Introduction to the new N-flow spreadsheet tool

TFEIP Agriculture Expert Panel, 12th May 2020
Session outline

1. What is the Tier 2 nitrogen flow methodology, and why use it?
2. General information about the tool
3. Live demo of layout and key features
4. Question and answer session
What is the Tier 2 nitrogen flow methodology?

- A mass-flow approach to calculating nitrogen species emissions from all stages of livestock manure-related emissions
- Basic activity data is N excreted
- Stepwise calculation based on the flow of ammoniacal nitrogen (TAN) through the system
- Pollutants estimated: NH$_3$, NO$_x$ and N$_2$O
Why use the Tier 2 approach?

Advantages:

• More accurate TAN based EFs
• Impacts of changes early in the process are reflected in downstream emissions
• Mass balance can be used for checking inputs = outputs
• Consistency of reporting with IPCC guidelines
• “Tier 3 ready” – stepwise structure facilitates inclusion of abatement measures into calculations

But…

• Needs more data than Tier 1 approach
• Apparent complexity may be off-putting
• No defaults available for some parameters
General information about the tool

Purpose of the spreadsheet tool

• Intended as a **template for compilers** to work from and customise to their national inventories, facilitating use and understanding of the tier 2 method.

• Template contains default animal categories, EFs and other parameters from the GB 2019, and IPCC 2006 guidelines (not yet using 2019 refinement)
  
  ▪ **But possible to change these*** – see demo

*All sheets are locked to prevent accidental edits, but can be unlocked without a password
Why has the spreadsheet tool been updated?

2013 GB tool:

- Meet national inventory compilers’ needs:
  - Allow time series calculations (cf. single year in old tool)
  - Provide summaries by NFR code
- Integrate 5B2 emissions
- Implement changes to methodology, emission factors and other parameters from GB 2019 update
- Implement calculation of some other manure-related 3D emissions
General information about the tool

Where to find it


- 3. Agriculture
  - 3 D Crop production and agricultural soils 2019 [977.0 KB]
  - [Manure Management N-flow tool [1.9 MB]]
  - 3.F Field burning of agricultural residues 2019 [478.6 KB]
- 5. Waste
General information about the tool

Scope of the spreadsheet tool

Livestock manure-related emissions (figure 2.1 in GB2019)
General information about the tool

Scope of the spreadsheet tool

Included:

- 3B Emissions from housing and manure storage (NH₃, NOₓ and N₂O)
- 3Da2a Emissions Manure application to soils (NH₃, NOₓ and N₂O *)
- 3Da3 Emissions from Urine and dung deposited whilst grazing (NH₃, NOₓ and N₂O *)
- 5B2 Emissions from anaerobic digestion facilities (NH₃ only)*

*Additional to algorithm presented in GB 2019

Livestock manure-related emissions (figure 2.1 in GB2019)
General information about the tool

Scope of the spreadsheet tool

Included:

✓ 3B Emissions from housing and manure storage (NH₃, NOₓ and N₂O)
✓ 3Da2a Emissions Manure application to soils (NH₃, NOₓ and N₂O *)
✓ 3Da3 Emissions from Urine and dung deposited whilst grazing (NH₃, NOₓ and N₂O *)
✓ 5B2 Emissions from anaerobic digestion facilities (NH₃ only)*

*Additional to algorithm presented in GB 2019

Not Included in current version:

X Other GHGs, PM, NMVOC, **Indirect N₂O emissions**
X Emissions from other 3D subcategories:
  X Synthetic fertilisers, sewage sludge and other organic
  X Crop residues and cultivated crops
  X Use of pesticides, farm-level operations, off-farm storage + handling
X Other kinds of summary information (e.g. total N applied to fields from all livestock)

Livestock manure-related emissions (figure 2.1 in GB2019)
Over to Rosie...
Question and answer session