Breeding strategies to reducing methane emissions from ruminants

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Harnessing the power of breeding.....

32,805 kg of milk
1,267 kg fat
974 kg protein
1,575 kg lactose
365 d lactation

Evergreen View My 1326 ET
Fundamentals of breeding
Fundamentals of breeding
Fundamentals of breeding
Two-pronged approach

Indirect approach

Direct approach
Indirect approach

Methane vs. Age graph
Indirect approach

Methane vs Age

- Methane levels increase with age.
- The graph shows a significant increase from age 0 to around age 700, where the methane levels reach a peak.
- After age 700, the increase in methane levels slows down, indicating a possible stabilization or slowing of the process.

The diagram illustrates the gradual accumulation of methane over time, with a sharp rise prior to age 700 and a more gradual increase thereafter.
Indirect approach

Heifer/lamb

Cow/ewe

Calories/CO$_2$
We’re currently breeding for lower hoofprint

14% improvement in carbon footprint per kg fat+protein corrected yield

Also improved nitrogen use efficiency

€320 more profit per lactation
We’re currently breeding for lower hoofprint

Top 10 bulls vs 90th-100th bulls

>½ kg CO₂eq/day
10% reduction

€63 more profit
We’re currently breeding for lower hoofprint

7.87 g per day
8.47 per day

€12/ewe more profit
Can we do better?

What is the variability?

Is it worth chasing?

Milk yield / growth rate vs. Methane production (g/d)
Measuring methane emissions

Prerequisites for breeding

1. Important
2. Exhibit genetic variability
3. Data availability
Take home message

• Sustainability is key
  • Social sustainability includes profitable sectors

• Massive opportunity to improve the environmental footprint of ruminant livestock

• Breeding is cumulative and permanent
  • And it is not slow!!!!!

• Co-evolution with animal/farm management