

State of art in relation methane registration for breeding purposes

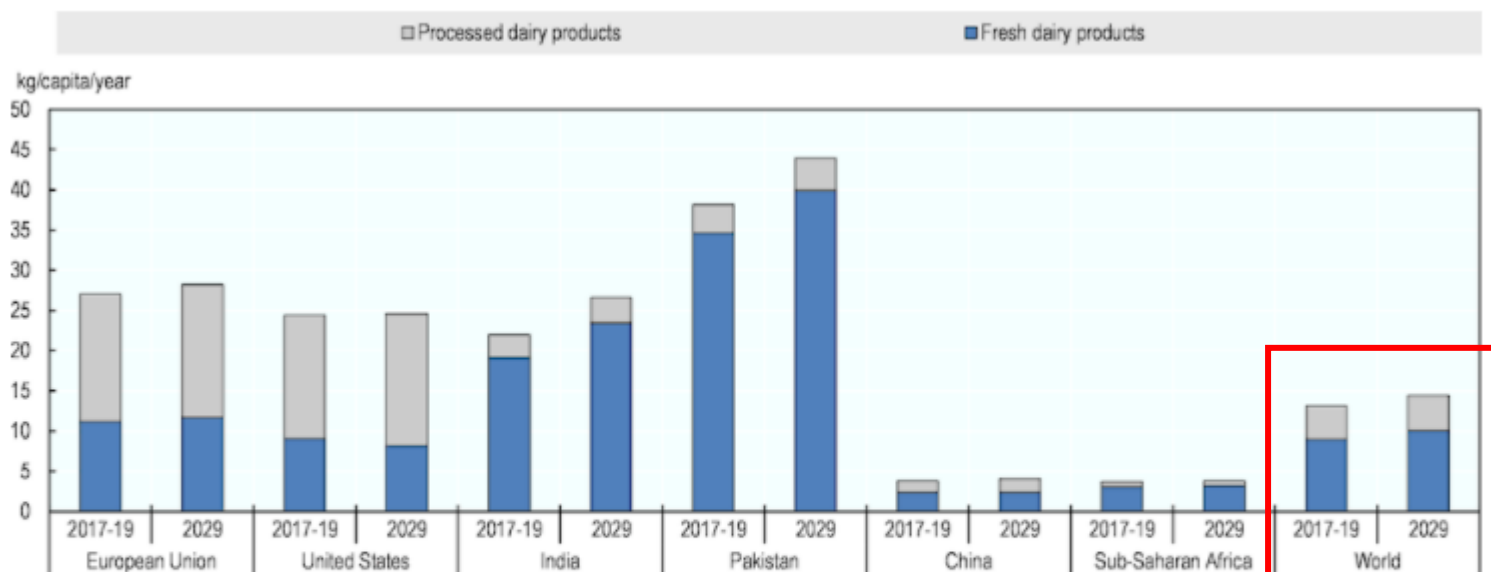


The political landscape in climate debate

- Agriculture is one of the scapegoats – especially ruminants
- If we can do something, we should implement it
- Alternative is a huge reduction in cattle world wide

The controversies....

Figure 7.1. **Per capita consumption of processed and fresh dairy products in milk solids**



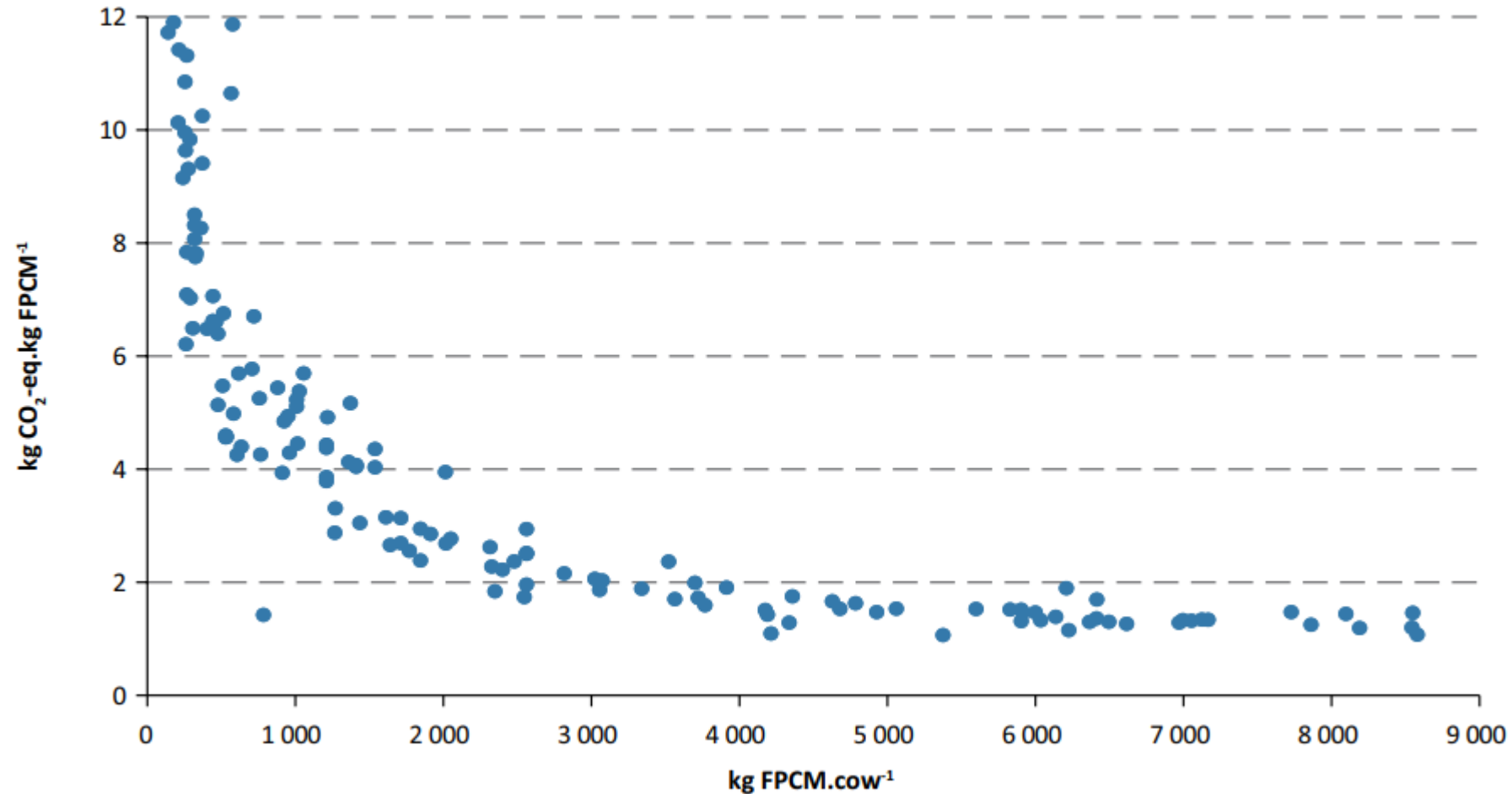
← +1% / year

Note: Milk solids are calculated by adding the amount of fat and non-fat solids for each product; processed dairy products include butter cheese, skim milk powder and whole milk powder.

Source: OECD/FAO (2020), "OECD-FAO Agricultural Outlook", OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

 StatLink <https://doi.org/10.1787/888934142577>

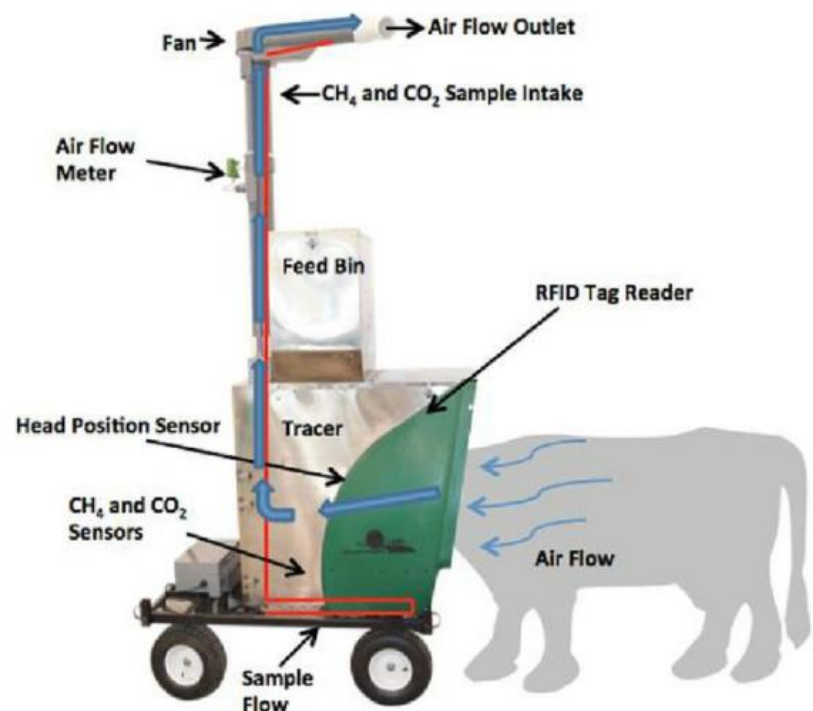
Methane intensity vs milk production



Research in order to reduce methane emission in dairy cattle

- 100s if not 1000s of project world wide on cattle nutrition
- 10s of projects world wide on cattle management incl genetics: longevity, reproduction, health, etc.
- To my knowledge 3(5) projects world wide on classic genetic evaluations
 - Denmark, Norway and the Netherlands
 - Spain. Not routine data recordings, but visiting several commercial herds
 - Also FutureBeefCross in Denmark

Methods to make records



Greenfeed



Sniffers



Greenfeed

- Very expensive (100.000 Euro/unit)
- Needs cow handling
- Precise quantification
- 100s animals

Sniffers

- Expensive (10.000 Euro/unit)
- Non invasive
- Less precise quantification
- 1000s animals

What is used?

- Norway – Only Greenfeed
- The Netherlands – Both sniffers and Greenfeed
- Denmark – Only sniffers

Aim in terms of recordings

- Norway: 3000 NRF cows
- The Netherlands: +10000 cows (all Holstein?) in 100 farms
 - Some fixed and some rotational data recordings
- Denmark: + 10000 cows across HOL, JER and RDC
 - Some fixed and some rotational data recording
 - Data from projects in Sweden and Finland can also be part of collaboration

Time schedule

- Norway: Started in 2021
- The Netherlands: First recording nov21
- Denmark: Begins Jan22, but 4000 cows with records from previous projects

Recordings in Denmark

- Comparable with yield recording
- 40-50 herds will be part of the recording
- Equipment will be installed in AMS herds for 4 weeks
- Every herd will be visited 3 time yearly
- Data from all milking cows visiting the AMS
- Moved to next herd
- Investment in 40-50 installations

The Danish project - GUDP

- Collaboration between University and industry (Jan2022-Jan2026)
- VG, SEGES, ARLA, AU, RYK
- 3 main aims
 - Genetic evaluation
 - Improve ARLA herd assesment
 - Improve national inventories for IPCC/UN

Initial results

- 3000 HOL cows (AUS, CHE, CAN, DNK)
- Methane is heritable (~ 0.20)
- Genetic correlations with high standard errors
- Their signs are as expected

	Methane production	Residual methane
DMI	0.42	0.00
ECM	0.45	0.10
RFI	0.38	0.20
BW	0.65	0.05

Manzanilla-Pech
et al., 2021

Sum up

- We can select for reduced methane emission
- A continuous data recording system is about to be initiated
- Two other countries are collecting data to generate methane indices



Thank you