

# Feed intake recording at commercial dairy farms to breed efficient and healthy dairy cows

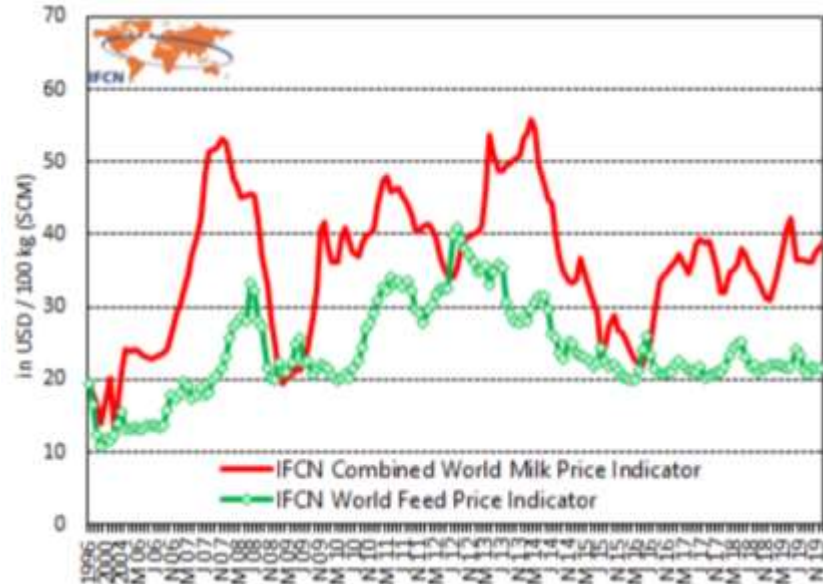
Sander de Roos & Pieter van Goor | ICAR, April 27<sup>th</sup> 2021



# Importance of feed efficiency

## (1) Profitability

- Feed are ~60% of costs on a dairy farm
- kg FPCM per kg Feed



source: <https://ifcndairy.org/>

# Importance of feed efficiency

## (2) Sustainability

- Optimal use of available land & feed
- Environmental compliance N, P<sub>2</sub>O<sub>5</sub>, CO<sub>2</sub>
  
- CO<sub>2</sub>-eq per kg Milk
- kg Milk per kg P<sub>2</sub>O<sub>5</sub>



### Three focus areas for sustainability on the farm

Our member dairy farmers focus on their carbon footprint, biodiversity and animal welfare. After all, in order to have a sustainable dairy farm, animals and ecosystems must be healthy and emissions must be minimal.



#### Carbon footprint

Our cooperative and member dairy farmers collaborate and work hard to reduce their carbon footprint.

Read more



#### Biodiversity

The greater the biodiversity, the greater nature's resilience and ability to recover. And nature is the strong force behind every dairy farm.

Read more



#### Animal welfare

Healthy cows live longer, need less medication and produce more – and more sustainable – milk.

Read more

# Breeding for feed efficiency

## Traditional breeding extremely effective

- Phenotype recording: production, type, fertility, health
- Progeny test ~100 daughters per bull
- Breeding values
- Farmers use the best proven bulls through AI



## Feed intake per cow too expensive to record on large scale

- Higher production per cow ... indirectly also higher feed intake per cow

## New opportunity with genomics in the last decade

- Genotype few 1000 cows with daily feed intake records
- Genomic breeding values

# Genomic breeding values for feed efficiency

Breeding value launch in 2015

Data = Dairy Campus + other feed research farms



~2500 cows with individual feed intake in 2015

~5500 cows with individual feed intake in 2018



# Feed intake recording at 5 dairy farms



2017	Alders	Overloon	200 cows	20 bins	Hokofarm
2018	Van Gastel	Nispen	150 cows	20 bins	Hokofarm
2019	Vroege	Dalen	1000 cows	84 bins	Biocontrol
2019	Duursma	Bellingwolde	300 cows	46 bins	Biocontrol
2019	Meerkerk	Emmer-Compascuum	230 cows	30 bins	Biocontrol



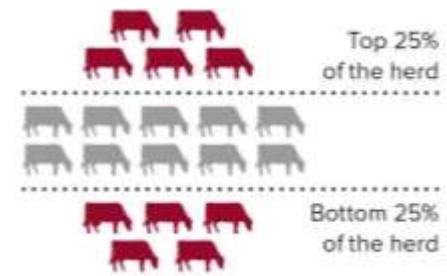
## Feed efficiency in practise

Cow	Kg FPCM 3 lactations	Body weight	Kg Dry Matter 3 lactations	Feed efficiency kg FPCM/kg DM
A	30,140	660	26,898	1.12
B	30,287	634	21,887	1.38
C	30,802	650	20,143	1.53
D	30,408	618	18,552	1.64

same milk

32% less feed

# Feed efficiency in practise



## Farm A

	FPCM (kg/d)	DMI (kg/d)	Feed Efficiency
top 25%	39.0	23.3	1.69
bottom 25%	31.4	23.7	1.32
	<b>+7.6</b>	<b>-0.4</b>	

## Farm B

	FPCM (kg/d)	DMI (kg/d)	Feed Efficiency
top 25%	36.2	18.1	2.09
bottom 25%	31.7	21.9	1.45
	<b>+4.5</b>	<b>-3.8</b>	



# Breeding values

**Dry Matter Intake**      kg DM per day  
**Saved Feed**              kg DM per day  
**Saved Feed Cost**        Euro per lactation  
**Feed Efficiency**          Kg FPCM per kg DM

**CRV EFFICIENCY**      Lifetime production/intake

Reliability Dry matter Intake      ~70% (genomics only)  
 Reliability Saved Feed                ~50% (genomics only)



Delta Endless



## Endless RF

Delta Endless

- ★ Breed leader for NVI
- ★ Super production
- ★ Great health & efficiency
- ★ Available February 2021

NVI B and W base

<b>CRV Health</b>	<b>CRV Efficiency</b>												
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid #ccc;">Daughter fertility</td> <td style="text-align: right; border-bottom: 1px solid #ccc;">104</td> </tr> <tr> <td style="border-bottom: 1px solid #ccc;">+8% Udder health</td> <td style="text-align: right; border-bottom: 1px solid #ccc;">106</td> </tr> <tr> <td style="border-bottom: 1px solid #ccc;">Hoof health</td> <td style="text-align: right; border-bottom: 1px solid #ccc;">106</td> </tr> </table>	Daughter fertility	104	+8% Udder health	106	Hoof health	106	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-bottom: 1px solid #ccc;">Production (€)</td> <td style="text-align: right; border-bottom: 1px solid #ccc;">529</td> </tr> <tr> <td style="border-bottom: 1px solid #ccc;">+20% Longevity</td> <td style="text-align: right; border-bottom: 1px solid #ccc;">615</td> </tr> <tr> <td style="border-bottom: 1px solid #ccc;">Feed efficiency</td> <td style="text-align: right; border-bottom: 1px solid #ccc;">111</td> </tr> </table>	Production (€)	529	+20% Longevity	615	Feed efficiency	111
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# Outlook

- Data collection & data sharing to increase Reliability
- Decrease **carbon footprint** of milk production through breeding
  - Indirectly via Feed Efficiency
  - Directly by measuring methane emissions in practise
- Study feed utilization (roughage vs concentrates)
- Study GxE (feeding systems, grazing on pasture)



Thank you

