High yielding Holstein cows have less lying time available for exchange to more eating time

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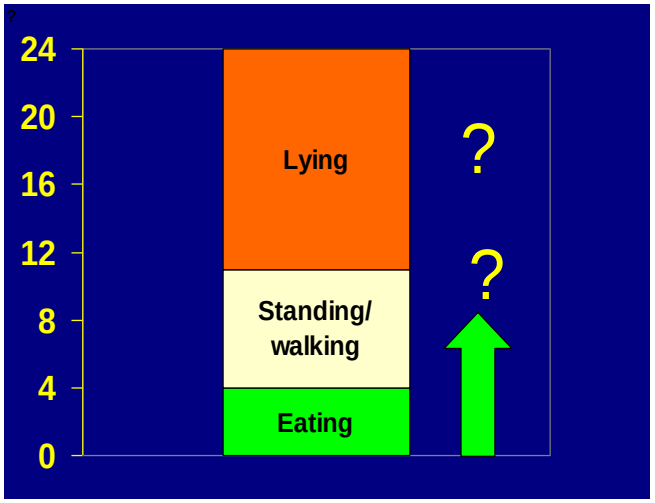
Increased milk yield

Time budget



Lying time, how important is it?

- Deprivation of lying = increase the motivation to lie down
- Repeated deprivation of lying = stressresponses
- Pregnant heifers work consistenly with increasing workload for access to 12- 13 hours lying time
- Time constraint on lying and eating behaviour = lying time higher priority than eating and feed intake

Experimental questions?

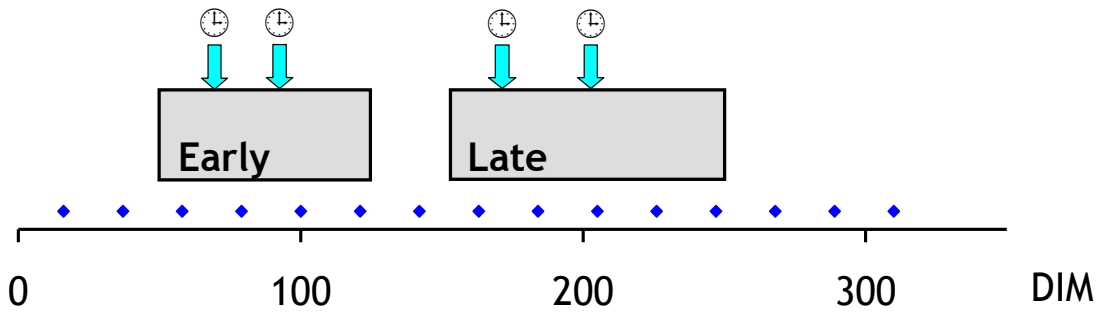
- How are **time budgets** of dairy cows affected by their yield?
- Are **individual cows** having **consistent time budgets** throughout lactation?

Design

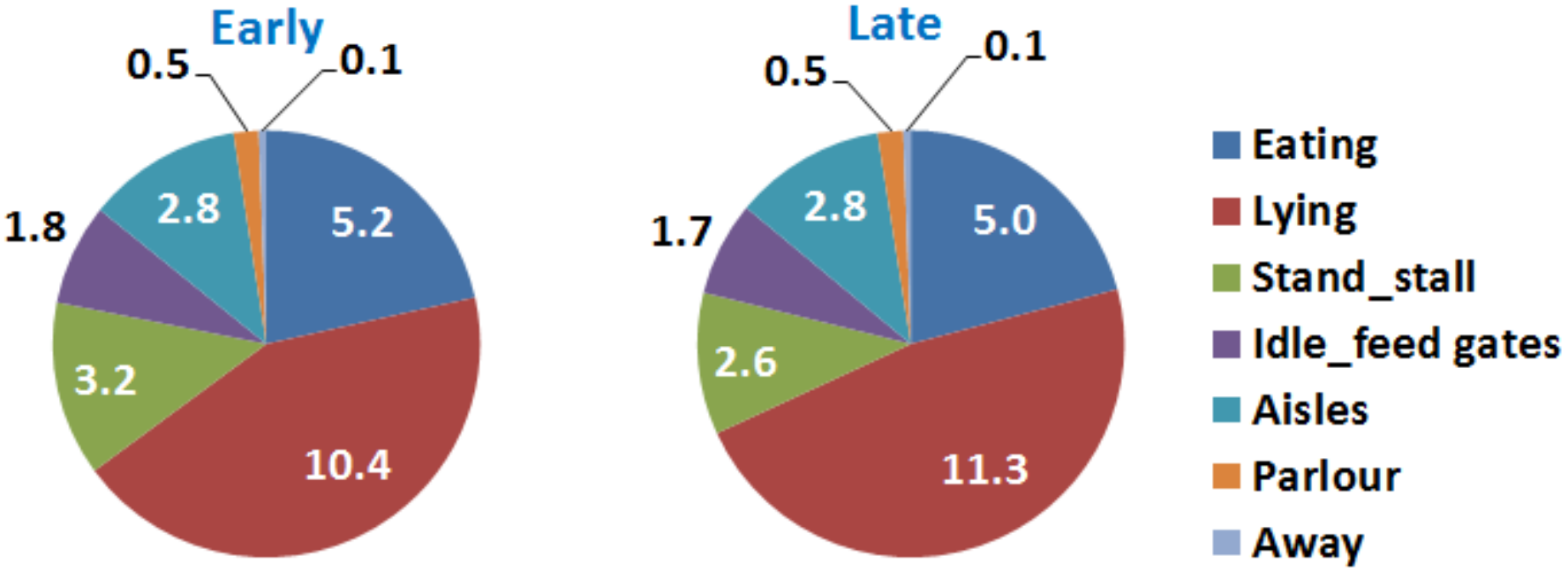
- 243 First parity Holstein cows in one herd
- Known genetic structure – ancestry – MOET
- Free stall barn – Parlour milking
- TMR feeding – headlock gates
- Milk recording – 3 week intervals

Recording of Time Budgets

- Batches of 20 cows as focal animals
- Interval scans at 10 min intervals, 24 h = 144 points
- Early and Late lactation – 2X repeat scans



Time budget – activities during 24 h



Consistency in time budget traits

Repeatability / correlation coefficients, 0.0 - 1.0

	Early	Late	Across stages	Correlation Early/Late
Eating time	0.44	0.58	0.39	*0.82*
Lying time	0.25	0.44	0.24	*0.97*
Milk yield	0.72	0.80	0.65	*0.86*

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Correlations of Eating, Lying and Stall time with milk yield

		Milk yield	
		Early	Late
Eating time		0.25	0.29
Lying time		-0.13	-0.08
Stall time		-0.13	-0.12

Correlations of Eating time with Lying and Stall time

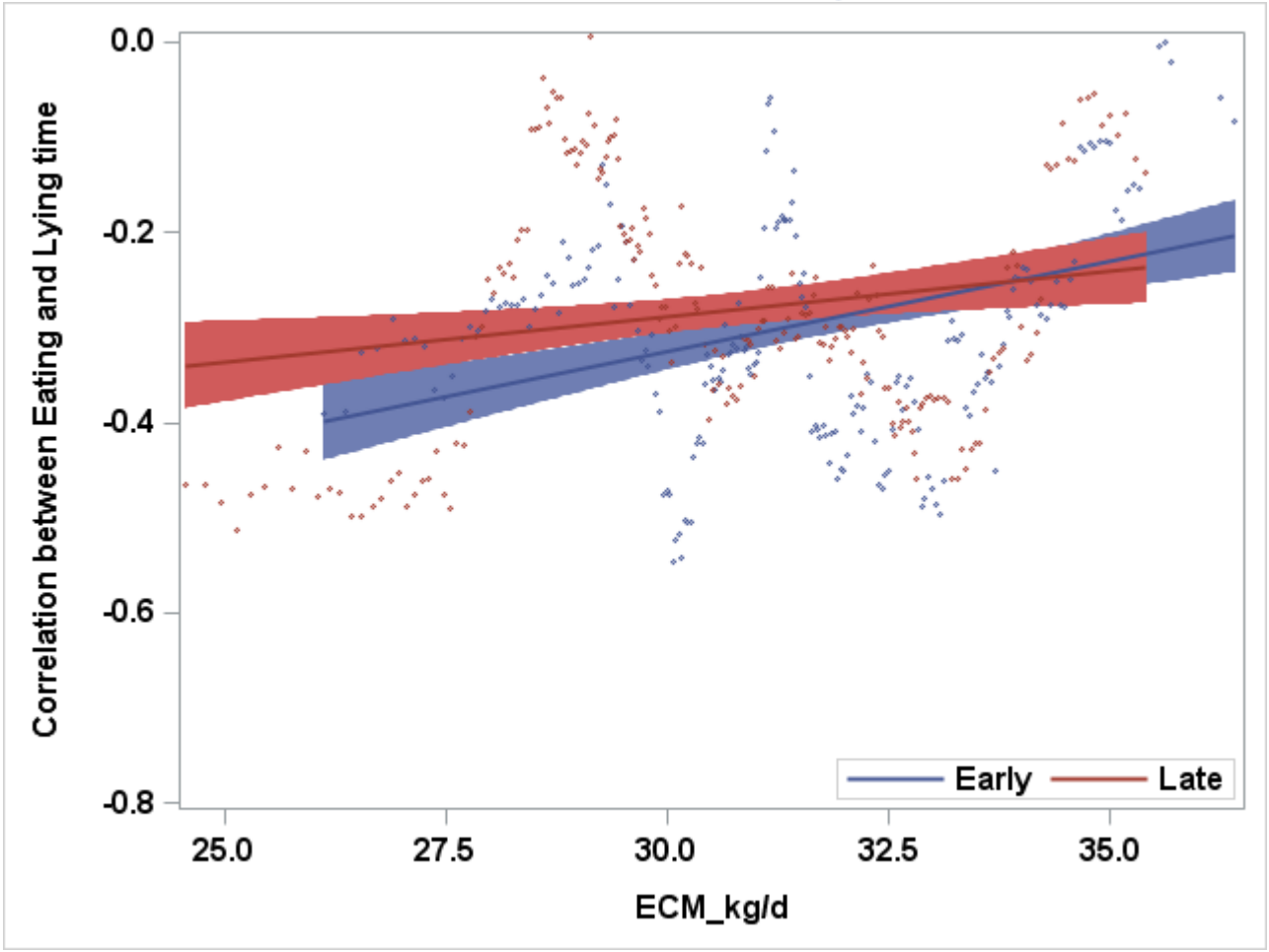
		Eating time	
		Early	Late
Lying time		-0.32	-0.30
Stall time		-0.62	-0.63

Trade-off between Eating time and Lying or Stall time

Are substitution effects dependent on yield?

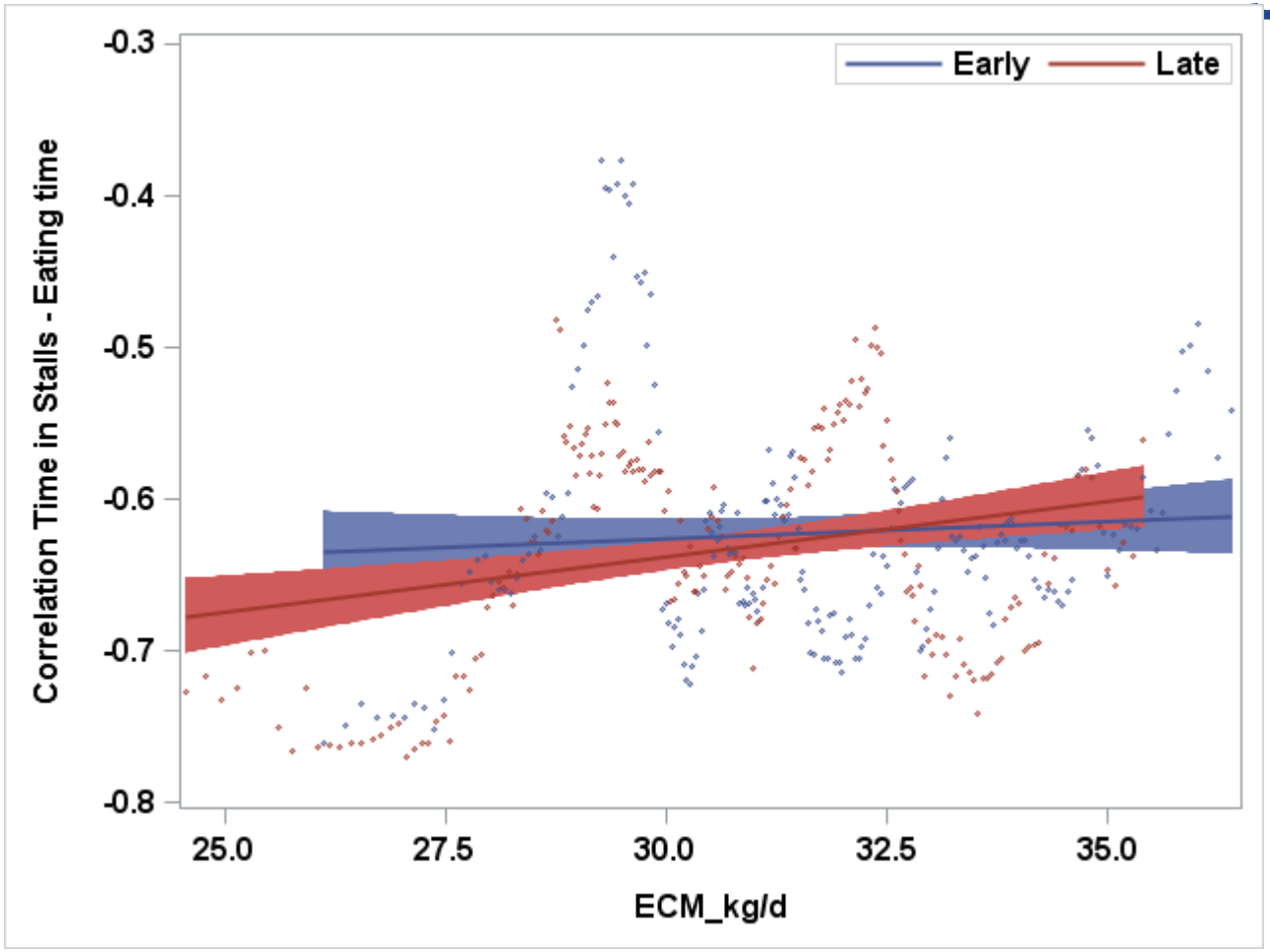
- Take cow deviations from herd mean as input
- Estimate correlations using sub-sampling of 40 cows – plot correlations against yield

Trade-off: Lying / Eating time



- **The** negative **correlation** between lying and eating time **gets weaker at higher yield**

Trade-off: Stalls / Eating time



- **Again, the** negative **correlation** between ”Stall time” and eating time **gets weaker at higher yield**

How are cows coping with higher yields?

- Some more eating time at the expense of less stall and lying time
- At high yields – less ”reserve time” is available – basic lying needs have greater priority than eating!
- Will cows eat quicker?
- Will they eat insufficient amounts?
- Will they extend duration of negative energy balance?

In conclusion …

Dairy cows need time –

– time to lye down

– time to eat

With higher yield – help cows find more time to important activities – including lying down!

More on time budget traits:

Løvendahl P. and Munksgaard L., J Dairy Science (accepted): **An investigation into genetic and phenotypic variation in time budgets and yield of dairy cows**