InveN$_2$Ory & ResearCH$_4$ Synthesis

Agricultural UK GHG PLATFORM

Agricultural Greenhouse Gas Inventory Research Programme

A 5-year research programme (2010-2015) has been funded by the UK government to generate new country-specific measured and modelled Emission Factors for methane (CH_4) and nitrous oxide (N_2O) from agriculture. This will build on previous research, combining field experimentation, modelling and scoping of data sources to fill knowledge gaps.

The main objective of the research programme is the development of an improved Agricultural Greenhouse Gas Inventory reporting tool for the UK, that uses appropriate country- and practice-specific emission factors and that will reflect the adoption of mitigation practices by the agricultural industry, enabling forecasting and monitoring of performance against target emissions reductions set by the UK Climate Change Act 2008.

This research is being delivered by a partnership of 16 institutes and universities through four linked projects (AC0112, AC0114, AC0116 and AC0116)

Field measurements will be conducted at a number of sites across the UK and will include:

Nitrous oxide emissions from soils, focussing on *nitrogen source* (fertiliser, manure, urine) and *application management* (rate, timing, method) across representative soil and climatic regions.

Methane emissions from farm livestock, from the animals (enteric fermentation) and their manures. The focus of measurements will be on sheep, beef and dairy cattle of different breeds and sizes, ages, and production systems (indoors and outdoors), across a range of diets and assessing different manure storage systems.

Activity data, including farm practices and spatial agri-environment data, are key to improved reporting. Existing and potential new data sources and methods for their interpretation will be assessed and applied with enhanced emission factors for CH_4 and N_2O.

Modelling will be used to estimate emissions at field and farm scale, and to interpolate to the national scale taking account of local climate and soil conditions and management practices.

The structure of the improved inventory will allow for reporting by individual sector and regionally. Close engagement with agricultural industry bodies will be an important part of this programme.

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