant positive effect on post-grazing height
• A linear model was created to predict the post-grazing height of each variety
• Residual grazed height (RGH) is the difference between the achieved post grazing height and the predicted post-grazing height
• A negative RGH is indicative of a variety with greater utilisation performance

![RGH values of PRG varieties grazed from March to November](image_url)
Residual grazed height and Grazed DM production

![Graph showing residual grazed height and grazed DM production for various grass varieties.](image-url)
Conclusions - First Years Findings

• Grazing utilisation was significantly different between varieties

• Increases in pre-grazing height and DM yield, increases post-grazing height - a negative relationship with grass utilisation

• Some varieties do not conform to this relationship, particularly tetraploids
Conclusions

- Some tetraploids have greater grazing performance because:
  - Larger free leaf lamina
  - Increased tiller mass
  - Reduced sward bulk density
  - Higher quality sub index in Pasture profit Index
Further Information

• The study is in to its second grazing season in 2018.

• Quality analysis of the varieties is still to be completed and related to the 2017 performance.

• 2017 and 2018 RL varieties not included in this trial have been sown and will be trialled under the same protocol in future years.