Relationship between meteorological factors and grass growth in spring in the South of Ireland
C. Hurtado-Uria, D. Hennessy, L. Shalloo, Luc Delaby, D. O Connor

To cite this version:
C. Hurtado-Uria, D. Hennessy, L. Shalloo, Luc Delaby, D. O Connor. Relationship between meteorological factors and grass growth in spring in the South of Ireland. Agricultural Research Forum, Mar 2012, Tullamore, Ireland. hal-02749551

HAL Id: hal-02749551
https://hal.inrae.fr/hal-02749551
Submitted on 3 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.
Relationship between meteorological factors and grass growth in spring in the south of Ireland

C. Hurtado-Uria1, 2, D. Hennessy3, L. Shalloo1, L. Delaby1 and D. O Connor3
1Animal & Grassland Research and Innovation Centre, Teagasc, Moorepark, Fermoy, Co. Cork; 2Cork Institute of Technology, Bishopstown, Cork; 3INRA, UMR 1080, Production du Lait, 35590 St. Gilles, France

Introduction
Ireland has conditions that favour grass growth throughout most of the year, with a 300 day grazing season achieved in the south, providing a competitive advantage in offering a cheap feed source to beef and dairy cattle. Grass growth is highly seasonal with little growth over the winter period due to low temperatures and low levels of solar radiation. Peak grass growth occurs in late spring and early summer, followed by a decline in the late summer and autumn. The climate in Ireland is influenced by the westerly winds and the proximity of the ocean, resulting in a temperate humid climate. Meteorological conditions influence grass growth over the course of the growing season, particularly radiation, temperature and rainfall (Burke et al. 2004), as a result there are variations in grass growth within and between years. The objectives of the study were to determine the meteorological factors having the greatest influence on growth of perennial ryegrass (Lolium perenne L.) in spring from 1982 to 2010 at Teagasc Moorepark.

Material and Methods
Daily data for the spring period from 1982 to 2010 at Teagasc Moorepark (January to April, weeks 1 to 17, 300 observations) were converted into average weekly data. The meteorological data analysed included minimum, maximum and mean air temperatures (°C), soil temperatures at 50 and 100 mm (°C), sunshine hours (h), solar radiation (MJ/m²), rainfall (mm), calculated evapotranspiration (ET) with Hargreaves’s analysis of weekly meteorological factors and weekly grass growth was measured using the methodology described by Corral and Fenlon (1978). A regression analysis of weekly meteorological factors and weekly grass growth rates was performed using the methodology of Technology, Bishopstown, Cork; 3INRA, UMR 1080, Production du Lait, 35590 St. Gilles, France

Figure 1. Relationship between grass growth and maximum air temperature, soil temperature at 100 mm and evapotranspiration in spring at Moorepark from 1982 to 2010.

Conclusions
Evapotranspiration, soil temperature at 100 mm and maximum air temperature were the factors with the greatest influence on grass growth at Moorepark in the January to April period over the years 1982 to 2010.

References