Introduction to the new N-flow spreadsheet tool

TFEIP Agriculture Expert Panel,
12th May 2020

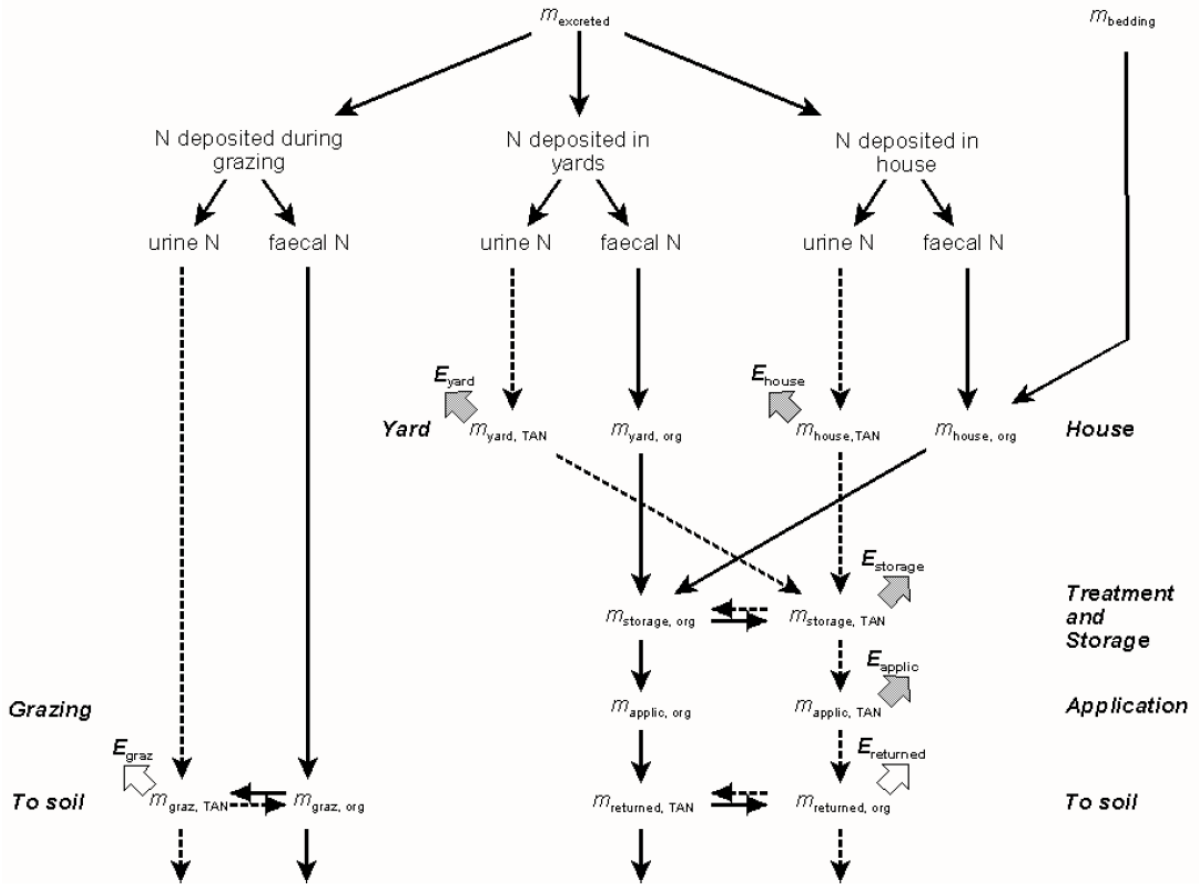
Aether

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_2O



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*

General information about the tool

Why has the spreadsheet tool been updated?

2013 GB tool:

Step 3. Calculation of Total N excretion deposited in buildings, on outdoor yards and on grazed land				
Input data				
	Number of livestock	100		
	N Excretion kg	105		
	% TAN excr	60		
	Housed period, days	180		
	% excreta on yards	25		
Calculations				
Equation 5	m_grazN	3991.4		
Equation 6	m_yardN	2625.0		
Equation 7	m_buildN	3883.6		
Total		10500.0		
Check		0.000		
Step 4. Allocation of organic-N and TAN excretion between buildings, outdoor yards and grazing				
Input data				
Equation 8	m_graz,TAN	2394.9	m_grazN	3991.4
Equation 9	m_yard,TAN	1575.0	m_yardN	2625.0
Equation 10	m_build,TAN	2330.1	m_buildN	3883.6
Total		6300.0		10500.0
Check		0.000		0.000
Step 5. Estimate amounts of TAN deposited in buildings as slurry or FYM				

- 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

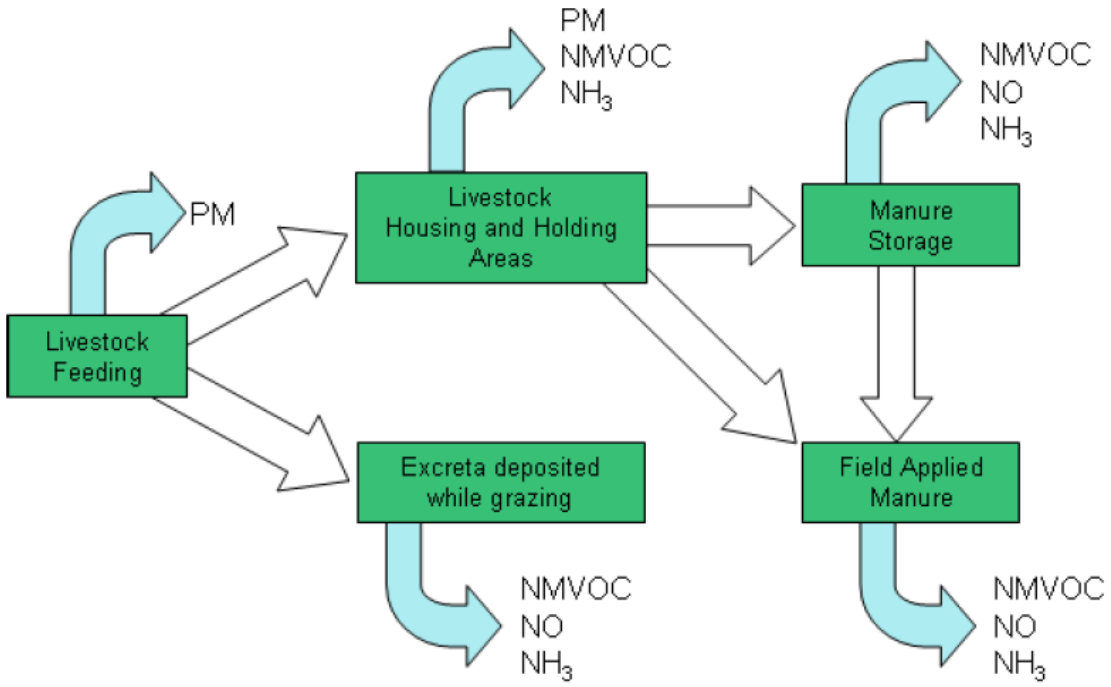
https://www.eea.europa.eu/publications/emep-eea-guidebook-2019/part-b-sectoral-guidance-chapters/4-agriculture/manure-management-n-flow-tool/view

- 3. Agriculture
  - 3.B Manure management 2019 [1.4 MB]
  - 3 D Crop production and agricultural soils 2019 [977.0 KB]
  - Manure Management N-flow tool [1.9 MB]
  - 3.D.f-3.I Use of pesticides and limestone 2019 [412.4 KB]
  - 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 (NH_3, NO_x and N_2O)
- ✓ 3Da2a Emissions Manure application to soils (NH_3, NO_x and N_2O *)
- ✓ 3Da3 Emissions from Urine and dung deposited whilst grazing (NH_3, NO_x and N_2O *)
- ✓ 5B2 Emissions from anaerobic digestion facilities (NH_3 only)*

**Additional to algorithm presented in GB 2019*

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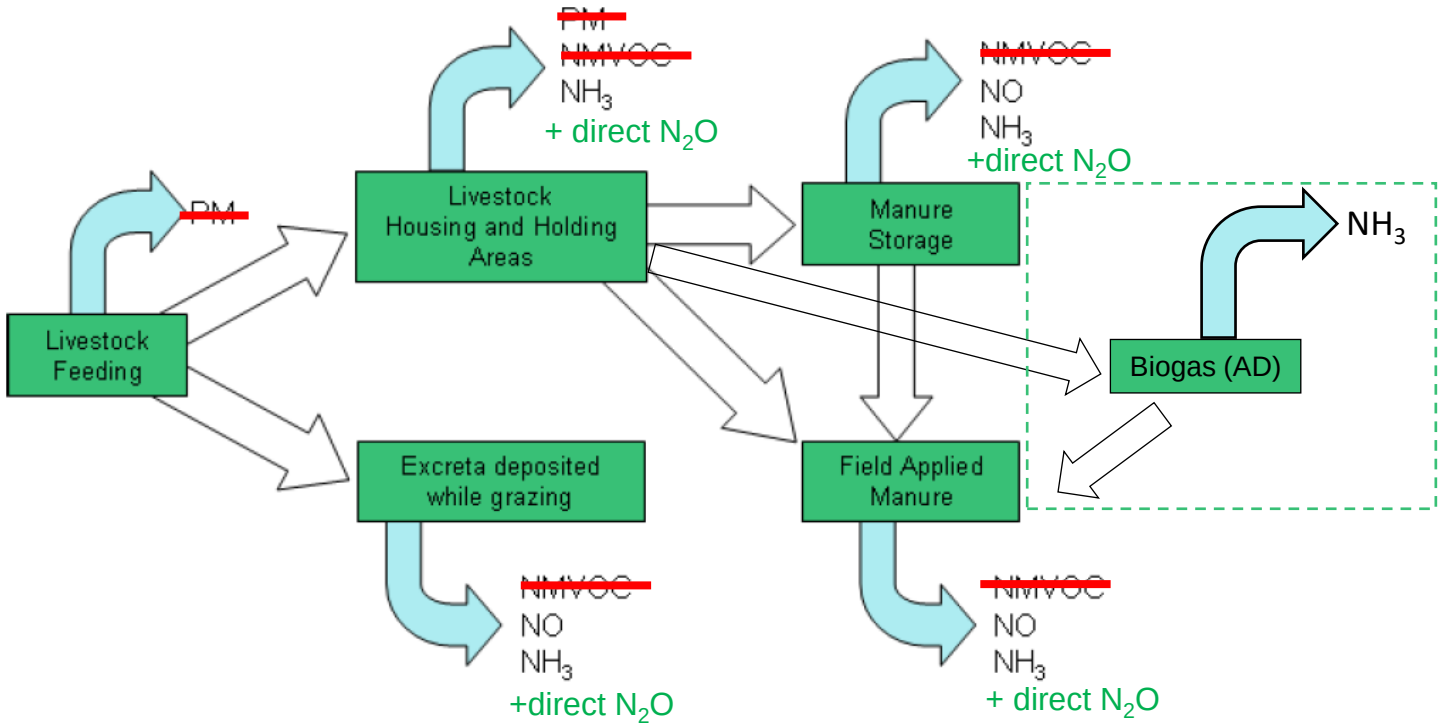

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**Additional to algorithm presented in GB 2019*

Not Included in current version:

- X Other GHGs, PM, NMVOC, **Indirect N_2O emissions**
- X Emissions from other 3D subcategories:
  - X Synthetic fertilisers, sewage sludge and other organic f
  - 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)

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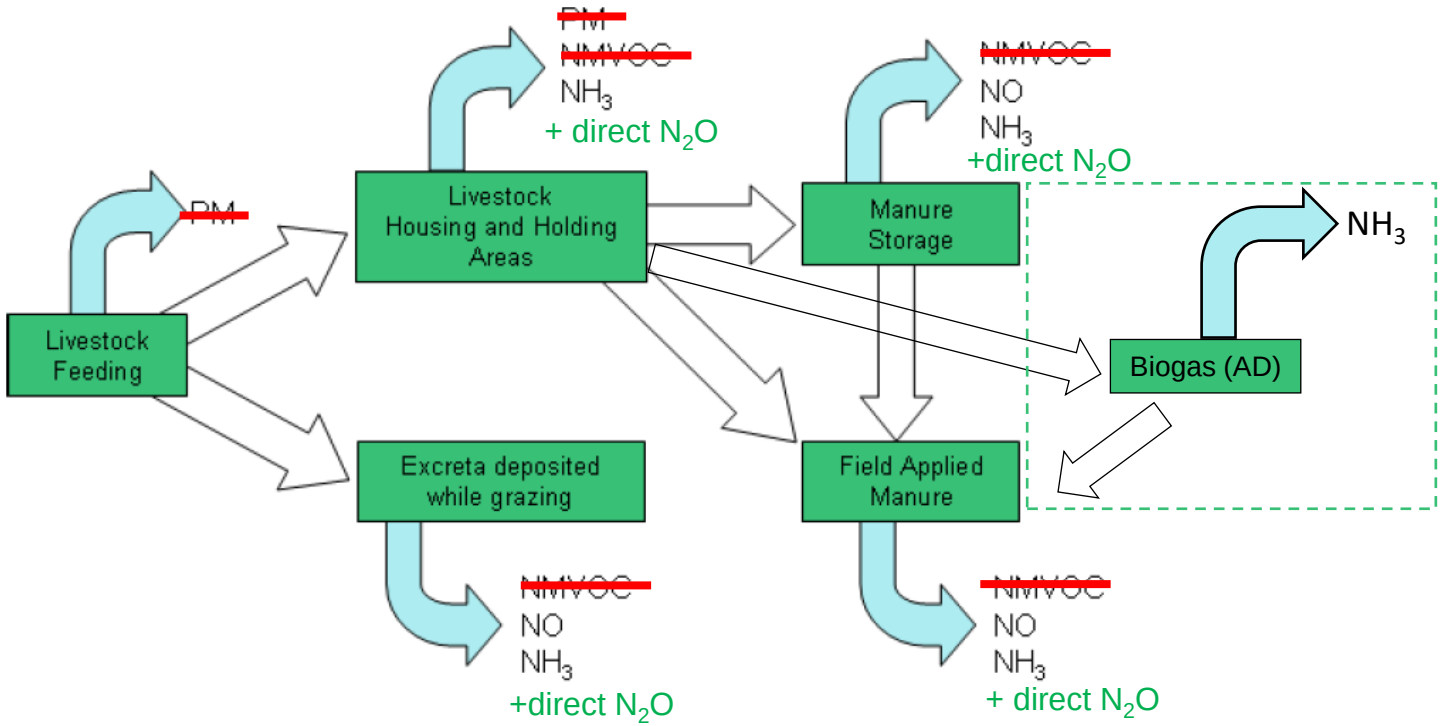

Live demo

Over to Rosie…

Question and answer session

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