Geophysical Research Abstracts,
Vol. 11, EGU2009-4984, 2009
EGU General Assembly 2009

Modeling the Impacts of Climate Change on Irish Farming

Dr. Abdalla (1) and Prof. Jones ()

(1) University College Dublin, School of Natural Sciences, Botany, Dublin, Ireland (abdallm@tcd.ie), (2) University College Dublin, School of Natural Sciences, Botany, Dublin, Ireland

Abstract

The impacts of future climate change on Irish spring barley, winter wheat and silage maize production were assessed using CERES-model (Crop Environment Resource Synthesis) which is part of DSSAT (Decision Support System for Agro technology Transfer) package, while that on grass growth was assessed using WinEpic-model (Win. Environmental Policy Integrated Climate). A baseline climate (1961-1990), and two future climate scenarios 2055 (2041-2070) and 2075 (2061-2090), each of a 30 year period, from the HadCM4 (Hadley Centre Global Climate Model) were investigated. The objectives were (1) to assess the impacts of climate change on crop productions and variability between three main regions of crop production in Ireland (Mid-east, south-east and border region) and throughout the country for grass.

Predicted low spring and summer precipitations, due to climate change, would negatively affect spring barley. By the end of this century, spring barely grain yield in south/ mid-east would decrease by 10% however, that in border area would be less affected (-4%). This would lead to spring barley growth to be shifted to the border area and water irrigation to be essential in the south/ mid-east regions. Winter wheat grain yield would increase by up to 6% until 2055; however by the end of this century would reduce by up to 14%. This reduction is mainly due to high temperature and would be partly compensated by increasing CO2 concentration. Silage maize biomass production would significantly increase (34-97%) and the crop would be viable in places which are less suitable at present. Perennial rye grass would continue benefit from climate change until the end of this century (8-25%). However, the rate of increase in biomass production in the east would be less than that in the west which would affect livestock intensity in the eastern part of the country.