

## GHG emissions from Agriculture - Ireland's approach

Bernard Hyde  
 EPA Regional Inspectorate,  
 The Glen, Monaghan Town,  
 Co Monaghan  
 Ireland

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## Agricultural GHG emissions IRE - the facts

- National total emissions = 58.3 Mt CO<sub>2</sub>e
- Agriculture = 18.75 Mt (31.0%)
- Agricultural CH<sub>4</sub> 88.3% of national CH<sub>4</sub> (cattle 90.6%)
- Agricultural N<sub>2</sub>O 92.8% of national N<sub>2</sub>O
- Agriculture ~ one third of the key categories
- Uncertainty in national estimate driven by N<sub>2</sub>O from soils

## Agricultural GHG emissions IRE - the facts

- Grass based system (cattle, sheep, goats, horses): 61.6% of N excreted is at pasture
- Liquid system AWMS - Mink (recent years)
- Solid storage and dry lot AWMS - horses, mules, Mink (historically)
- Pit Storage AWMS - Dairy cattle, other cattle, pigs, Laying hens and ducks
- Deep Bedding AWMS - Dairy cattle, other cattle, sheep, goats, deer

## Livestock categories

- Cattle
  - Dairy Cattle
  - Non-Dairy Cattle
- Sheep
- Goats
- Horses
- Mules and Asses
- Swine
- Poultry
- Deer
- Fur farming



## Livestock categories (contd.)

- June and December livestock census - Central Statistics Office
- AIM - Department of Agriculture
- Crop production statistics - Central Statistics Office/LPIS

### Cattle

Dairy cows  
 Suckler (Beef) cows  
 Male cattle < 1 year  
 Male cattle 1-2 years  
 Male cattle > 2 years  
 Female cattle < 1 year  
 Female cattle 1-2 years  
 Female cattle > 2 years  
 Bulls for breeding  
 Dairy in-calf heifers  
 Beef in-calf heifers

### Sheep

Ewes  
 Rams  
 Lambs  
 Other sheep

### Pigs

Sows in pig  
 Sows for breeding  
 Gilts in pig  
 Gilts not yet served  
 Fattening pigs < 20kg  
 Fattening pigs > 20kg

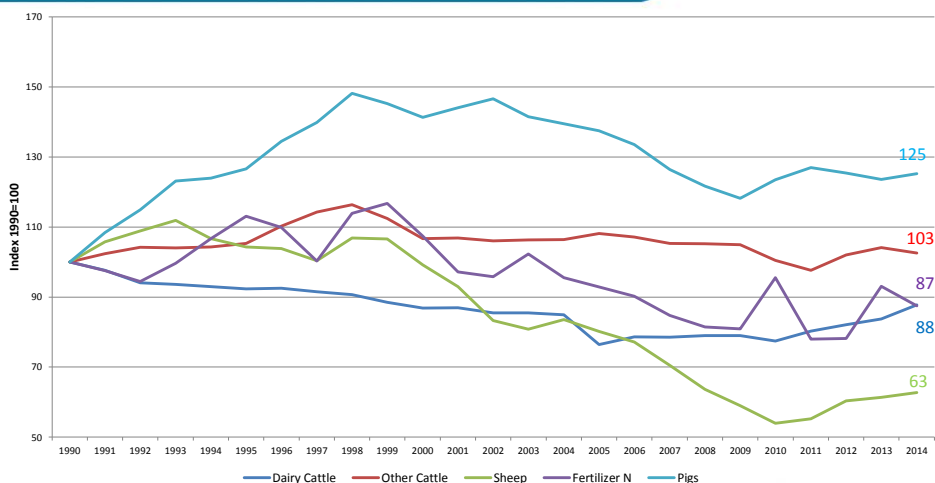
### Poultry

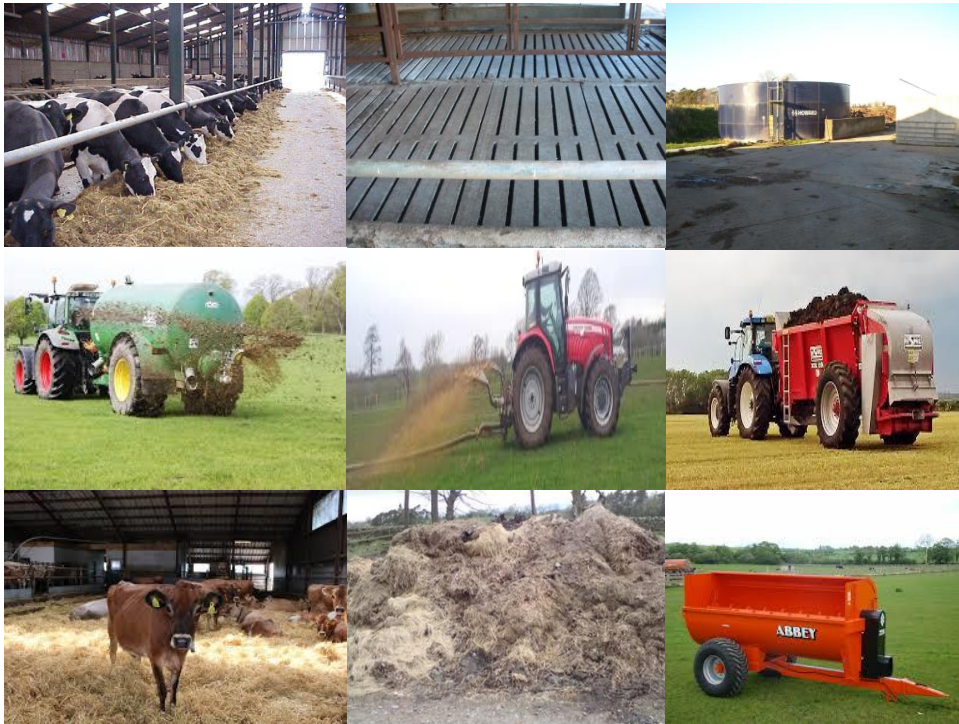
Layers  
 Broilers  
 Turkeys  
 Ducks & Geese

### Other Livestock

Horses  
 Mules and asses  
 Goats  
 Mink  
 Fox  
 Farmed Deer

## Drivers in Agriculture - Livestock population (relative trend)

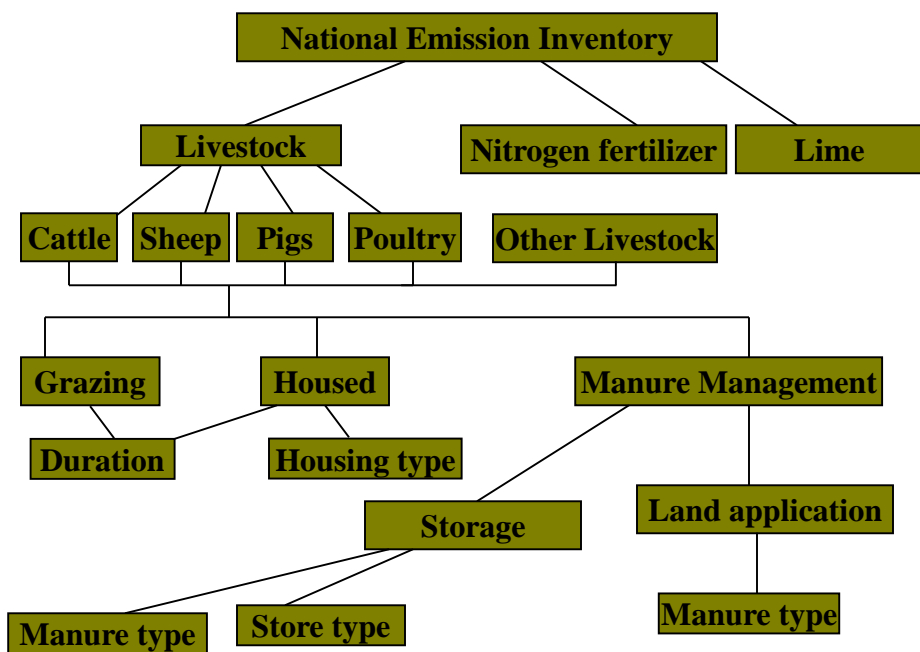




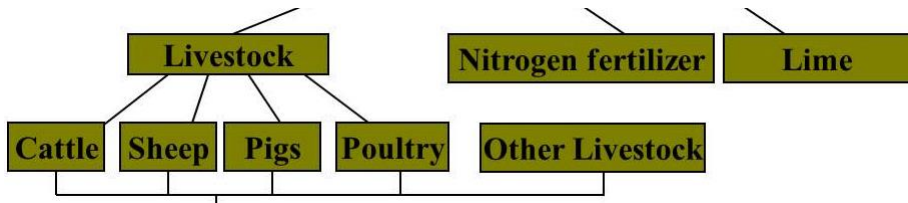
61.6% of N excreted is at pasture

## Emission sources and gases

- Enteric Fermentation -  $\text{CH}_4$  (Tier 2 model - cattle)
- Manure Management -  $\text{CH}_4$  (Tier 2 model - cattle) &  $\text{N}_2\text{O}$  (Tier 2 CS data on AWMS)
- Agricultural Soils -  $\text{N}_2\text{O}$  (Tier 1)
  - Direct emissions - All forms of nitrogen
  - Indirect emissions - Atmospheric deposition of  $\text{NH}_3$ , leaching and runoff
- Urea Application -  $\text{CO}_2$  (Tier 1)
- Lime Application -  $\text{CO}_2$  (Tier 1)
- Rice Cultivation, Prescribed Burning of Savannas, Field Burning of Agricultural Residues, Other carbon containing fertilizers and Other not included

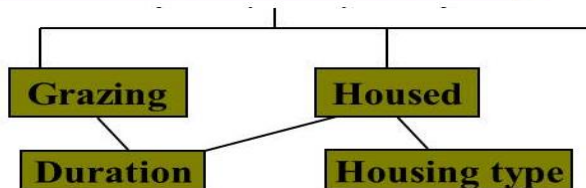


## Livestock & N Fertilizer & Lime



- ☐ National/Regional Statistics, Government Departments, Agricultural Industry Bodies, Slaughter statistics
- ☐ Fertilizer industry, import statistics
- ☐ Lime production industry, farm advisory bodies, consultants

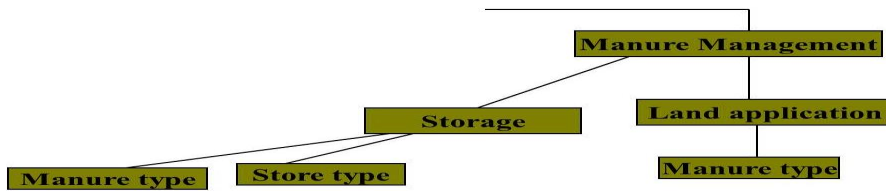
## Manure management



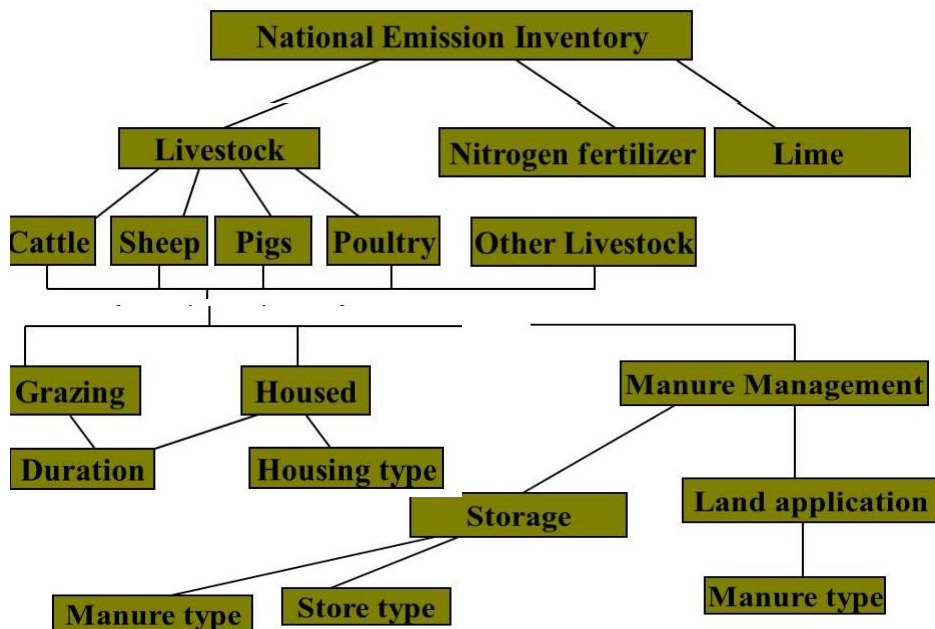
- ☐ National/Regional Statistics
- ☐ Farm organisations
- ☐ Farm advisory bodies/consultants
- ☐ Surveys
- ☐ Expert judgement



## Manure management



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## Current and future IRE Research Activities

- <http://agri-i.ie/>
- Feed evaluation for accurate nutrition
- Modelling of increased grazing management precision on Irish grassland farms
- Sustainable nitrogen fertilizer use and disaggregated emissions of nitrogen
- Measurement and abatement of agricultural ammonia emissions
- Carbon auditing of dairy and beef farms
- Review of National Emissions Factors for Methane Emissions associated with Agriculture and Livestock Management

