AUTOGRASSMILK

SEVENTH FRAMEWORK PROGRAMME

Effects of heat stress periods on milk production, milking frequency and returns of grazing dairy cows milked by a mobile automatic system in 2013.

Aidan & Ann Power Robotitc Farm
SME Farm IE

F.Lessire, J.-L Hornick, J. Minet, I. Dufrasne

SME Farm DK
Thure and Susanne Worm

KNOWLEDGE CENTRE FOR AGRICULTURE

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Material and Methods

- Herd: 45 dairy cows
- Milked on pasture by a mobile AMS (Lely A3®)

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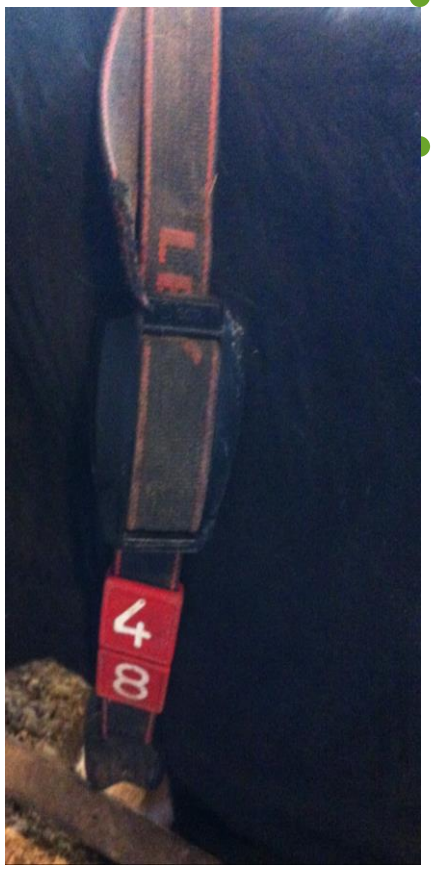
Material and Methods



- Transponders are fixed on cows’neck collar
- Several parameters are registered:
  - milk yield (MY)
  - number of milkings/day
  - number of milkings failure/day (e.g. robot cannot find the teat)
  - number of refusals/day (e.g. interval between milkings too short)
  - returns = (Milkings + refusals + failures)/day

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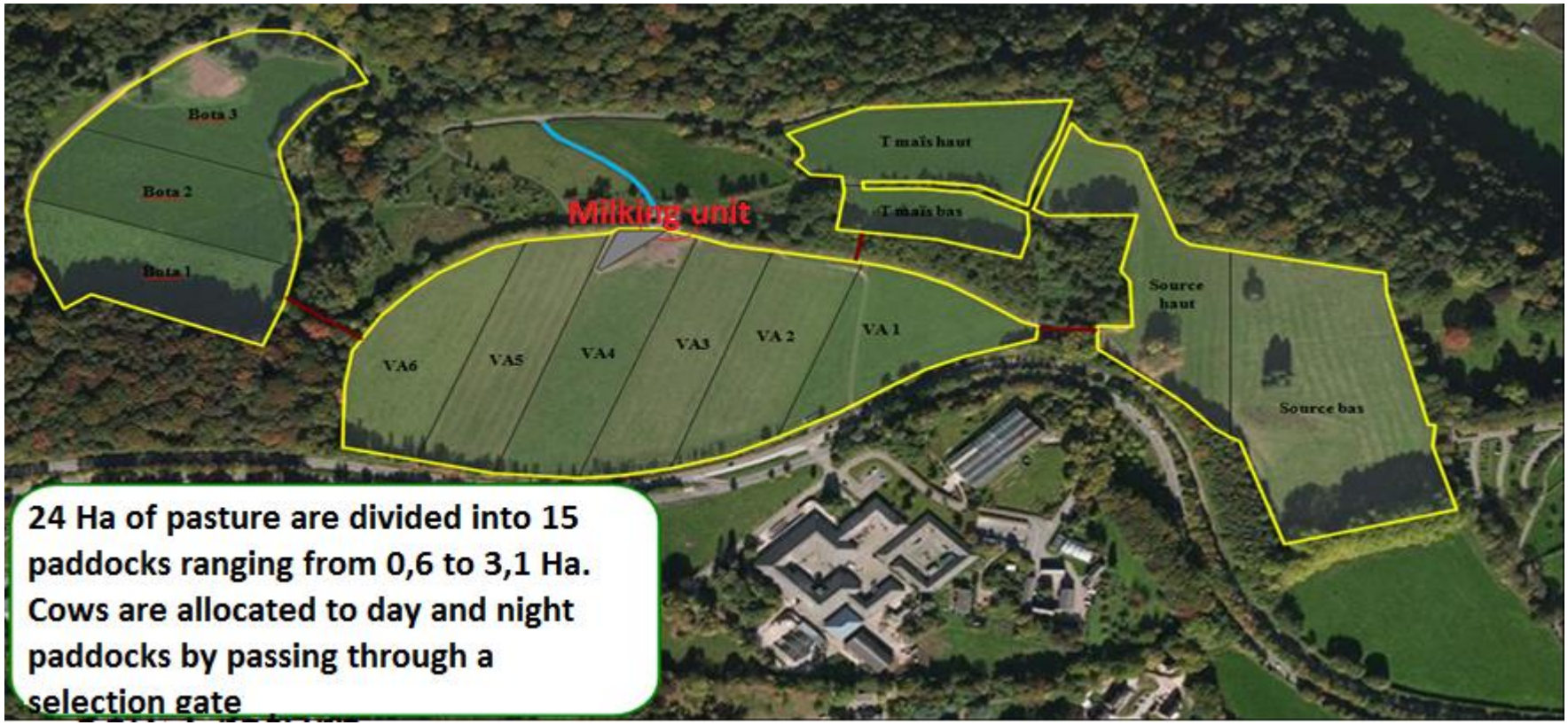
Material and Methods

Description of the grazing system



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Material and Methods

Grazing from 24/4/2013 till 24/10/2013

- Strip grazing based on grass height
- Height measurements by rising plate meter when cows came in/out
- Grass sampling to assess nutritional value

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Material and Methods

Determination of Heat stress periods

- ✓ Temperature humidity indexes (THI) were calculated according to Ingraham et al (1979)

$$THI = (1.8 \times AT + 32) - (0.55 - 0.55 \times RH) \times [(1.8 \times AT + 32) - 58]$$

AT: ambiant T°C- RH: relative humidity (%)

- ✓ Heat stress periods were defined by THI >72

- ✓ 2 periods of heat stress were identified in July (J) and in August (A)
- ✓ Each heat stress period compared with a “normal period”(N).

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Results

Experimental design

		Nb cows	DIM	LN	distance	THI
July	HS	33 ± 0	183 ± 85	2.46 ± 1.68	700 ± 0	78.4 ± 4.0
	N	33 ± 0	182 ± 85	2.39 ± 1.64	635 ± 150	69.8 ± 2.0
August	HS	33 ± 0	186 ± 92	2.58 ± 1.85	250 ± 34	77.3 ± 4.2
	N	33 ± 0	191 ± 75	2.30 ± 1.60	304 ± 0	67.9 ± 1.6

DIM: days in milk; LN: lactation number;
Distance: distance from the pasture to the robot.

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Results

Grass supply

Month	Grass height (cm)		Grass yield (kg DM/ha)	Grass available (kg DM/cow/d)
	Entry	Exit		
July	12.0	6.6	1587	15
August	11.4	6	1734	17

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Results

	July		August	
	N	HS	N	HS
Milk yield (kg/cow/d)	20.3 ± 0.9***	16.8 ± 0.9	19.4 ± 0.9 NS	20.9 ± 0.9
Milkings (/cow/d)	2.23 ± 0.09***	2.41 ± 0.12	2.28 ± 0.10NS	2.33 ± 0.11
Returns (/cow/d)	3.03 ± 0.18 ***	3.97 ± 0.22	3.20 ± 0.24NS	3.35 ± 0.22

Values are means ± SE
***: p< 0.001 – NS: p>0.05
Stat: SAS 9.3 proc mixed repeated day - cs

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Conclusion

- HS induced a decrease in MY in July
  - due to lesser grass availability compared with August
  - due to higher THI value (78.4) than in August (77.3)

- Milkings and returns were increased in July
  - This could be due to water availability nearby the mobile robot (extra tin)

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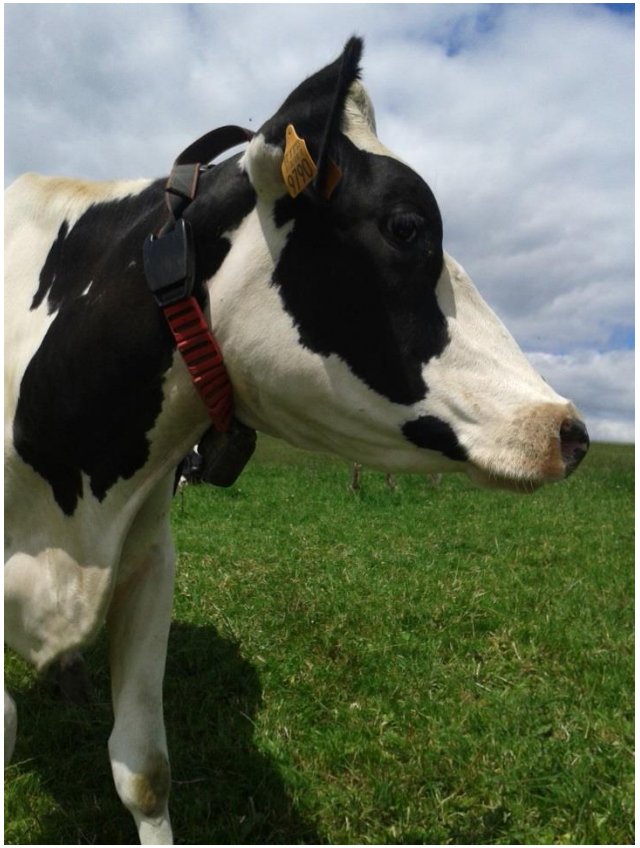
Thank you for your attention



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