



ClimAg: Multifactorial Causes of Fodder Crises in Ireland and Risks due to Climate Change

Authors: Nithiya Streethran, Kieran Hickey, Astrid Wingler and Paul Leahy

Lead organisation: University College Cork

Identifying pressures

The temperate climate of Ireland favours almost year-round grass growth, which has supported the development of a successful pasture-based farming system. However, this has been threatened by repeated severe shortfalls in fodder stocks, with resulting impacts on yields, revenues, and animal welfare. Grass growth may be influenced by a number of factors, including droughts, heat stress and other drivers, which can lead to the emergence of a fodder crisis.

This research identifies the key drivers of historic fodder crises, and investigates whether such events will become more or less frequent or severe under the climatic changes projected for Ireland by the mid-21st century.

Informing policy

By the middle of this century, total annual grass growth is projected to decrease throughout Ireland. However, the projected changes are spatially variable. Fodder production in the north-west of the country is likely to remain more resilient than elsewhere, with decreases in production most likely to occur in the south-east and, during summer months, in parts of the mid-west. This may result in gradual shifts in agricultural practices over time.

Growth limitation due to heat stress is unlikely to occur in any area of the country, even in the worst-case future climate scenario. However, interactions between drought and heat may lead to reduced growth in particular years.

Reductions in autumn growth and reduced cover at the end of the growing season are also projected, particularly in the south-east. This indicates increased risk in future to the resilience of pasture systems, especially as many of the highest-impact fodder crises develop over successive growing seasons. There may be potential short-term impacts on farm incomes, and mitigation measures are likely to impose additional long-term costs on farmers.

Developing solutions

This research has created a novel fodder crisis severity index which can be used to gauge the impacts of historic and future events. Past fodder crisis events have been multifactorial, and in many cases multi-annual. The research has also developed and validated an innovative modelling framework which combines climate change projection datasets with a computer model of grass growth. This can be used to determine pasture productivity under future climatic conditions.

Data is key to supporting better decision making at farm level and informing policy supports at government level. The modelling framework developed in this research can inform preparedness by being potentially coupled with long term weather forecasts to create an early warning system for adaptive pasture management.

Measures to increase the resilience of pasture systems against fodder crisis events are recommended. These include increases in stored fodder provision, and the development of early warning systems. Earlier closure in autumn may also allow for better growth recovery in spring in order to avoid the emergence of multi-annual events which have been observed several times since 2010.

