

# Future of dairy farming



Euroopa Maaelu Arengu  
Põllumajandusfond:  
Euroopa investeeringud  
maapiirkondadesse



# Introduction

- Carlijn Gieling, the Netherlands
- MSc Animal Sciences, spec: Adaptation, Health and Welfare
- Behavioural sensor technology in dairy farming
- Innovations in dairy farming



# Topics

- Passion for cows
- Dairy farming developments
- Future of dairy farming
- Precision Livestock Farming (PLF)
- Examples of PLF technology use in dairy
- Vision for the future

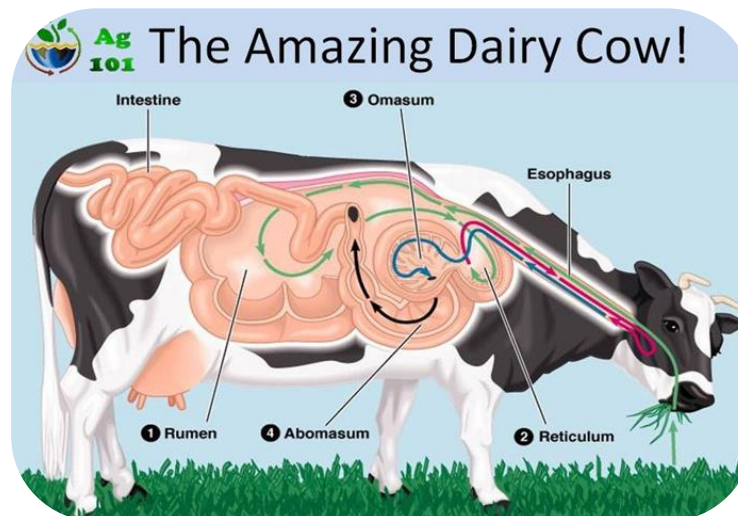


# Passion for cows

What makes her so special?



+

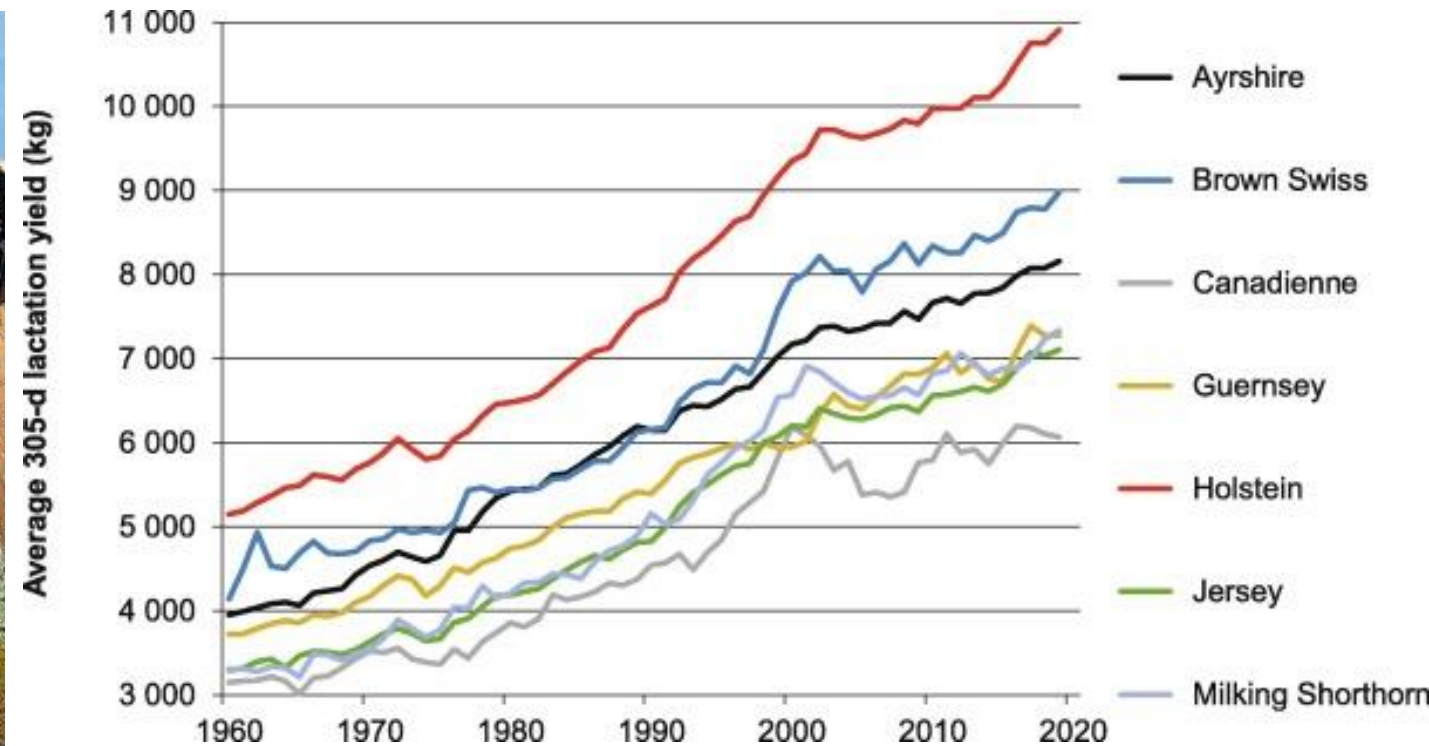
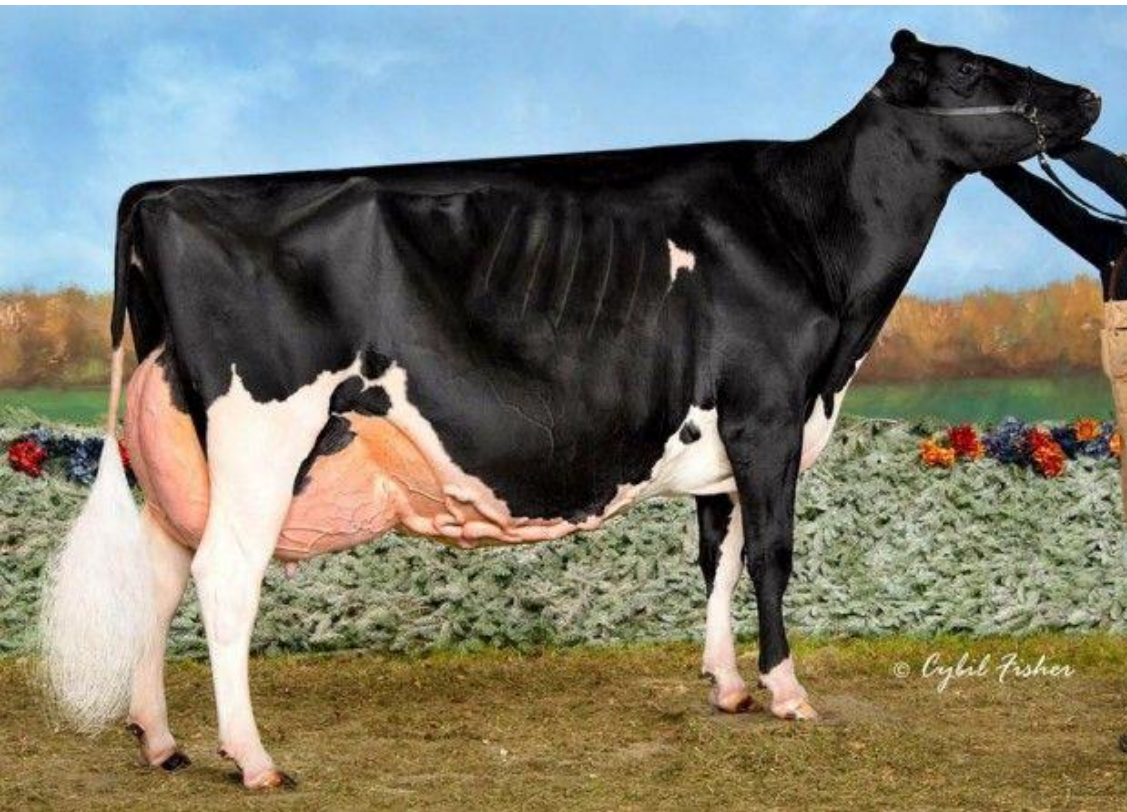


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# Dairy farming developments

>10,000 years domestication and selection



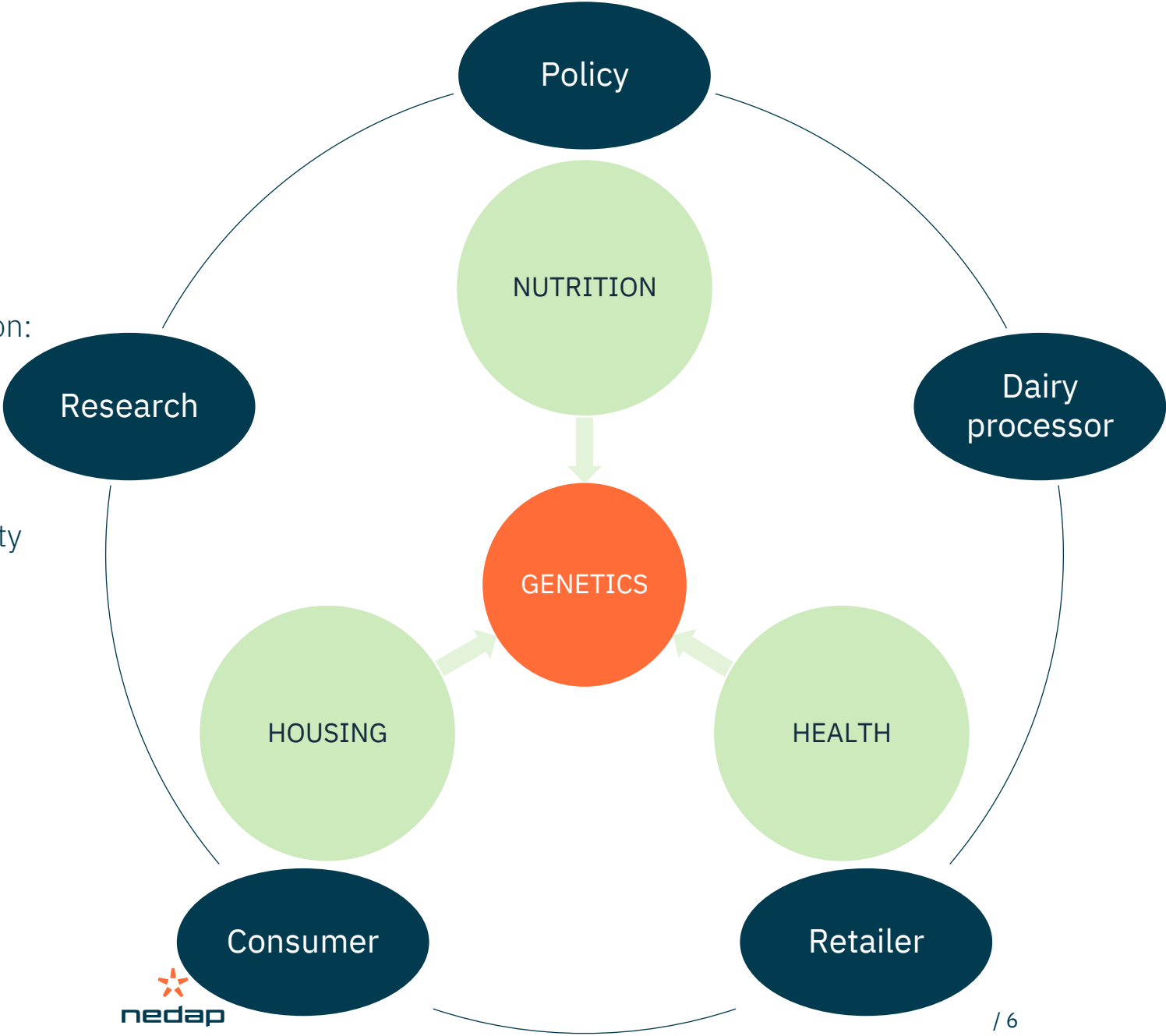
# Future of dairy farming

Contribute to feeding the growing global population:  
↑ animal protein ↓ ecological footprint / kg

Integrate information for efficiency and productivity

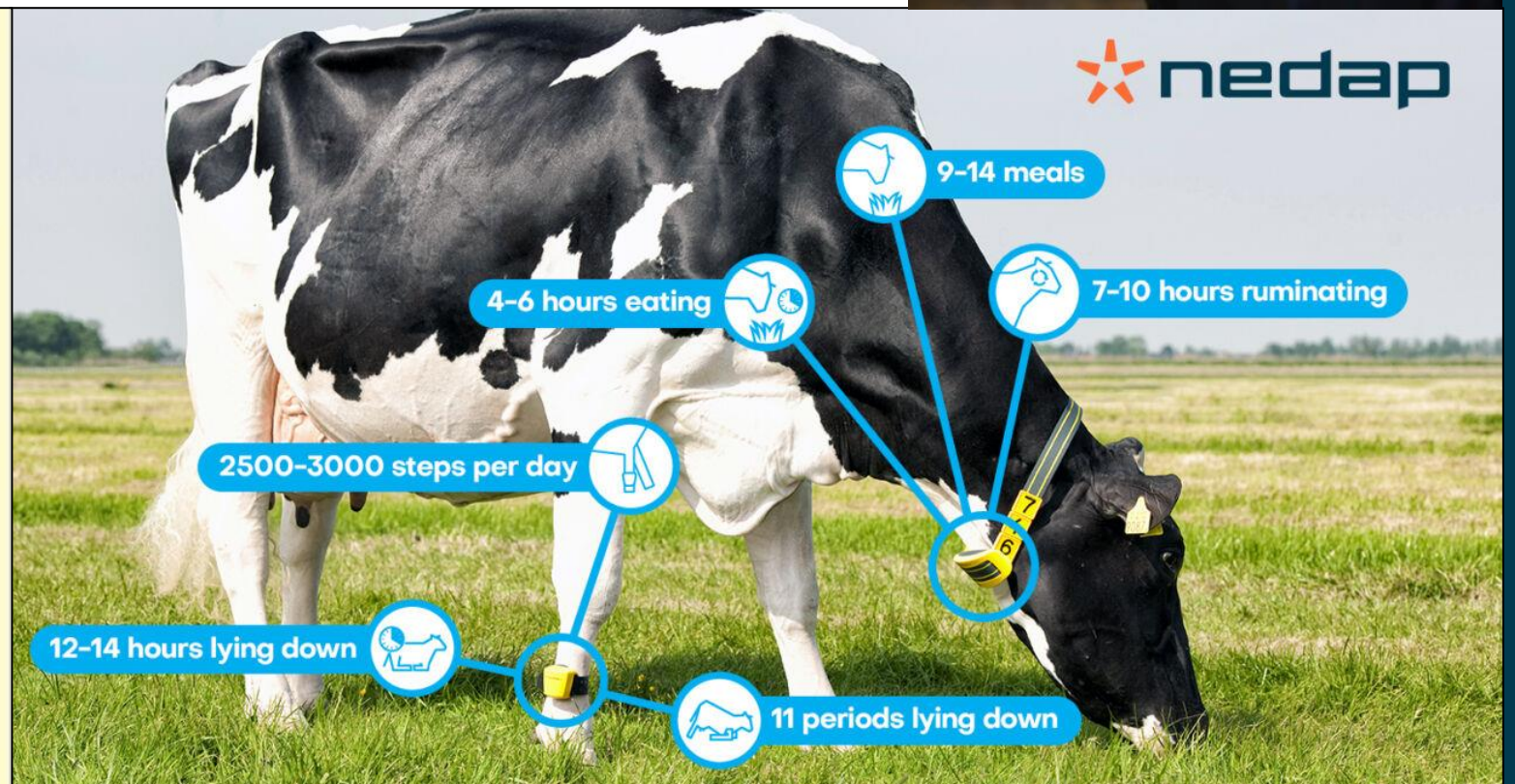
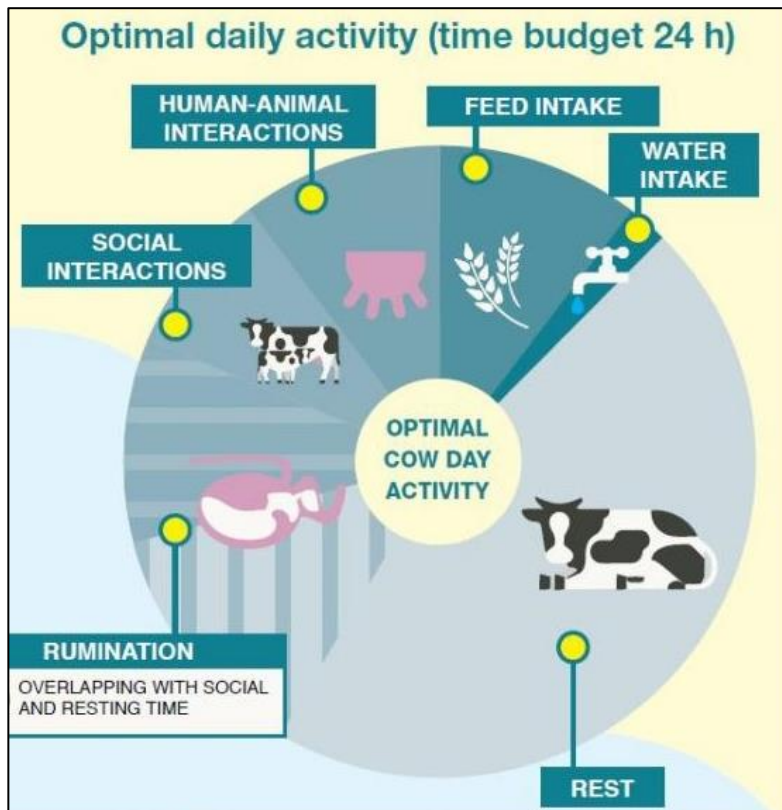
Sustainability throughout the dairy chain

- Environmental
- Social
- Economic



# Precision Livestock Farming (PLF)

24/7 cow monitoring – she'll tell you how her day is





# Individual monitoring


Heat and health



Heat



# Alerts



Dashboard

Farm

Quick entry

Reports


Settings

Maintenance

Logout

### Heat detection




**1**  
Attentions

- 0 In insemination period
- 0 In voluntary waiting period
- 1 Pregnant
- 2 Suspicious

[Show attentions >](#)

### Animals to check



**4**  
Attentions

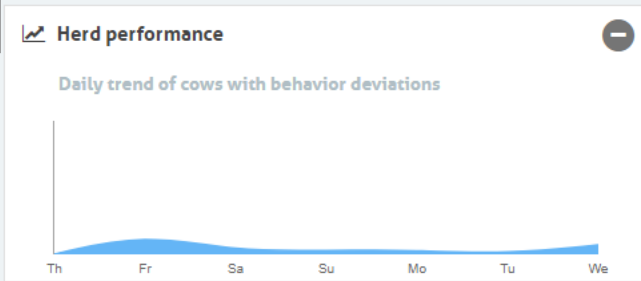
- 2 In transition period
- 2 Other animals

[Show attentions >](#)

### Urgent attention

Animal	Group / pen	Inactive
1299	2. Dried off	10:28

[Show attentions >](#)



### External lists

No external lists

### Animals at unexpected group/pen

No attentions

### Farm

[Unknown animals \(UHF\) \(8\) >](#)

### Calendar

[Calving \(1\) >](#)

[Dry off \(4\) >](#)



[Pregnancy check \(31\) >](#)

[No insemination \(19\) >](#)

### Tags

[No data in last 24 hours \(1\) >](#)

### System notifications



Calendar

# Heat detection

## Heat detection

Attentions **4**

Handled

Suspicious **1**

Show:  All  Youngstock (0)  Dairy cows (4)

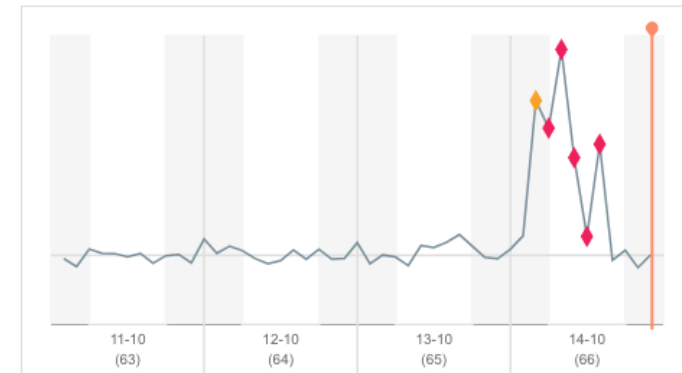
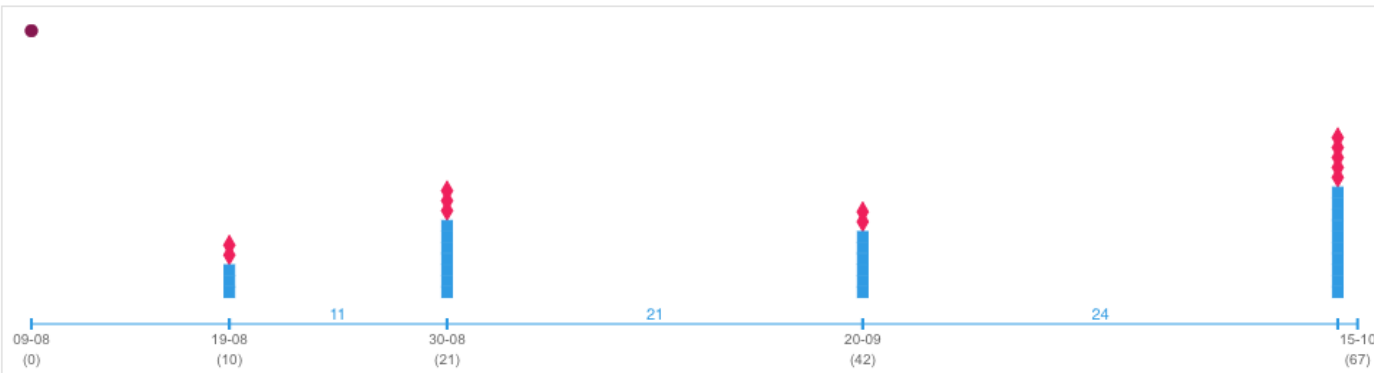
Actions ▾



<input type="checkbox"/> Animal	Group / pen	Lact. days	Heat days	Insem. days	# Insem.	Pregnant	Start of heat	Optimal insemination moment	Actions
<input type="checkbox"/> 123	9. In lactatie	191	43	43	1		02-04 01:00 (37 hours)		Actions ▾
<input type="checkbox"/> 30	9. In lactatie	375	230	230	3	✓	02-04 11:00 (27 hours)		Actions ▾
<input type="checkbox"/> 112	9. In lactatie	63	-	-	-		02-04 19:00 (19 hours)		Actions ▾
<input type="checkbox"/> 31	9. In lactatie	67	-	-	-		02-04 19:00 (19 hours)		Actions ▾

Realttime neck ▾

Legend



# Health



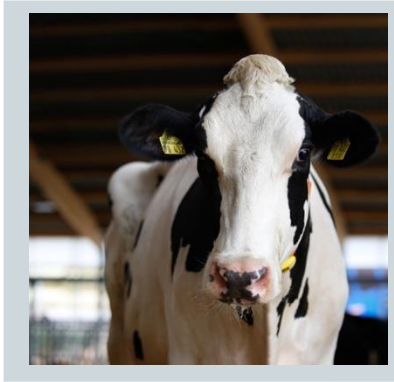




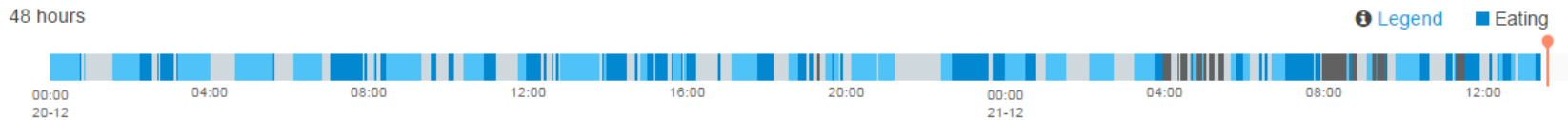
**Is she really eating?**




# Track her daily routine



**i** Legend   ■ Eating   ■ Rumination   ■ Inactive   ■ Other active




# Alerts



- Dashboard
- Farm
- Quick entry
- Reports
- Settings
- Maintenance
- Logout

### Heat detection



**1**  
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[Show attentions >](#)

### Animals to check



**4**  
Attentions

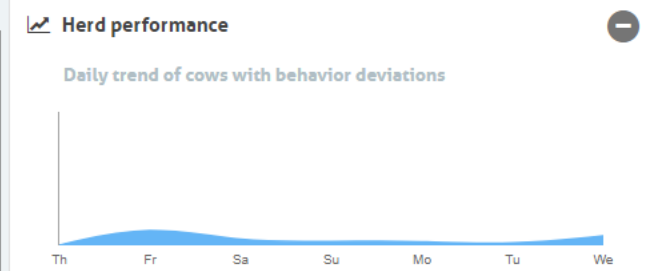
- 2 In transition period
- 2 Other animals

[Show attentions >](#)

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Animal	Group / pen	Inactive
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[Show attentions >](#)



### External lists

No external lists

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No attentions

### Farm

[Unknown animals \(UHF\) \(8\) >](#)

### Calendar

- [Calving \(1\) >](#)
- [Dry off \(4\) >](#)
- [Pregnancy check \(31\) >](#)
- [No insemination \(19\) >](#)

### Tags

[No data in last 24 hours \(1\) >](#)

### System notifications



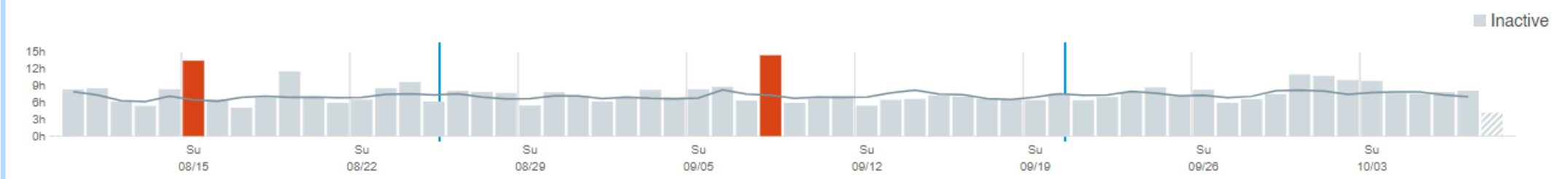
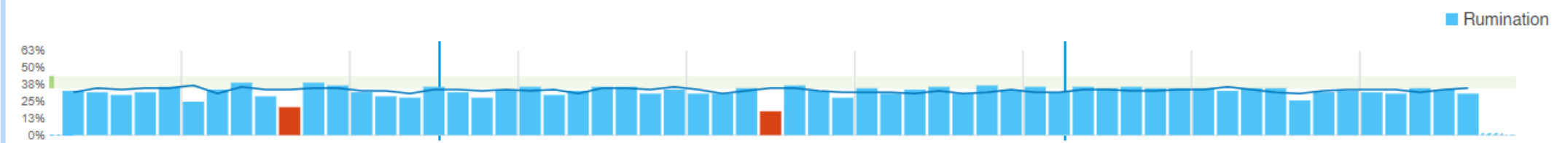
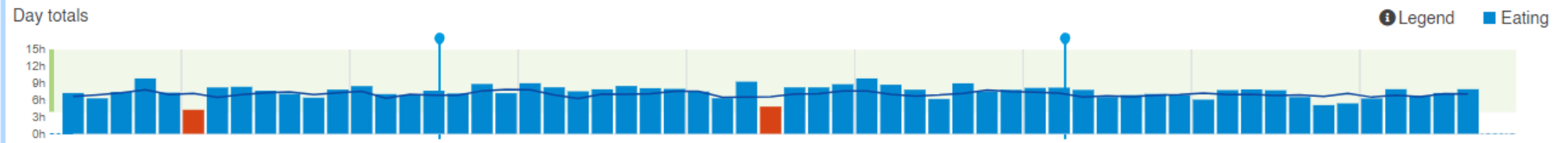
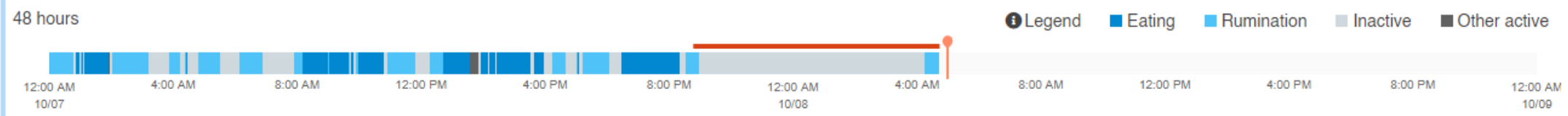
Calendar

- Dashboard
- Farm
- Quick entry
- Reports
- Settings
- Maintenance
- Logout

### Urgent attention

Actions ▾

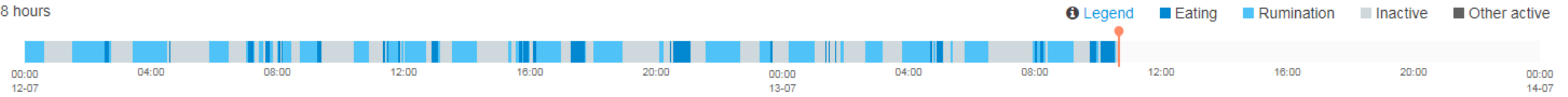
<input type="checkbox"/>	Animal ▾	Seen ▲	Group / pen ▾	Lact. days ▲	Reproduction state ▾	Inactive ▾	Date ▾	
<input type="checkbox"/>	23307		10. 10 Fresh Cows	11	Open	7:13	10/08/2021 3:18 AM	▼
<input type="checkbox"/>	29019		211. 211 Pregnant Heifers	0	Pregnant	7:57	10/08/2021 2:47 AM	▲



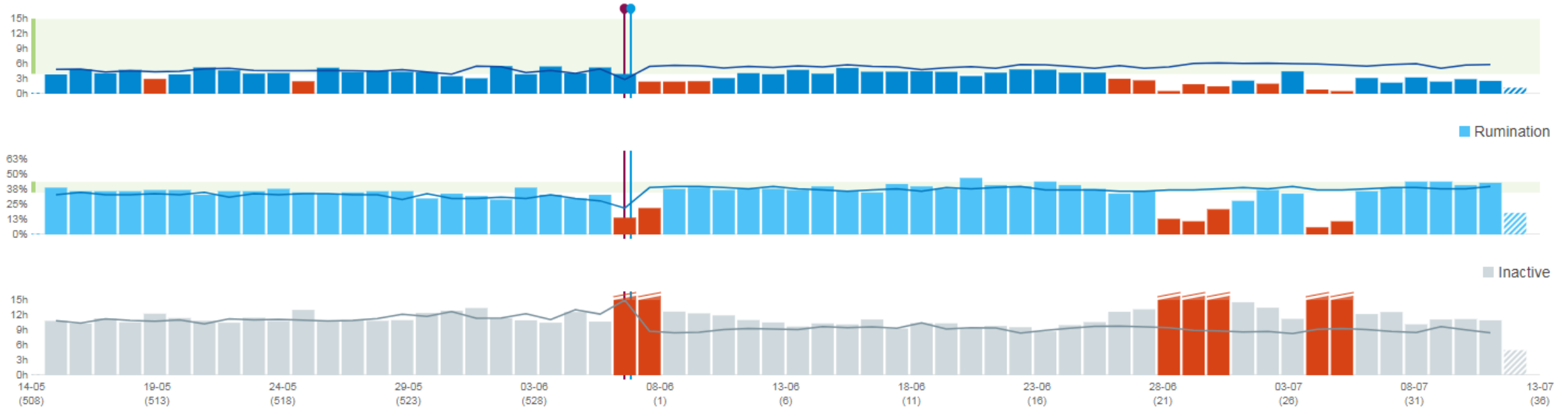
# DA

Heat detection **Health and management**

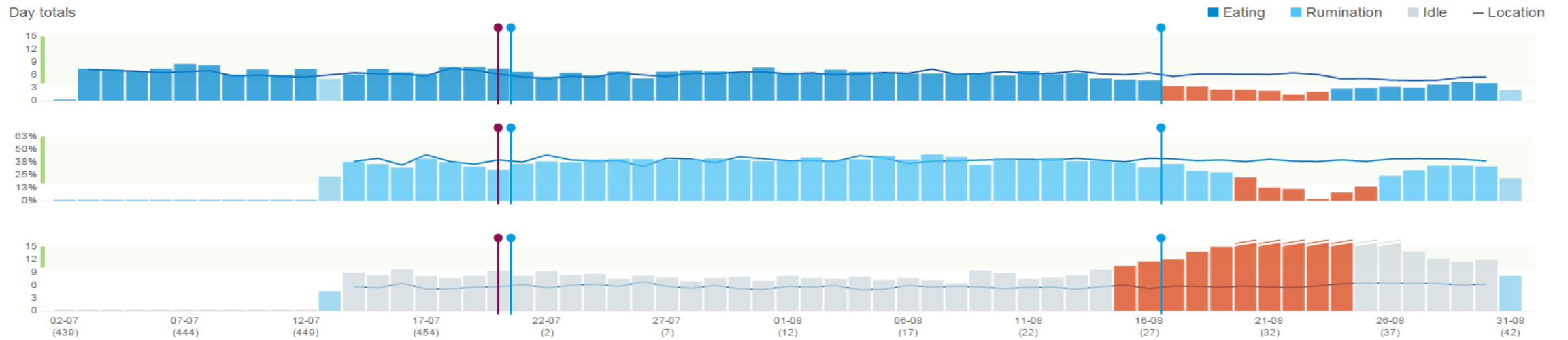
48 hours



Day totals



# Mastitis



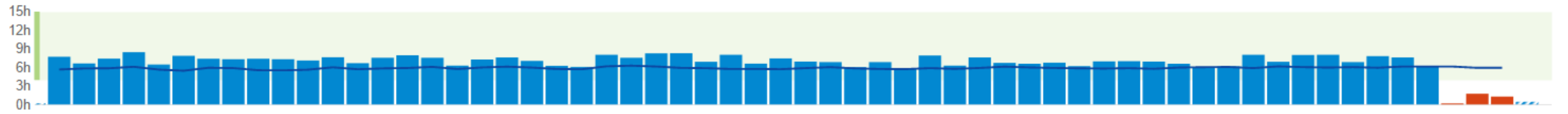
# E-coli

48 hours

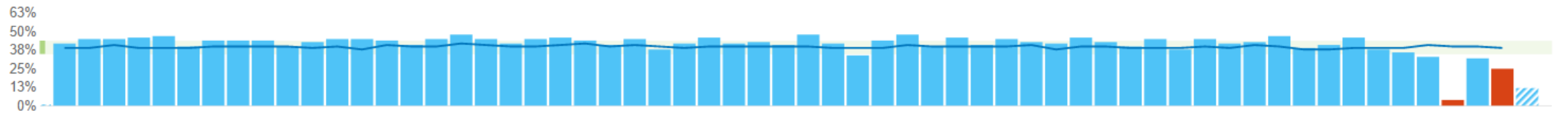


Day totals

Legend Eating



Rumination



Inactive



# Transition

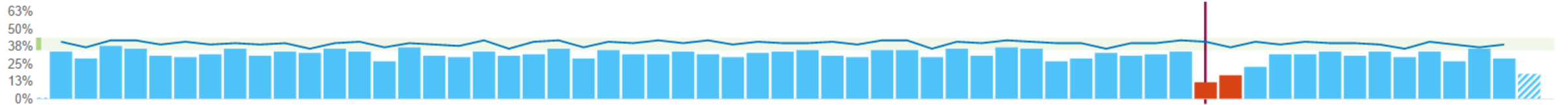
calving

Day totals

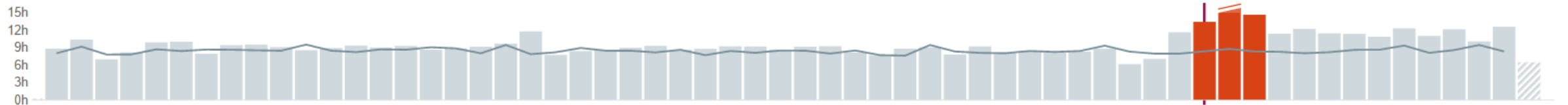
Legend Eating



Rumination



Inactive



# Group monitoring

Efficiency and productivity



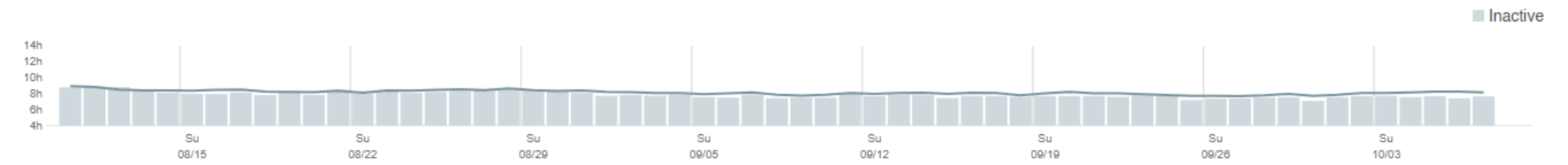
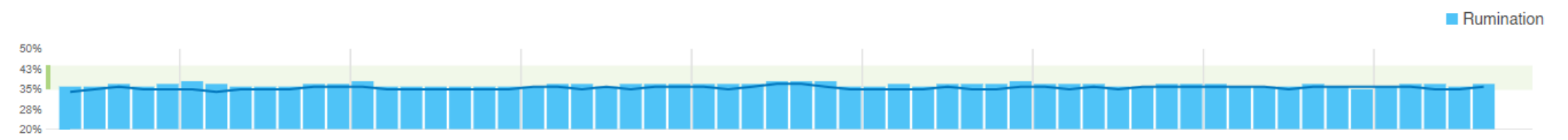
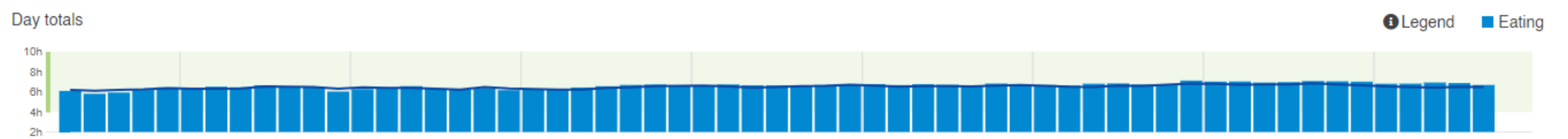
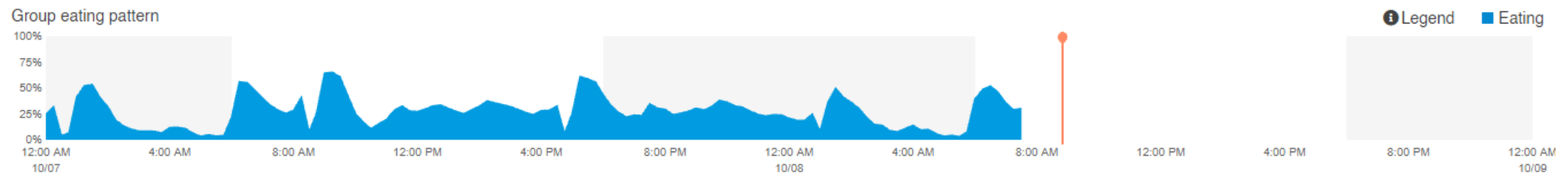
- Dashboard
- Farm
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- Reports
- Settings
- Maintenance
- Logout

Farm overview > 5. 5 Milking Pen

No. of animals 334

[View animals](#) [Add animal](#)

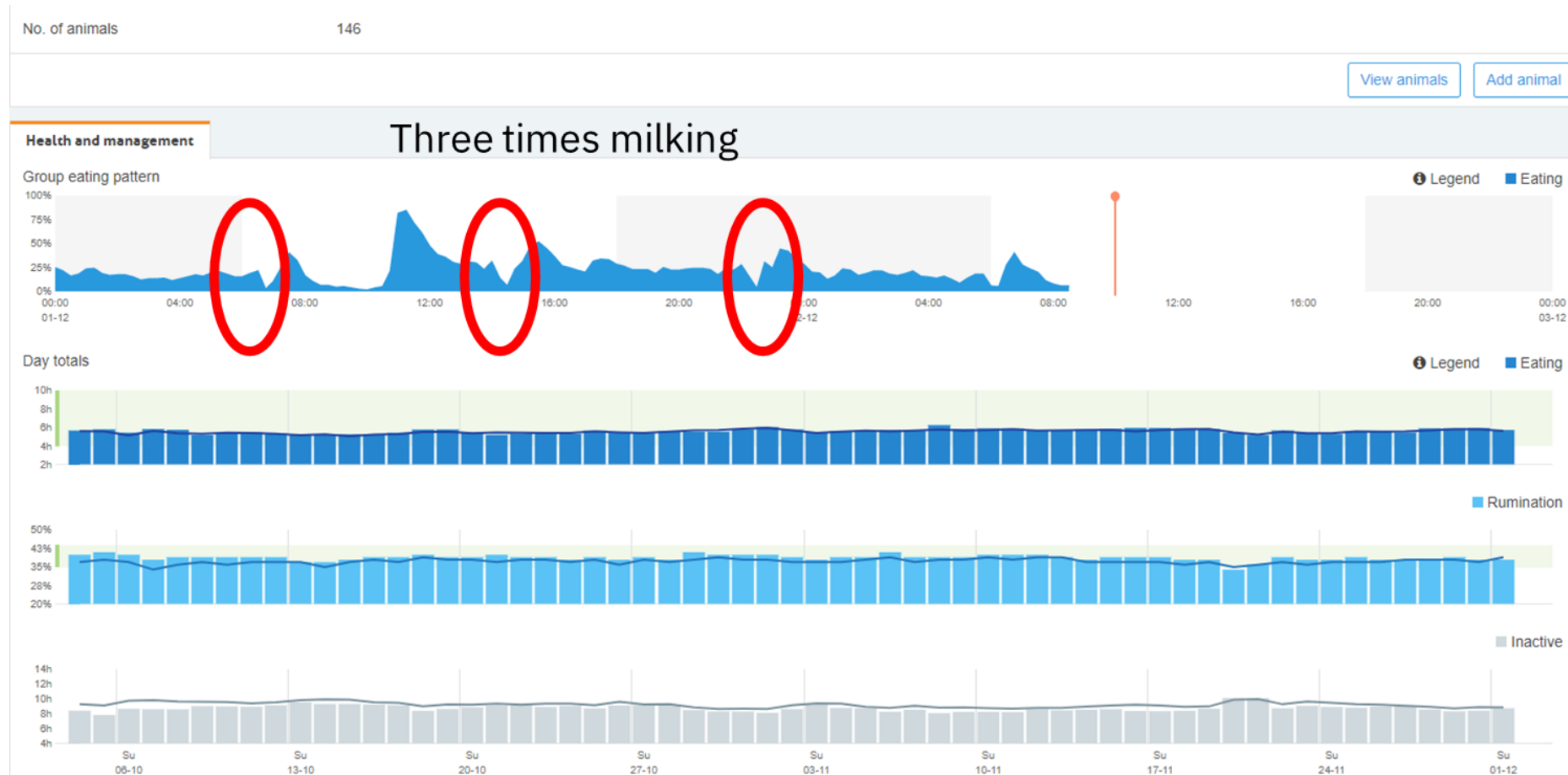
### Health and management



[Text](#)

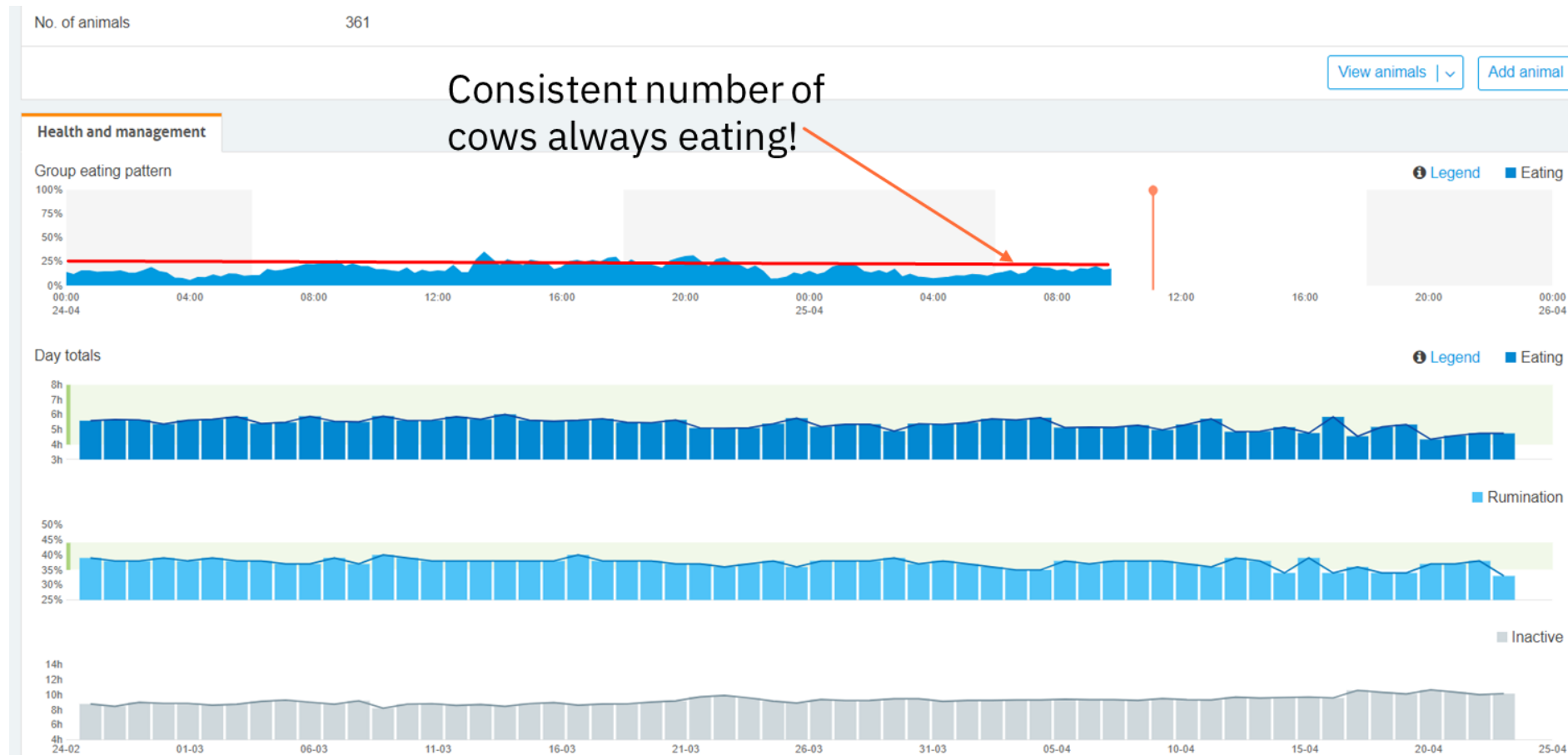
# Feed management

Freestall with TMR feed



# Feed management

Robot milking and feed pushing



- Dashboard
- Farm
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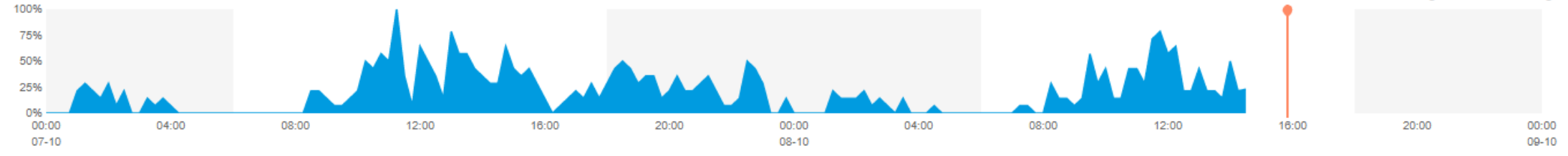
Farm overview > 4. Droge koeien << >>

No. of animals 14

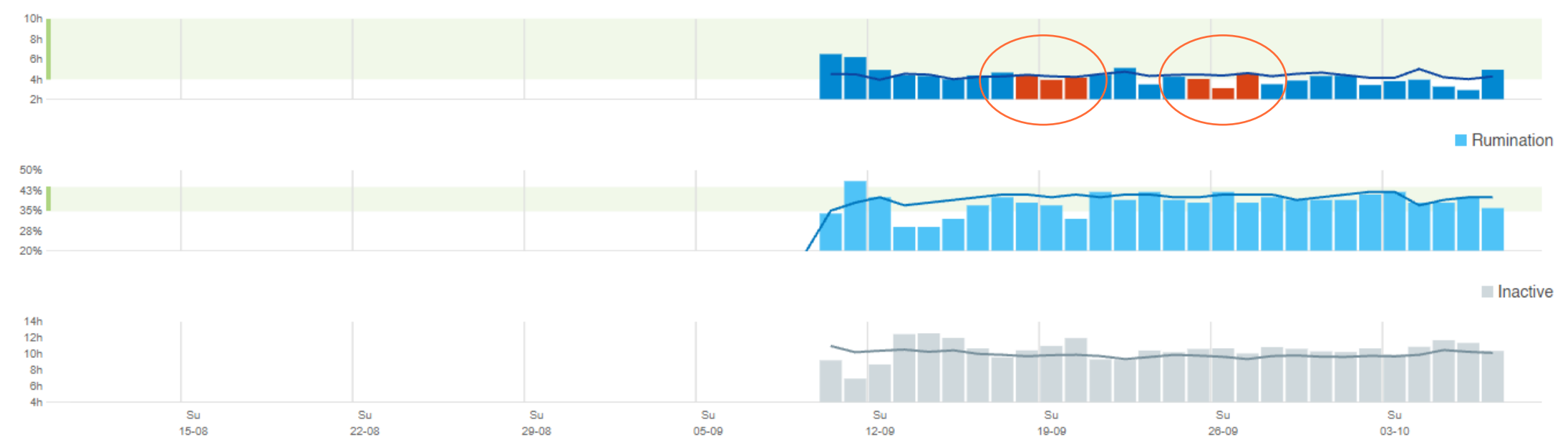
[View animals](#) [Add animal](#)

### Health and management

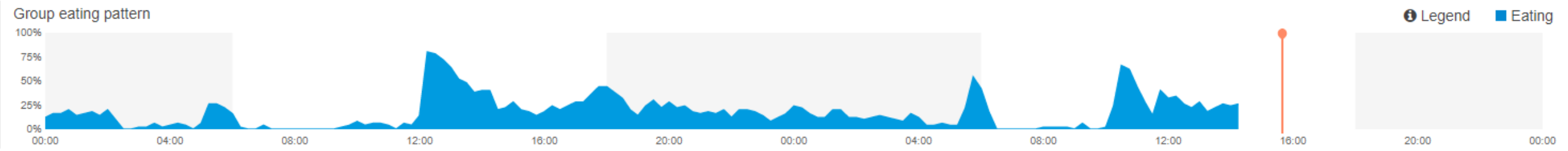
Group eating pattern



Day totals



[Text](#)



# 'Fitbit' for cows

24/7 tracking is she is doing well

Peace of mind

Group monitoring

Integrate performance information for:

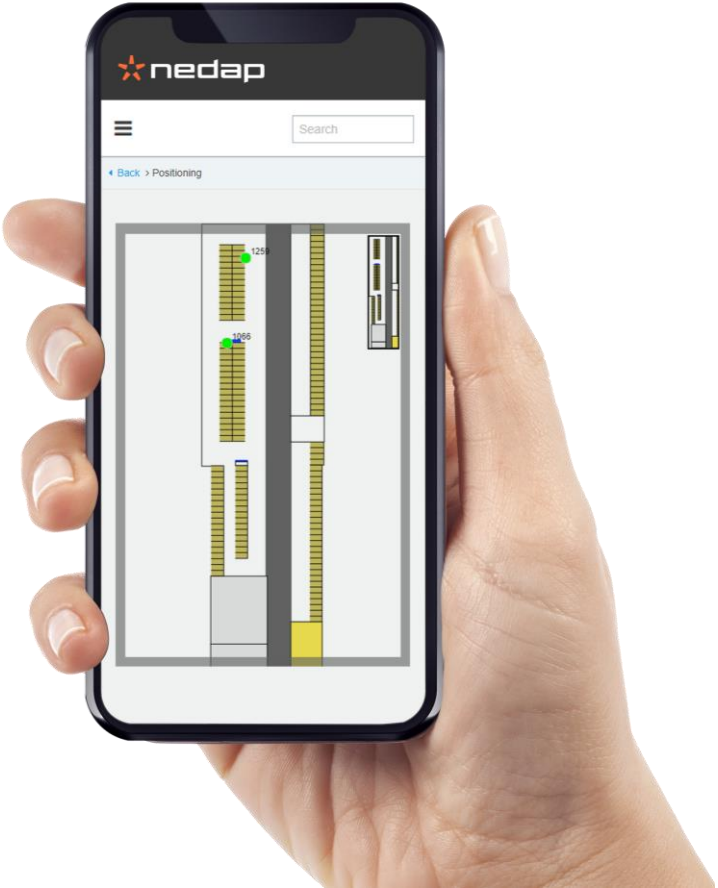
- Efficiency
- Productivity
- Sustainability



# Future vision



# Cow Locating





# Autonomous behavior monitoring



Heat

Heat

Lame

Health

Lame

# Farm proof ?



Ready for the  
future with  
 nedap



# Thank you

Carlijn Gieling

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