FEED EFFICIENCY:
THE NEXT STEP IN ANIMAL BREEDING

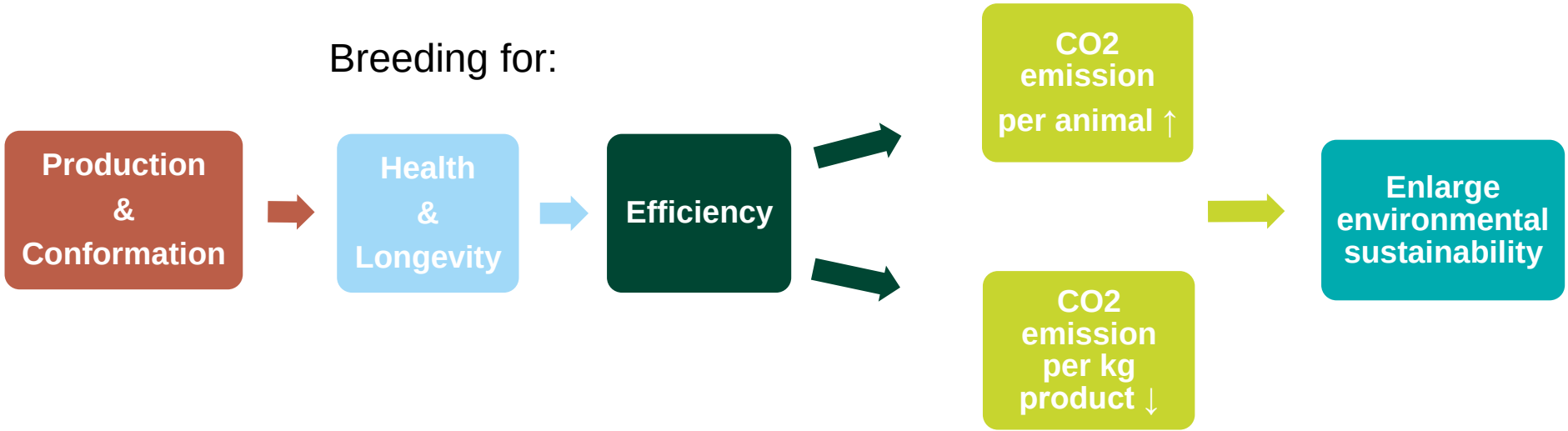
Jorien Bouwmeester - Vosman | Animal Evaluation Unit
P. van Goor, E.C. Wiesenekker – Verduijn, C. van der Linde, G. de Jong

EAAP 2019 – August 29, session 66

BETTER COWS | BETTER LIFE

INTRODUCTION

Breeding for:



INTRODUCTION

Goal: **Breeding for an animal that converts feed in an efficient way into milk (or meat)**

Advantages:

- Smaller carbon footprint
- Reduction of feed costs

DRY MATTER INTAKE (DMI)

- **Genetic info:** Heritability = 0.28
  Standard deviation = 1.4 kg/day

- **Breeding values for Dutch bulls and cows**
- **First genetic evaluation in 2014**

- **Recently added: Saved Feed Costs for body maintenance (SFC)**
  SFC = feed intake – feed for production
  → feed for maintenance
  → difference in digestion and activity
  Unit = euro / lactation

DATA AVAILABLE

- **Data from 1990 onwards**
  > 130,000 weekly DMI records
  > 5,600 HF cows
  with > 2,000 genotyped
  from > 1,000 sires

- **Data providers**
  - Wageningen Livestock Research
  - ILVO
  - Trouw Nutrition
  - Schothorst Feed Research
  - AVEVE

- **CRV BV**
  - Alders herd (260 cows)
  - This year 4 more herds follow

WHAT ABOUT FEED EFFICIENCY?

- **Big difference between farms**
- Variation between 1.2 and 1.6 kg milk / kg dry matter
  - For 50 kg milk difference of 11 kg dry matter!

- **Differences between cows larger!**
- Variation between 1.1 and 1.8 kg milk / kg dry matter

The goal is **not** to reduce the amount of DMI, but to increase kg milk per kg dry matter.

WHAT ABOUT FEED EFFICIENCY?

Based on Alders data from December 2018

3 full sisters	Production (Kg FPCM /day)	Feed intake (kg dm/day)	Feed efficiency (kg FPCM / kg dm)	Profit per cow/day
Linde 1	34.1	21.6	1.58	7.62
Linde 2	38.1	21.9	1.74	8.96
Linde 3	41.8	23.0	1.82	10.03

Milk price € 0.35
Feed costs € 0.20

WHAT ABOUT FEED EFFICIENCY?

Based on Alders data from December 2018

	Production (Kg FPCM /day)	**Feed intake** (kg dm/day)	**Feed efficiency** (kg FPCM / kg dm)	**Profit per cow/day**
25% Best	41.6	23.9	1.74	€ 9.78
25% Worst	31.4	24.6	1.28	€ 6.07
differences	**10.2**	**-0.7**	**0.46**	**€ 3.71**
Milk price € 0.35 Feed costs € 0.20				

The 25% best cows for feed efficiency produce 10 kg milk extra with the same DMI.

25% best cows for FE have 61% higher profit

WHAT ABOUT FEED EFFICIENCY?

Based on Alders data from December 2018

Sire	# Dtrs	Production (Kg FPCM /day)	Body Weight (Kg)	Feed intake (kg dm/day)	Feed efficiency (kg FPCM / kg dm)	Profit per cow/day	EBV SFC (€)
Sire A	28	32.2	649	22.9	1.41	€ 6.69	- 16
Sire B	23	36.4	650	25.1	1.45	€ 7.72	**+ 46**
Sire C	16	**39.0**	**675**	**25.4**	**1.54**	**€ 8.57**	+ 36

Milk price € 0.35
Feed costs € 0.20

Cows with the highest profit: perfect balance between production, body weight and feed intake
→ produce more with less!

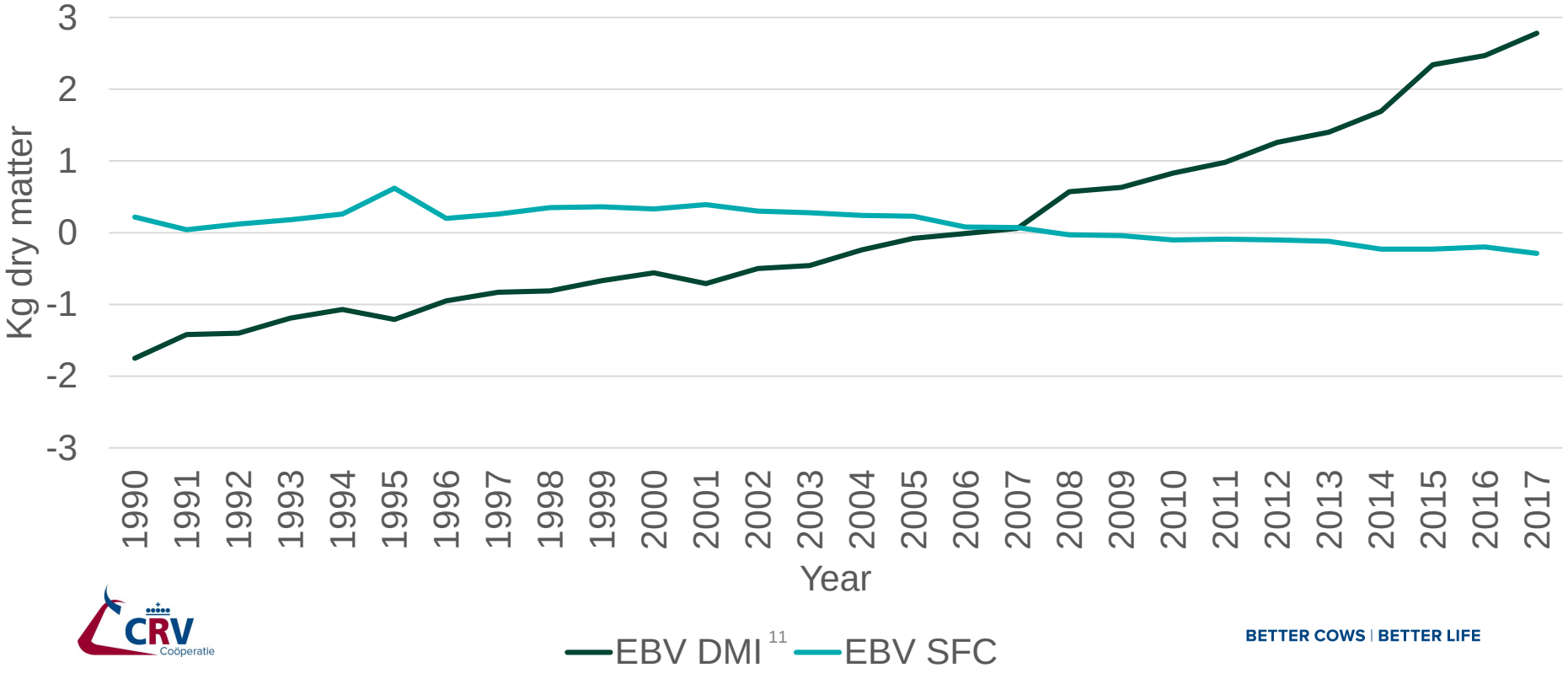
SAVED FEED COSTS

PART OF NET MERIT INDEX

NVI 2018	Factor	Rel weight
Inet	0.40	29%
Longevity	0.08	12%
Udder health	4.7	12%
Fertility	6.3	16%
Udder	1.8	5%
F&L	3.6	9%
Calving traits index	1.8	5%
Claw health	2.7	7%
Saved Feed Cost	0.23	5%

Saved Feed Cost is included in the net merit index with a weight of 5%.

GENETIC TRENDS DMI AND SFC FOR BULLS



FINAL REMARKS

- **5600 cows with feed in take data**
- **DMI used to define SFC**
  - SFC part of total merit index
- **Large differences between cows**
  - Genetic
  - Phenotypic
- **Big step to breed for efficient cow**
  - Higher profit
  - Lower carbon footprint

Animals with a higher feed efficiency
provide more profit for the farmer
and have a lower carbon footprint per kg milk.

Thank you for your attention.
Are there any questions?

Jorien.Bouwmeester@crv4all.com