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Impact of climate change on grass growth at two sites In Ireland

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Weather conditions in Ireland are generally favourable for grass growth. As a result dairy farming in Ireland depends to a large extent on the efficient conversion of grass to milk as grass grazed is the cheapest feed available on most dairy farms. The main factors influencing grass growth are climatic conditions, soil type and soil reserves of nutrients such as nitrogen (N). However, due to climate change the weather could become less favourable to grass growth and the utilisation of a grass growth model combined with predicted weather conditions is the best way to predict the impact of climate change on the future grass growth. The Moorepark St Gilles Grass Growth (MoSt GG) model is a dynamic model predicting grass growth, grass nitrogen (N) content and N leached in a daily time step. The model inputs are daily weather (maximum, minimum and mean air temperatures, rainfall and solar radiation), soil characteristic (percentage of sand, clay and organic matter as well as soil mineral N content at the start of the simulation), defoliation management (including cutting or grazing, post grazing/cutting height, number of animals) and fertilisation management (mineral or organic). The MoSt GG model was developed from the adapted Jouven model. The model has been modified to take into account grazing animals. A N sub model and a soil water sub model have also been added. It is assumed that each urine and faeces deposition by an animal affects a 2 m2 area of the paddock, and the model can describe outputs such as grass growth, soil mineral N content, grass N uptake, grass N content, N leaching, etc. at the 2 m2 level. Grass growth is determined by weather conditions, N available and a potential growth factor. The model has been used to predict the future grass growth up to 2060 using the model projection for Ireland from the Environmental Protection Agency at two sites in Ireland. The two sites are Moorepark, Fermoy Co. Cork and Ballyhaise, Co. Cavan. The variation in terms of grass growth, N leaching, and grass growth pattern has been evaluated.