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Reducing concentrate supplementation in an Alpine low input system: response of two dairy cow types

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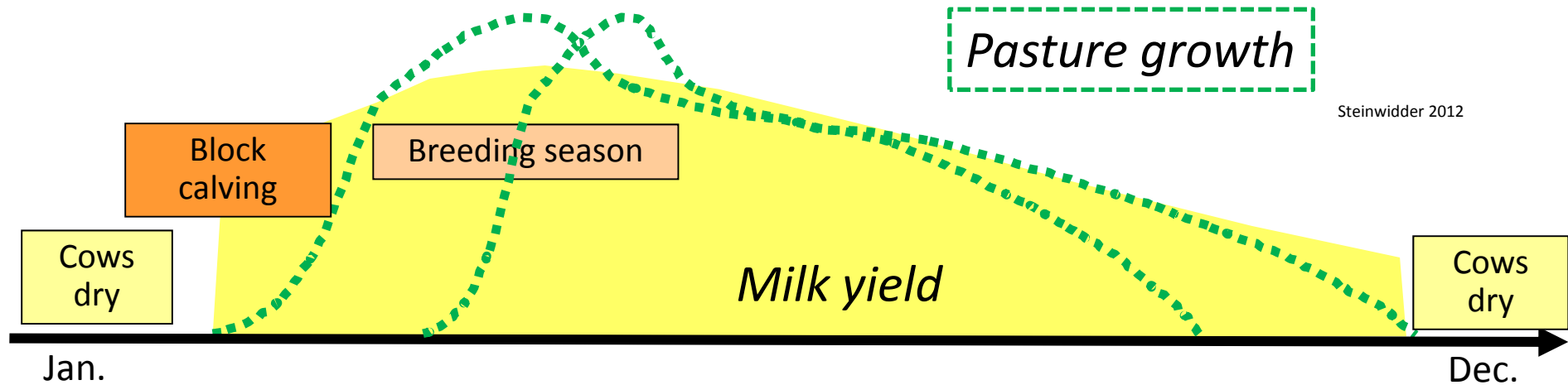
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EAAP 2014, Copenhagen

Low-Input dairying



- Reducing inputs → reducing costs → increasing competitiveness
- Example: Seasonal pasture based dairy systems (IRL, NZ)



Animals



Brown Swiss (BS)

Selected with a multi trait index:

- 48 % milk performance
- 47 % fitness
- 5 % beef



Holstein Friesian lifetime performance (HFL)

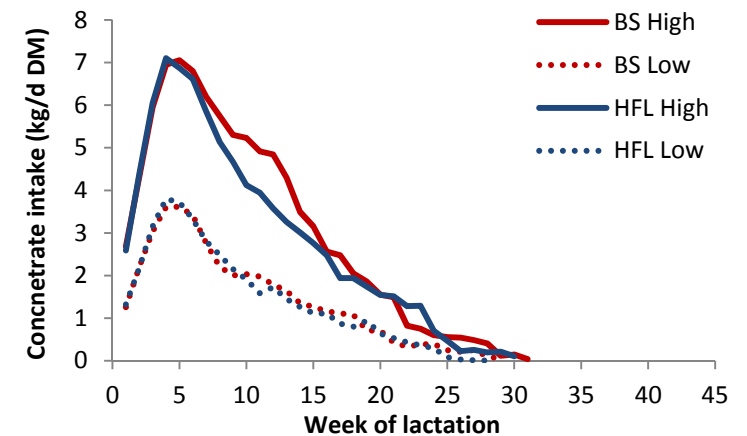
Selected for superior lifetime performance:

- Lifetime performance of ancestors
- Fitness



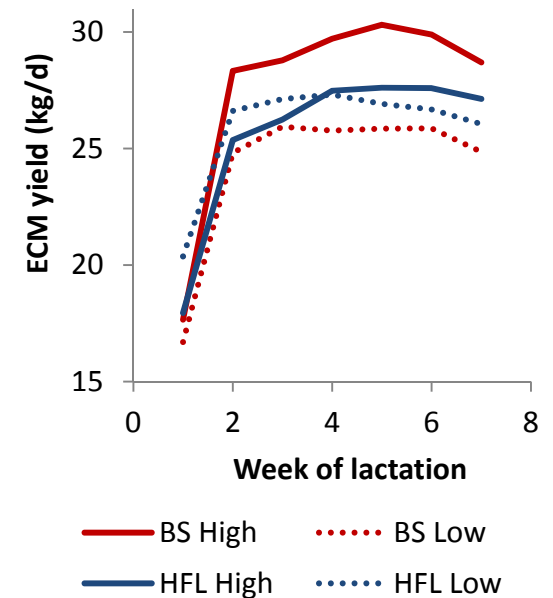
Experiment & methods

- n = 50 lactations (21 BS & 29 HFL)
- Concentrate suppl. levels:
 - High **618 kg DM/cow & lact.**
 - Low **279 kg DM/cow & lact.**
- Duration of grazing season: 210 d
- Turn out to pasture at 115 DIM in both experimental years
- Mixed model (SAS 9.2)



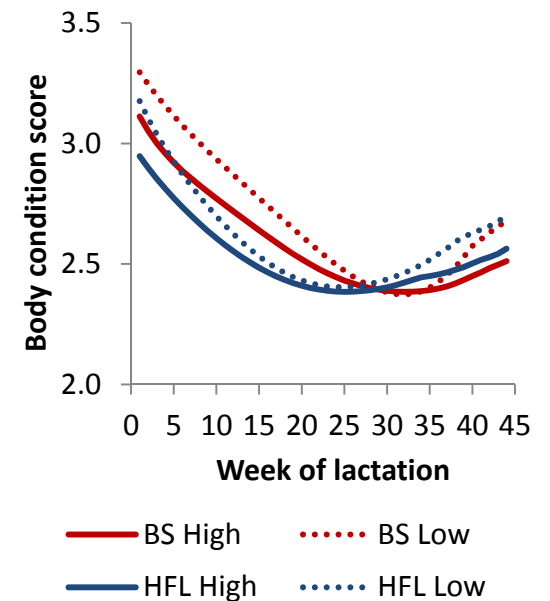
Early lactation

	BS		HFL		P value		
	High	Low	High	Low	CT	SL	CT×SL
Concentrate intake (kg/d DM)	5.7	2.9	5.5	3.0	0.387	<.001	0.344
Forage intake (kg/d DM)	12.5	13.0	11.1	12.5	0.122	0.038	0.205
ECM yield (kg/d)	27.0	24.2	25.8	26.3	0.732	0.233	0.096
Energy balance (%)	96	88	95	84	0.330	0.002	0.629
BCS change	-0.2	-0.3	-0.2	-0.4	0.440	0.293	0.422
NEFA (μeq/l)	160	200	228	309	0.011	0.071	0.743
BHBA (mmol/l)	1.02 ^{ab}	0.93 ^b	1.12 ^{ab}	1.44 ^b	0.160	0.370	0.013
Urea (mmol/l)	2.58 ^b	3.39 ^a	2.48 ^b	2.57 ^b	0.013	0.006	0.032



Entire lactation

	BS		HFL		P value		
	High	Low	High	Low	CT	SL	CT×SL
Total concentrate input (kg DM)	642	281	593	278	0.535	<.001	0.556
ECM yield (kg/lactation)	6,363	5,643	6,021	5,570	0.585	0.014	0.505
Average BW (kg)	585	593	533	537	0.006	0.650	0.843
BCS 1 st week p.p.	3.1	3.3	3.0	3.2	0.179	0.055	0.596
BCS nadir	2.4	2.3	2.3	2.4	0.850	0.773	0.679
Week of BCS nadir	31	28	26	24	0.090	0.175	0.680
1 st service conception rate (%)	45	60	57	53	0.845	0.777	0.913
Days to conception (d)	79	68	81	78	0.853	0.055	0.716



Conclusions



- The different **selection focuses** are only partially reflected in the results
- **Similar milk yield, body tissue mobilisation and reproductive performance** for both breeds
- **Dietary treatment** mainly influenced **milk production** while **reproductive performance** was relatively insensitive to concentrate supplementation
- **Metabolic** adaption pattern was somewhat cow type specific



Thank you!

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Alpine low-input dairying?



Pasture-based „low-input“- systems may be an alternative also for Alpine (organic) dairy farming

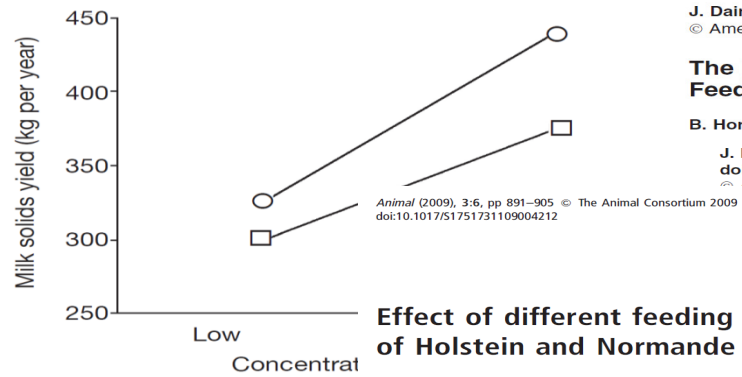
- AUT: Steinwider et al. (2008)
- CH: Thomet et al. (2004)
- GER: Steinberger et al. (2008)

High Input	Low Input
maximising Outputs	minimising costs
yield/cow	yield/ha
year-round barn feeding	seasonal grazing
meet „requirement“	minimise supplementation
conserved forage + concentrates	pasture + conserved forages
year-round calving	seasonal calving

Milk performance

Fitness

GUI in pastoral dairy systems



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The Interaction of Strain of Holstein-Friesian Cows and Pasture-Based Feed Systems on Milk Yield, Body Weight, and Body Condition Score

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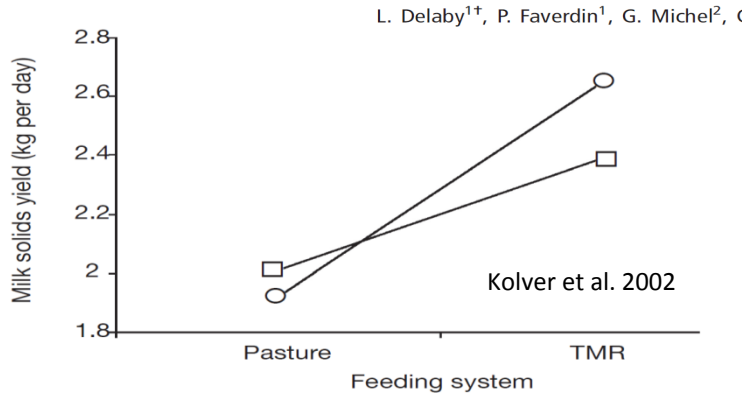
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Continuously Grazing System: Impact on Milk Yield and Body Condition Score

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Effect of different feeding strategies on lactation performance of Holstein and Normande dairy cows

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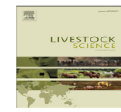
Comparison of the Performance of Holstein-Friesian Grazed and Pasture-Based Feed Allowances



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Comparison of the performance of Holstein-Friesian and Jersey x Holstein-Friesian crossbred dairy cows within three contrasting grassland-based systems of milk production

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