

Reducing greenhouse-gas emissions from agricultural crops



According to the IPCC, globally, the agriculture & forestry sector is responsible for just under a quarter of anthropogenic greenhouse-gas (GHG) emissions and, according to Defra, agriculture accounts for 9% of GHG emissions in the UK. This POSTnote aims to summarise emissions sources arising from growing arable and horticultural crops as well as examine possible approaches to mitigating them.

Context

Scientists predict that GHG emissions from agriculture will increase by nearly 80% over the next 35 years, if current trends continue, and the Foresight Report on Food and Farming highlighted an urgent need to examine ways of reducing sector GHG emissions whilst increasing productivity. Agriculture emits three main GHGs (percentage in brackets refers to the gas's estimated contribution to global warming within the UK's agricultural sector):

- nitrous oxide (55%), produced by the use of synthetic and organic fertilisers
- methane (36%), created through the digestion processes in livestock and the production and use of manure and slurry (POSTnote 453)
- carbon dioxide (9%), mostly derived from energy used for agricultural fuel and heating, land-use change and soil disturbance

A number of approaches could be promoted to mitigate emissions and improve productivity, including:

- Changes in farm practices, such as the use of nutrient management plans, precision agriculture, cropping legumes and reduction of on-farm energy use, as well as the potential for wider land-use change

POST Publications

Method

POST draws on the expertise of a wide range of external parties. Input comes from industry, NGOs, academics, regulators and government. A draft of the report will be circulated to all contributors for comment prior to the publication of the final document.

Timing

It is planned that the briefing will be produced for publication in January 2014.

Dissemination

All of POST's publications are publicly available. The briefing note will be published in paper form and distributed to Parliamentarians and other interested parties. It will also be available on POST's website: www.parliament.uk/post/

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- Biotechnology developments such as enabling any plant to take-up nitrogen from the air and inhibition of the microbes which produce nitrous oxide
- Management of soils to optimise for properties such as soil organic matter

Given decisions on the Fifth Carbon Budget to be made in 2016 (for 2028-2032), this summary is intended to inform discussions on possible mitigation by this sector.

Scope

The aims of this POSTnote are to provide MPs and Peers with an overview setting out:

- How land-use affects GHG emissions and current and predicted trends in agricultural GHG emissions, with a focus on the EU and UK
- Sources of current agricultural emissions and the ways that farm practice, including soil and nutrient management and cropping systems, can mitigate emissions
- Highlight how new innovations in plant and soil science could contribute to reducing emissions
- Highlight how the Common Agricultural Policy (CAP) and other relevant policy frameworks are tackling this issue