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16:45 Economic assessment of greenhouse gas mitigation on livestock farms

Eory Vera¹, Faverdin Philippe², O'Brien Donal³

¹Scotland's Rural College (SRUC), Land Economy, Environment & Society, EH9 3JG, Edinburgh, United Kingdom

²INRA, UMR Physiologie, Environnement et Génétique pour l'Animal et les Systèmes d'Élevage, F-35000 Rennes, France

³Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co Cork, Ireland

One of the main challenges of livestock production is to reduce its environmental burden while meeting the increased demand for animal products in a changing climate. A wide range of management practices and technologies are available to reduce greenhouse gas (GHG) emissions from European livestock farms. The variability in environmental, financial and management conditions of the farms inevitably leads to differences in the applicability, mitigation potential and costs of these options. Economic assessments of GHG mitigation usually consider an 'average' farm in a region or country, without the detailed implementation of the options on individual farms. This paper is presenting an economic assessment of mitigation options as implemented on two modelled livestock farms: a continental dairy mixed farm (France) and a maritime grassland based dairy farm (Ireland). The mitigation options include cover crops, legumes, nitrification inhibitors, fat and nitrate feeding, and genetic improvement of livestock. The biophysical aspects of the farms were modelled in FarmAC, a deterministic farm model, in a related work. This provided data on production, GHG and ammonia emissions and nitrogen leaching for the baseline and the mitigation scenarios. The corresponding net technical costs were calculated to reflect the management changes required for implementing the mitigation options, and included changes in resource costs, labour and income. The net technical costs of the options were compared to the greenhouse gas emission changes to calculate the cost-effectiveness of the mitigation options. Results rank the mitigation options in terms of their cost-effectiveness and highlight the differences between the two farms. The divergent practical implementation of the mitigation options is discussed, focusing on the variability in cost elements and abatement potential, and emphasising the need for individually tailored mitigation advice for farmers.