Grazing opportunities with mobile milking robot

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3 years research and development

- Introduction and research goal
- Methodology and material
- Results 2008, 2009, 2010
- Conclusions and recommendations

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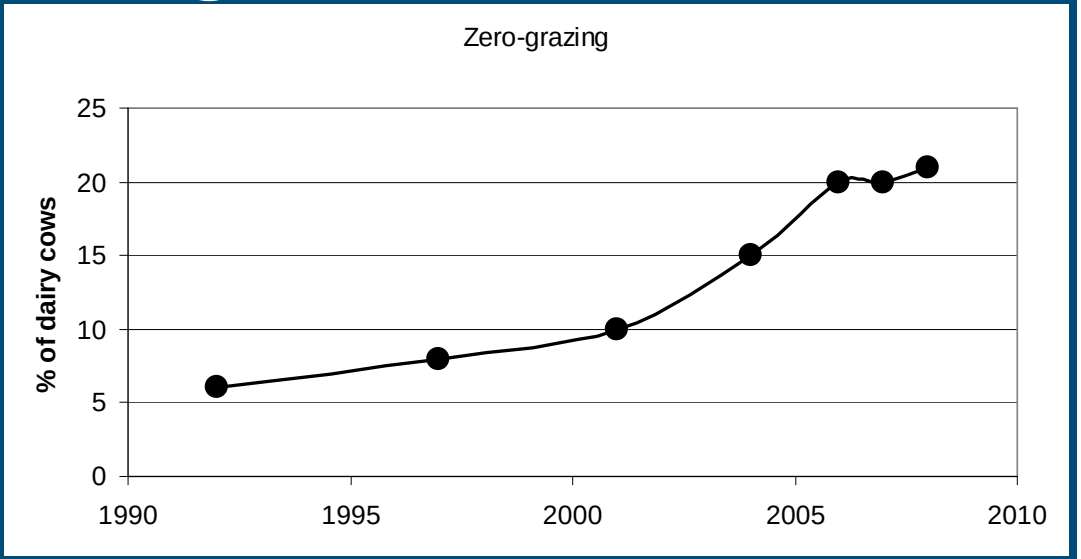
NL: every year less grazing!



Is that a problem? Yes:

- Society loves cows grazing
- Grazing reduces costs

Reasons for less grazing:

- Large herds, not enough land, Milking robot, better control.

Solution: automatic and (real) mobile milking

Research goals:

- Technical development of mobile milking robot in pasture
- Explore grazing systems with ‘Mobile Milking’
  - Managing more than 60 cows yielding about 8000 kg milk/cow/yr

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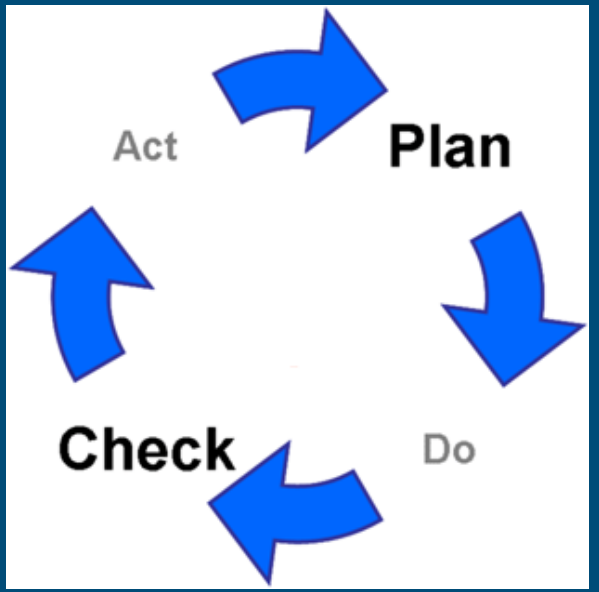
Methodology

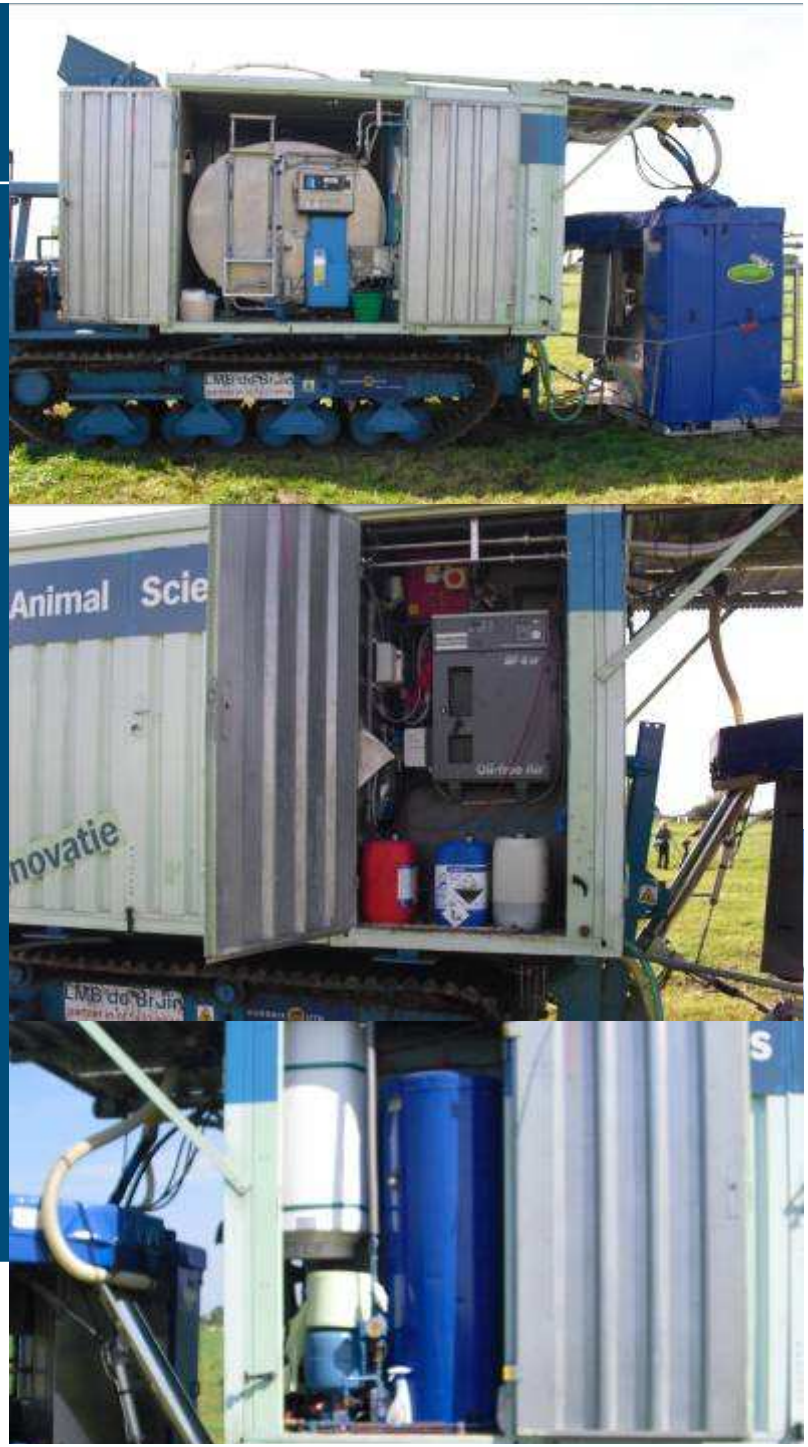
- System Development (exploring grazing system)
- Development by learning every year (2008, 2009, 2010)

- 2008
  - 30 cows
  - Continuous grazing
- 2009
  - 60 cows
  - Controlled strip grazing
- 2010
  - 55 cows
  - Free cow traffic and strip grazing



Material

- Mobile milking robot
  - Caterpillar
  - Milk tank
  - Water
  - Energy
  - Concentrate
  - DeLaval VMS robot
- Wireless communication
- Experimental farm Zegveld



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Results technique

- First time in pasture (28-4-2008)
- The system technically works
- Not more failures than robot inside (ca 1/wk)
- Usage
  - Water: 600 – 800 l / day
  - Diesel: 40 – 50 l / day
- Every 2 days loading/unloading
- Introduction Milk can for transport

Grazing system 2008

2008

- Continuous grazing
- Free cowtraffic
- 35 cows
- 3-4 weeks grazing on the same block (ca 3-5 ha)
- Grass length avg 11 cm
- Max distance 400 m

2009

- Stripgrazing
- Controlled cow traffic (1/d)
- 60 cows
- 12 hours grazing
- Grass length avg 15-20 cm
- Max distance 75 m

Results 2008

Grazing/feeding system	Number of cows	Milk yield (kg cow-1 d-1)	Milking frequency (milkings cow -1 d-1)	std dev freq.
Continuous grazing, free cow traffic, 2008	*35*	*20.3*	*1.9*	*0.10*
Winter period, 2008/2009 indoor feeding, no grazing	58	22.1	2.4	0.07

Grazing system 2009

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Winter period, 2008/2009 indoor feeding, no grazing	58	22.1	2.4	0.07
Strip grazing, june 2009 controlled cow traffic	*62*	*19.4*	*2.1*	*0.12*
Strip grazing, sept 2009 free cow traffic	50	17.1	2.4	0.12

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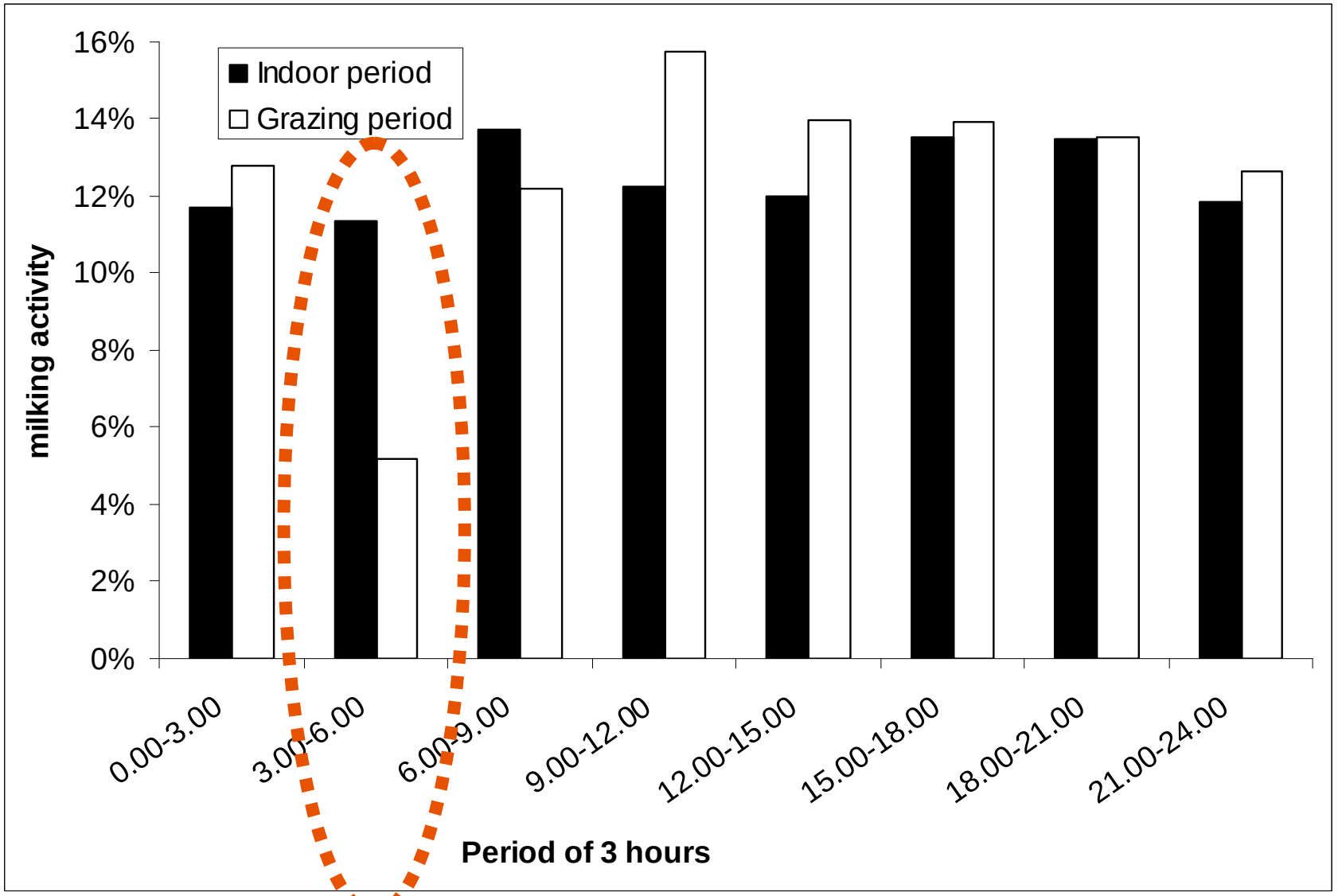
Milking activity (% of day total per period)



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Grazing system 2010

2009

- Stripgrazing
- Controlled cow traffic (1/d)
- 60 cows
- 12 hours grazing
- Grass length avg 15-20 cm
- Max distance 75 m

2010

- Stripgrazing
- Free cow traffic
- 55 cows
- 8 hours grazing (wire)
- Grass length avg 16-18 cm
- Max distance 80 m

Results 2008. 2009. 2010

Grazing/feeding system	Number of cows	Milk yield (kg cow-1 d-1)	Milking frequency (milkings cow -1 d-1)	std dev freq.
Continuous grazing, free cow traffic, 2008	*35*	*20.3*	*1.9*	*0.10*
Winter period, 2008/2009 indoor feeding, no grazing	58	22.1	2.4	0.07
Strip grazing, june 2009 controlled cow traffic	*62*	*19.4*	*2.1*	*0.12*
Strip grazing, sept 2009 free cow traffic	50	17.1	2.4	0.12
Winter period, 2009/2010	44	25.0	2.5	0.08
strip grazing, 2010 free cow traffic, 3x wire	*51*	*24.9*	*2.4*	*0.10*

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Conclusions and recommendations

- 65 cows yielding 8000 kg cow-1 yr-1 possible
- Strip grazing combining free cow traffic
- 3 times a day new strip (15 kg dm cow -1)
- Cows need to get used to the system
- Methodology: System development really differs from comparative research
- Cow mangement needs to be optimized
- Costs and savings need further attention

Mobile milking, idea to reality!?

- More grazing opportunities

- More information?
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