Reducing environmental impact in the Dutch dairy sector with ANCA-tool

(Annual Nutrient Cycling Assessment)

KRINGLOOP WIJZER

29-4-2021

Michel de Haan, WUR

NL has unique situation

- High level of milk production *(no 12 - 15 in the world)*
- Due to climate, good soil, access to concentrates, cooperatives, skilled farmers
- Lots of animals in a small country

-> So a lot of manure with risk of impact on water quality, high ammonia emissions and GHG emissions

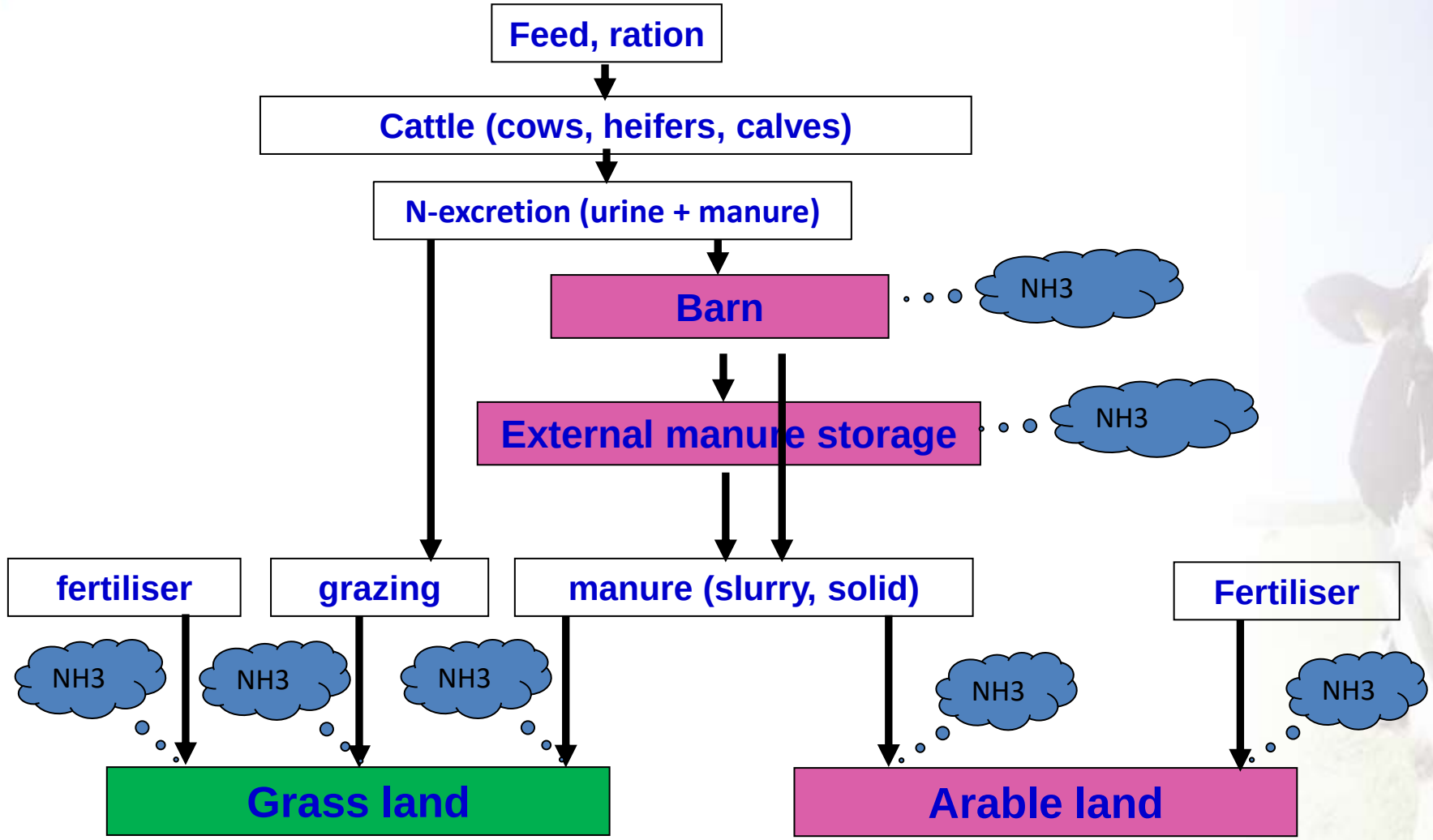
Dairy farming = nutrient cycling

- 2010: start developing ANCA
- To calculate farm specific environmental performances
- Financed by dairy sector and min. LNV

ANCA calculates:

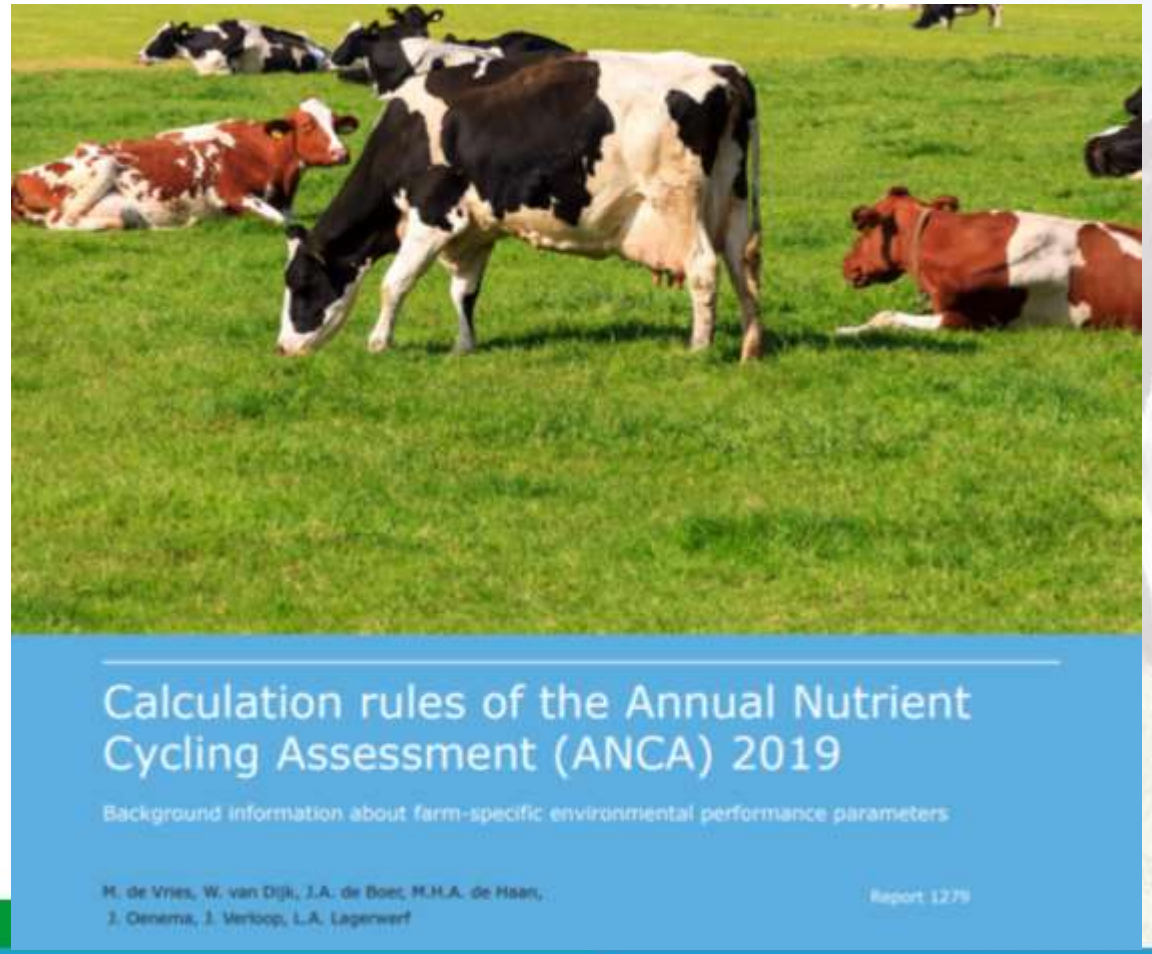
1. Efficiency of feeding (conversion of N and P from feed into milk and meat)
2. Crop yields: N, P, C, energy (kVEM)
3. Efficiency of fertilisation (conversion form fertiliser and manure into crop yields)
4. Production of manure: excretion of N and P
5. Surpluses of N, P on farm balance
6. Surpluses of N, P on soil balance
7. Supply of effective organic matter (eom)
8. Ammonia emissions
9. Green House Gas emissions (CH_4, N_2O, CO_2)

Ammonia emissions



Report with formulas

https://library.wur.nl/WebQuery/wurpubs/fulltext/533905



Agreement (1 JULY 2013 – onwards): improve mineral efficiency by using ANCA

nzo
nederlandse zuivel organisatie

LTO Nederland

Nevedi

VLB
vereniging van accountants- en belastingadviesbureaus

Aldus overeengekomen:

Datum: 1 juli 2013

NZO	LTO Nederland	Nevedi	VLB
C.C. 't Hart	C. Romijn	H. Flipsen	F. Tsang

Milk processors Farmers union Feed suppliers Accountants

From 2016 onwards: ANCA is mandatory for all dairy farms

Dataprocessing with maximum automation

Data flows ANCA

Key Performance Indicators: better management for lower costs

	De Marke 2020 (3 yr average)	Reference group
Nitrogen Soil Surplus (kg/ha)	100	125
Ammonia emission (kg/ha)	42	54
Home grown protein (%)	50%	62%
Permanent grassland (%)	27%	60%
Green house gas emission (g/kg FPCM)	1035	1162

Extra (financial) benefits

- Good performance on KPI's in sustainability programs
  - Dairy processors, Banks (interest rate), Local biodiversity projects
  - On the way to planet proof: Independent environmental quality label

- Government: some pilots for *using extra manure* when low nitrogen and phosphorus surpluses

Conclusions / summary

- ANCA developed to indicate farm specific environmental performances
- Formulas scientifically described
- Dairy sector agreed to oblige ANCA for dairy farms from 2016
- Central database with maximum automation organized by ZuivelNL
- ANCA helps to improve farm management and can help to get extra financial compensation in sustainability programs

Discussion

- A mandatory system driven by the dairy sector can be successful in other countries than NL
- Without an obligation a system with a central database has no future
- The government is afraid of data input manipulation (wrong data input, on purpose), so for legislation they better use stocking rate to indicate environmental performance

ANCA is a joint effort of the dairy sector and partners

Owner Central Database

Partners

Ministerie van Landbouw, Natuur en Voedselkwaliteit