

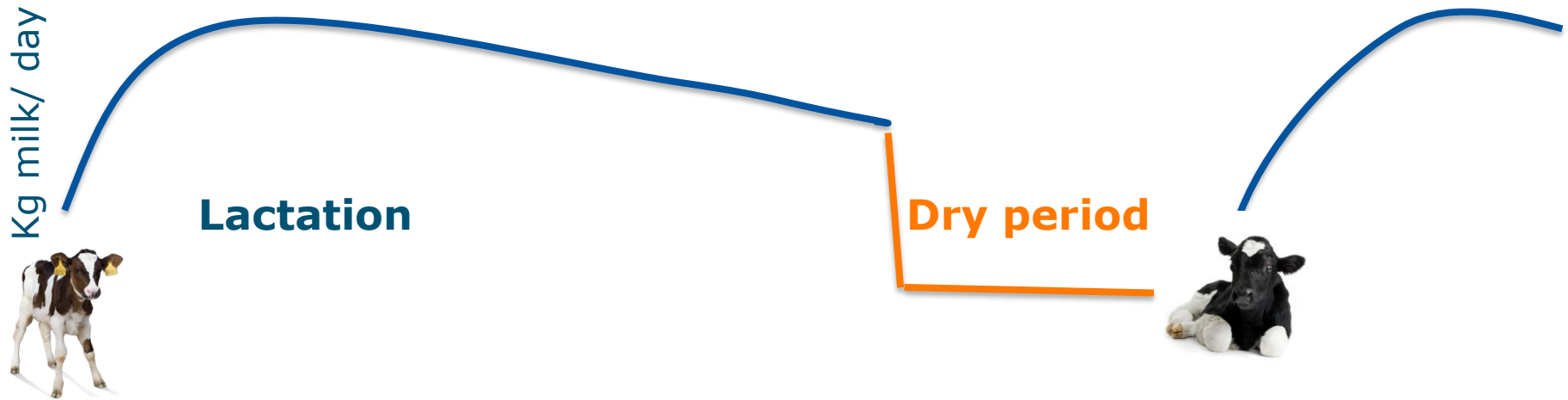
# No dry period: consequences for dairy cows, cash flows, and climate.

Akke Kok, Ariëtte van Kneegsel, Corina van Middelaar, Henk Hogeveen, Bas Kemp, Imke de Boer

EAAP 2018

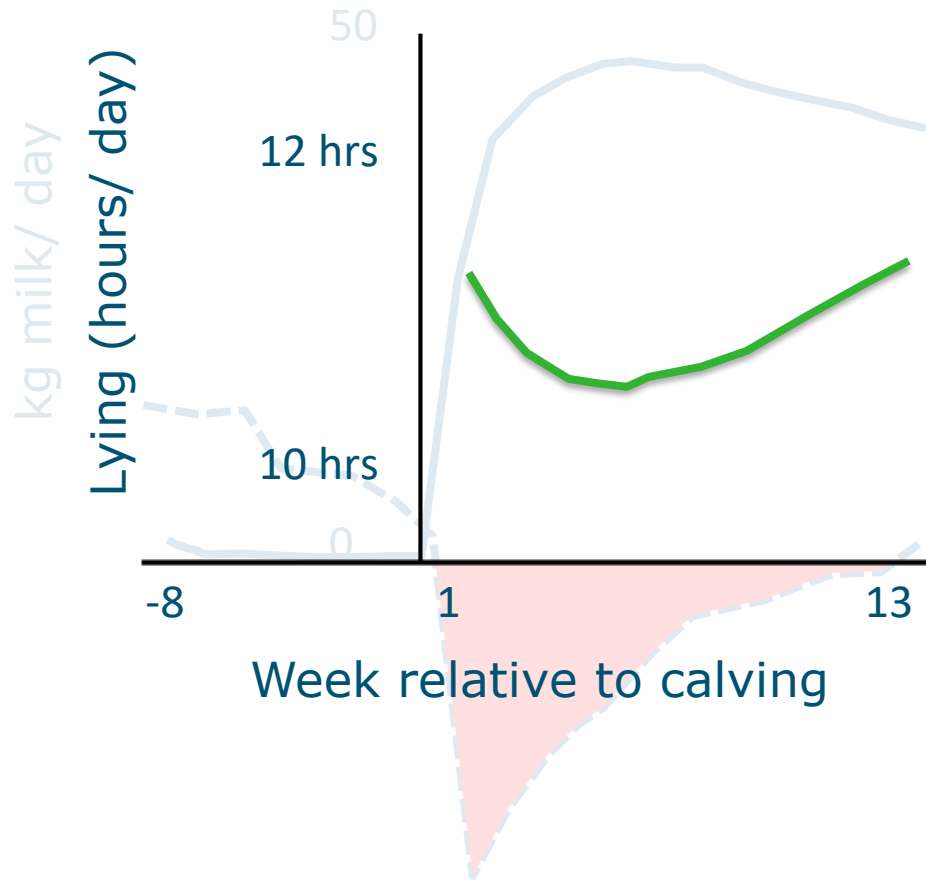


# Dry period: what and why?



- Period without milking before next calving
- Treat subclinical mastitis
- Rest period
- Maximise milk yield

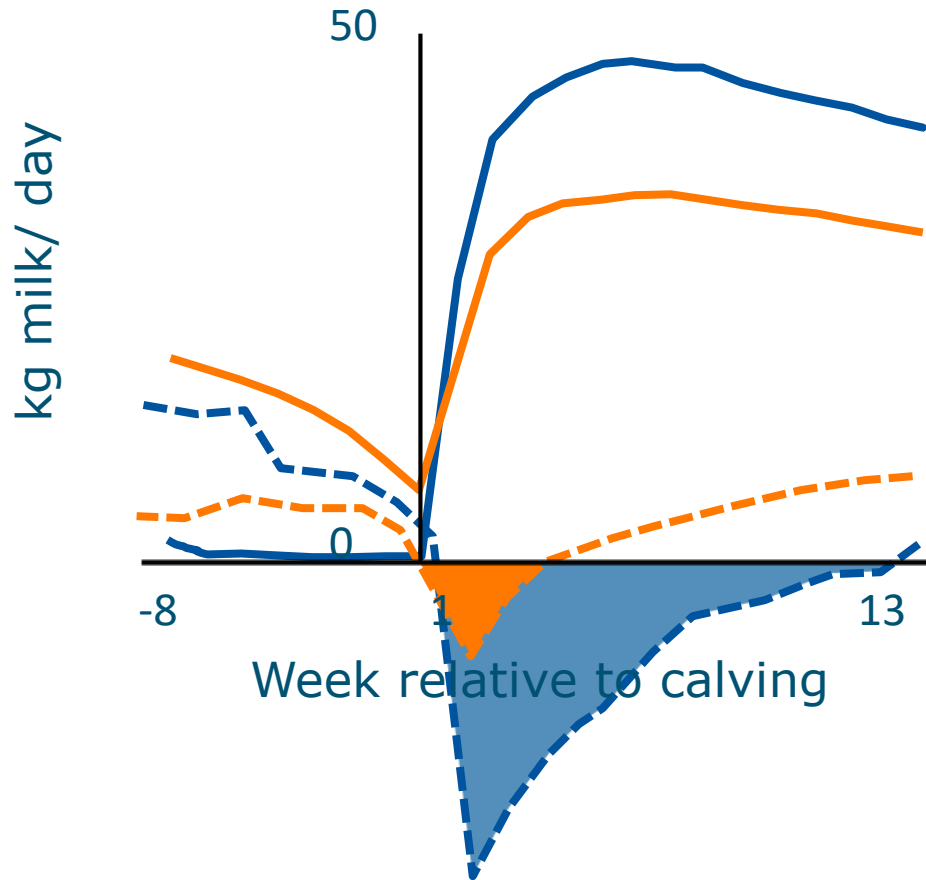
# High milk yield - negative energy balance



Reduced lying time:  
reduced welfare?

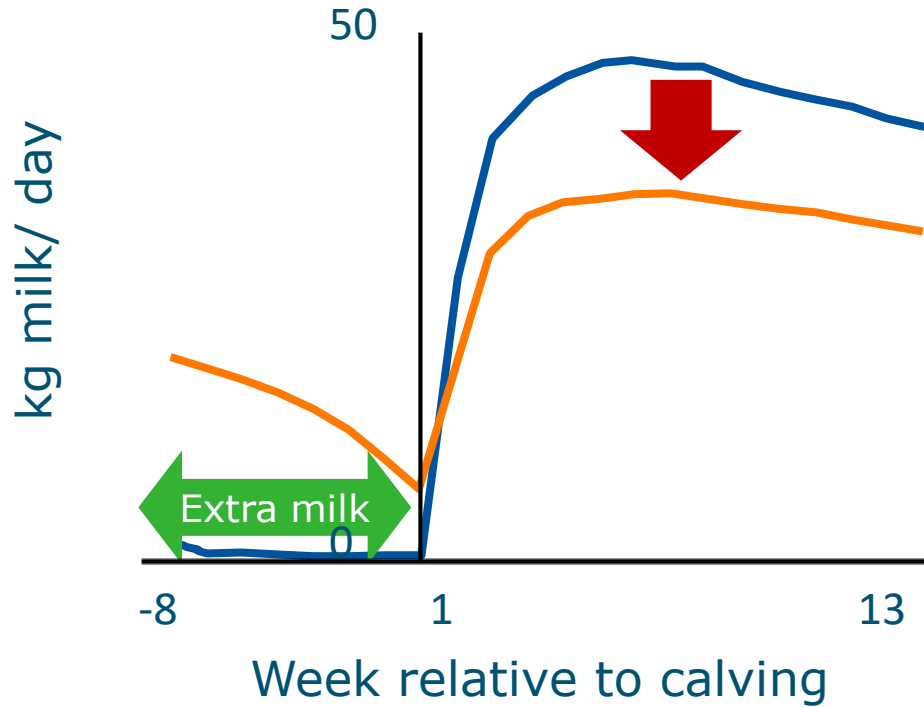
Metabolic diseases  
& reduced fertility

# Solution to NEB: no dry period



No dry period reduces duration and severity NEB

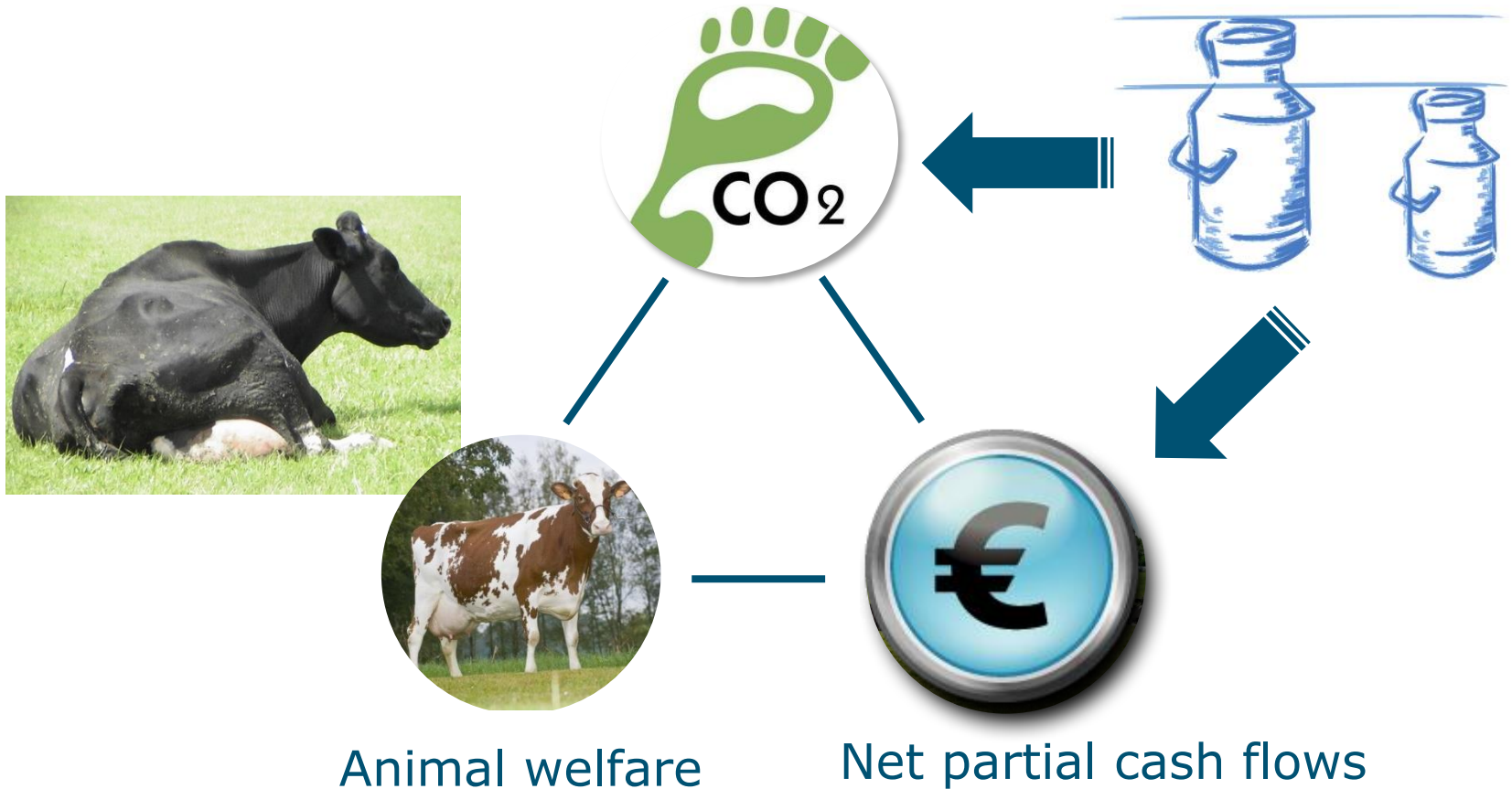
# Trade-offs ? Solution to NEB, but ...



1. Reduced milk yield
2. No rest period

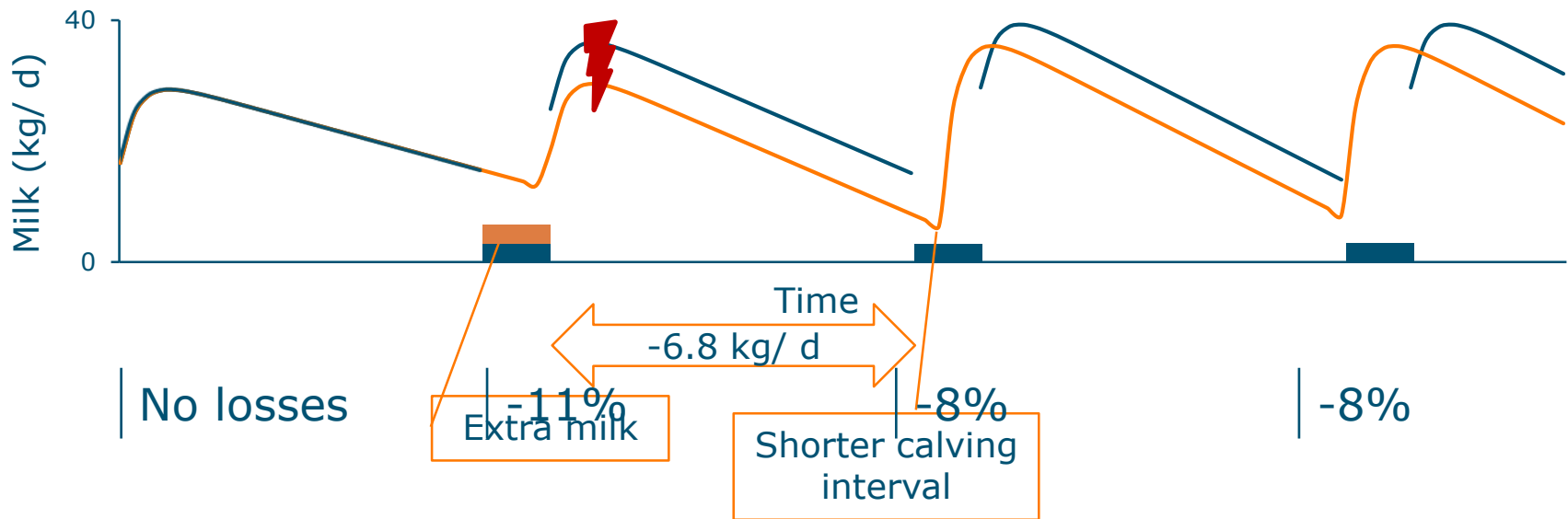
# Aim: assess impacts of continuous milking

Greenhouse gas emissions



# Impact on milk yield

No dry period versus standard dry period (8wk)

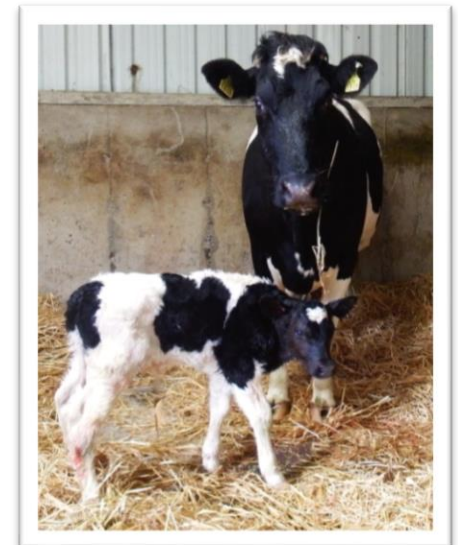


⚡ Culling in early lactation less impact for no DP

Milk yield of the herd is reduced by 3.5%

# Simulation model at herd level

- 100 cows with standard/ no dry period
- No dry period
  - reduces peak milk yield
  - improves fertility:
    - shorter calving interval
    - reduced fertility culling





# Other model inputs



Net partial cash flows/ year

Milk revenues  
Calves sold  
Cows culled  
  
Feed  
Replacement heifers



Greenhouse gas emissions/ t milk\*

- Life cycle analysis
- CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O as CO<sub>2</sub>-equivalents

\* Fat-and-protein-corrected milk

# Net partial cash flow & GHG emissions

No dry period, relative to 8wk dry period

Ref. model



€ cow<sup>-1</sup> y<sup>-1</sup>

-€16



CO<sub>2</sub>-e/ t milk

+4 kg (+0.4%)

Improved health could reduce disease costs<sup>1</sup>

Small negative impact that may be compensated

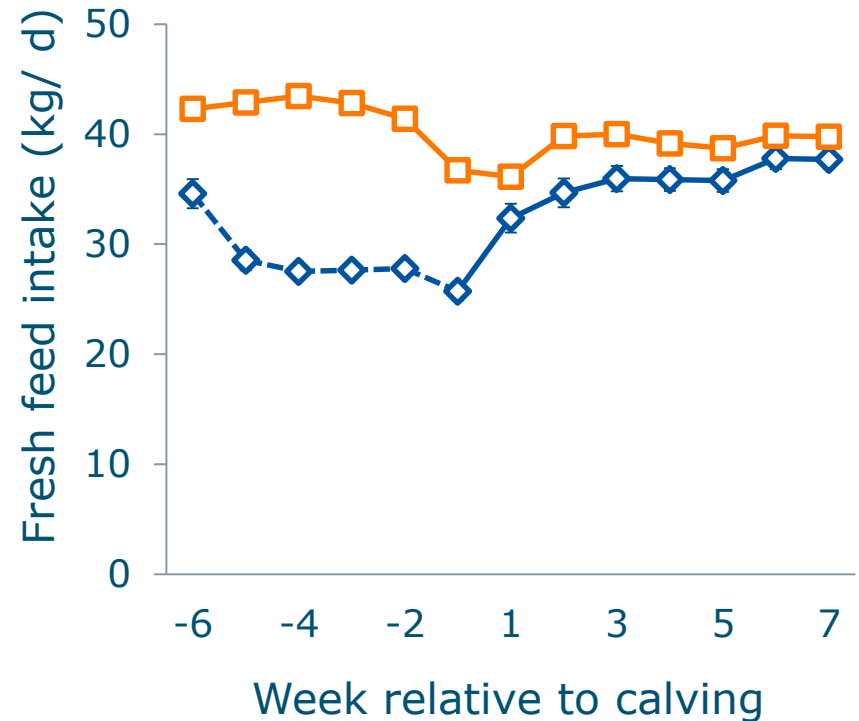
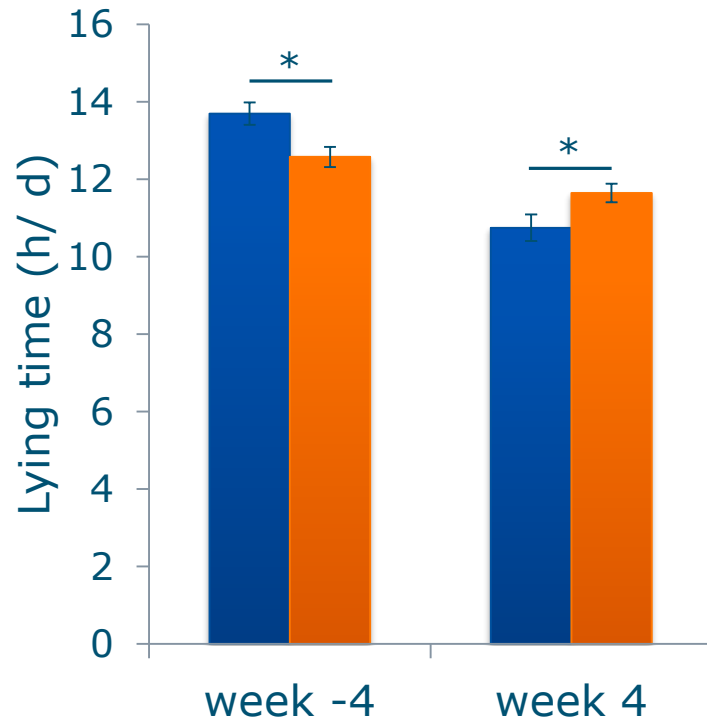
# Effects on the cow: lying and feeding



- 81 cows: 28 dry period (30 days)  
53 **no dry period**
- Feed intake: continuously
- Lying: week -4 and 4 relative to calving

# Effects on the cow

**Dry period (30days)**  
**No dry period**



Still a rest period; increased adaptation to lactation

# Discussion

- Cow welfare seems improved by no dry period
- Small effect on net partial cash flows and GHG emissions
  - Variation between farms
  - Farmers: ease of labour, healthier cows
- Effect on health and disease remains unclear
  - *Trend* increased mastitis<sup>1</sup>



<sup>1</sup>Van Hoeij et al. 2017

# Take home message

No dry period can  
contribute to sustainable  
milk production



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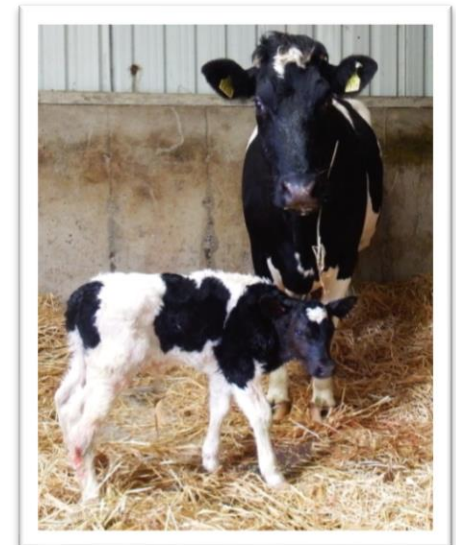




# Simulation model at herd level

- 100 cows with standard/ no dry period
- No dry period
  - reduces peak milk yield
  - improves fertility

Parity	Days dry	Peak yield kg/ d	CI (median)	% fertility culling
1	-		374	8.0
2	56		381	7.5
	<b>0</b>	<b>-6.8</b>	<b>359</b>	<b>3.9</b>
>2	56		385	7.8
	<b>0</b>	<b>-6.1/ -3.5</b>	<b>370</b>	<b>3.7</b>





# Input – economic data

## ■ Net partial cash flow

	Value (€)
<b>Milk</b> revenues (per 100 kg solids) <sup>1</sup>	
Protein	576
Fat	288
Lactose	58
<b>Calves</b> revenues (per animal) <sup>2</sup>	
Female / Male	51 / 109
<b>Culled cows</b> (per kg meat) <sup>2</sup>	2.32
<b>Replacement</b> heifer (per animal) <sup>2</sup>	969
<b>Feed</b> costs (per t DM) <sup>3</sup>	
Summer ration	168
Winter ration	202



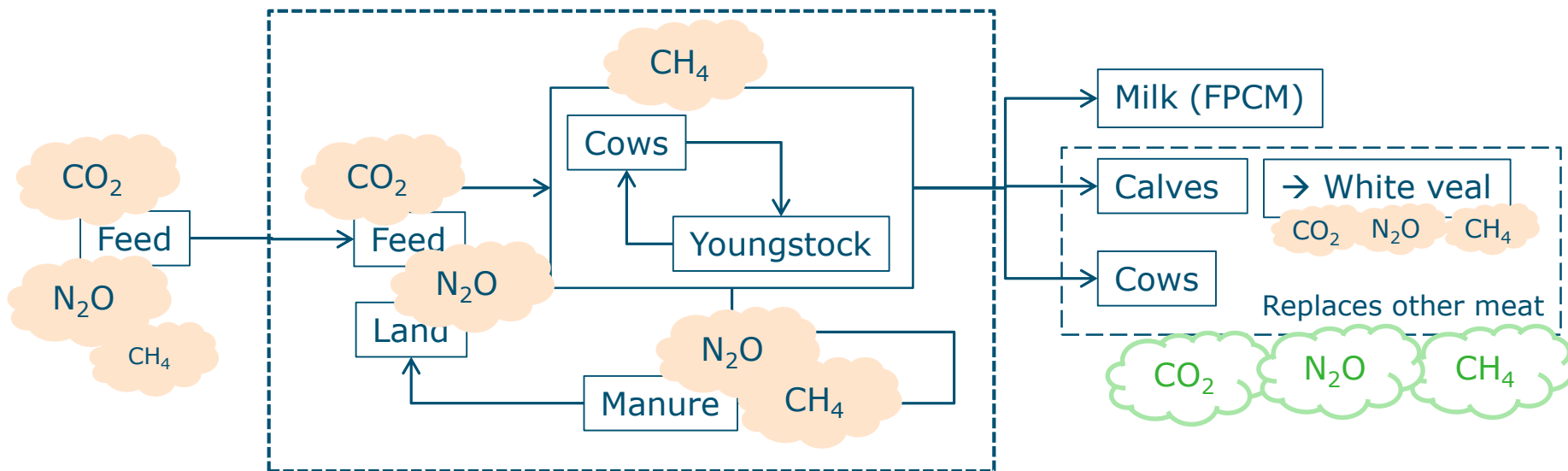
1: milk price 2008:2016, FrieslandCampina

2: 2008:2016, Wageningen Economic Research (LEI)

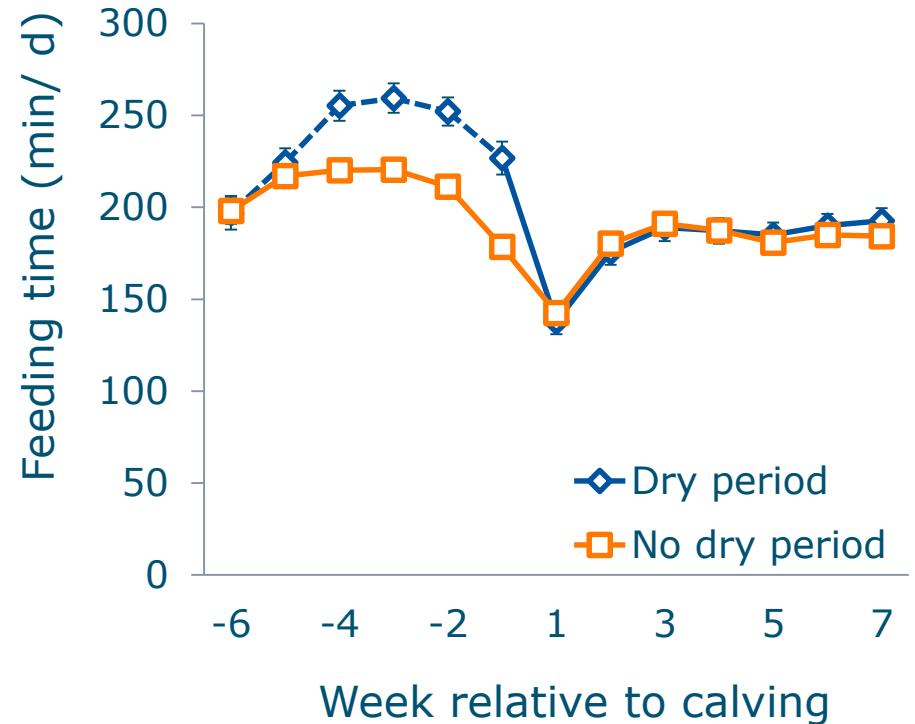
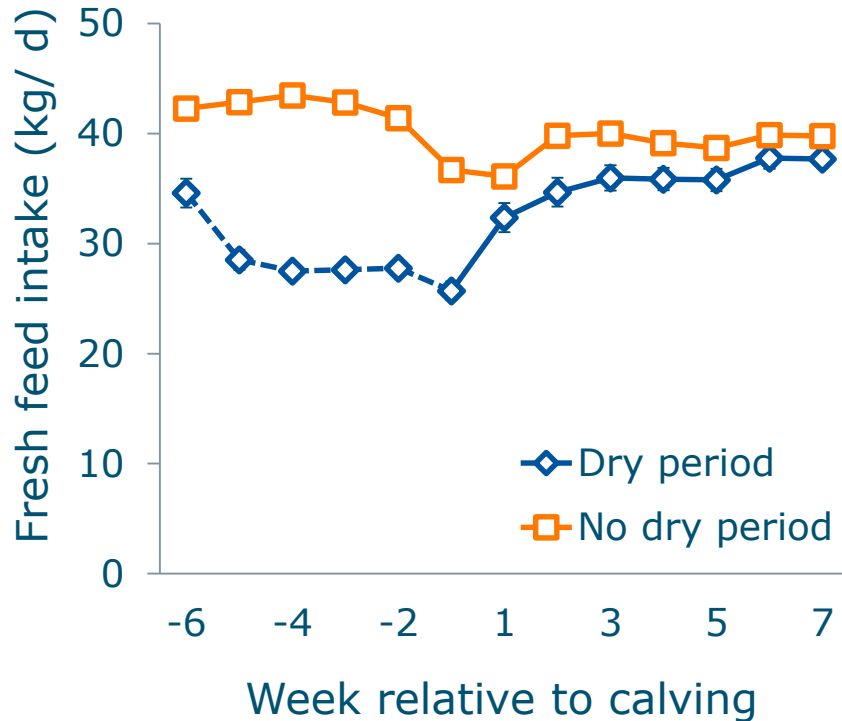
3: KWIN-V, 2014

# Input – GHG emissions

- GHG emissions in kg CO<sub>2</sub> equivalents/ t FPCM



# Impact on the dairy cow



Cows with no dry period:

- Higher feed intake, before and after calving
- Shorter feeding time before calving