

## **2. Searching for sustainable land management strategies aimed at decoupling greenhouse gas emissions from economic performance**

Chris Brown<sup>1&2</sup>, Pete Smith<sup>1</sup>, Robin Matthews<sup>2</sup>

1) Institute of Biological & Environmental Science, University of Aberdeen, Aberdeen, (2) The Macaulay Institute, Aberdeen.

Energy crops have been suggested as a means of replacing fossil fuels to reduce greenhouse gas (GHG) emissions and to improve fuel security. A survey was developed to gain an insight into barriers to adoption, and the existing and potential future policy levers to encourage increased uptake. The aim of this research is to assess farmer attitudes to energy crops and to identify the social, economic and other barriers to uptake of energy cropping in North-East Scotland.

Agent-based modelling (ABMs) has been identified as providing a promising approach to integrate social, economic and biophysical processes. This project involves two models; implementing a bioenergy component within the framework of PALM (People and Landscape Model), and secondly, ECOSSE (Estimating Carbon in Organic Soils – Sequestration and Emissions) model. This will provide a greater understanding of potential energy cropping strategies, which may contribute to a decoupling of GHG emissions from economic performance.

Survey analysis shows that economic drivers were the most important factors in influencing current and future adoption, including a greater commitment from energy companies, and suggests that policies encouraging specific targeted subsidies and policy stability could increase the uptake of energy cropping in the region. This would help Scotland and the UK more broadly to meet their commitments on GHG emissions and increase the use of bioenergy within the UK's energy mix.