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

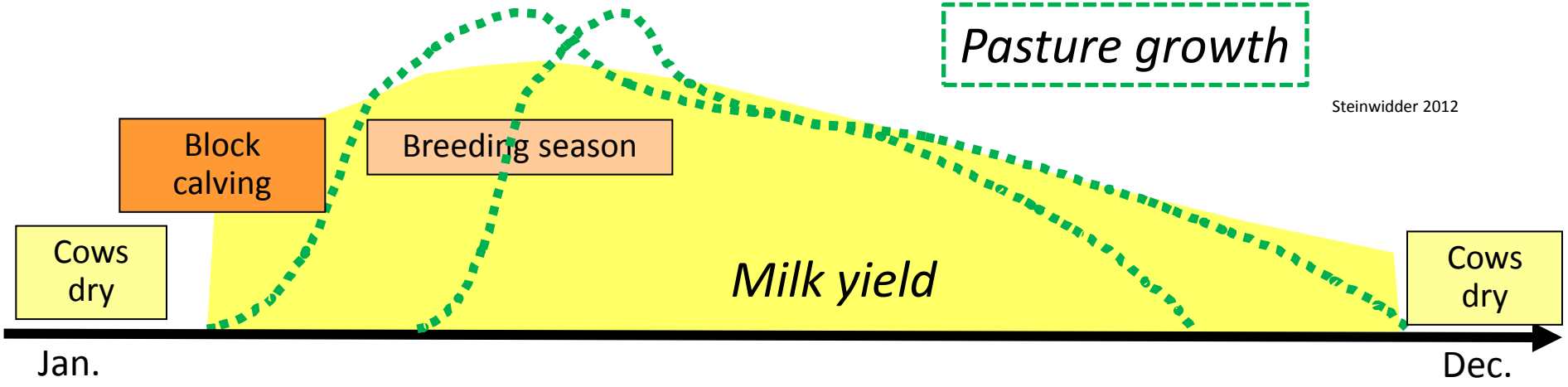
Marco Horn[1], Andreas Steinwidder[2], Johann Gasteiner[2], Mogens Verstergaard[3] and Werner Zollitsch[1]

[1]BOKU-University of Natural Resources and Life Sciences, Austria
[2]AREC Raumberg-Gumpenstein, Austria
[3]Aarhus University, Denmark

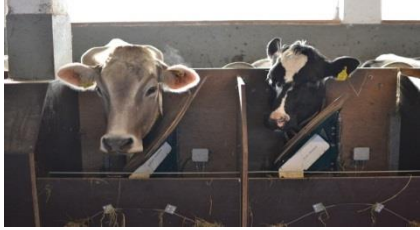
EAAP 2014, Copenhagen

Low-Input dairying

- **Reducing** inputs → **reducing** costs → **increasing** competetiveness
- 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

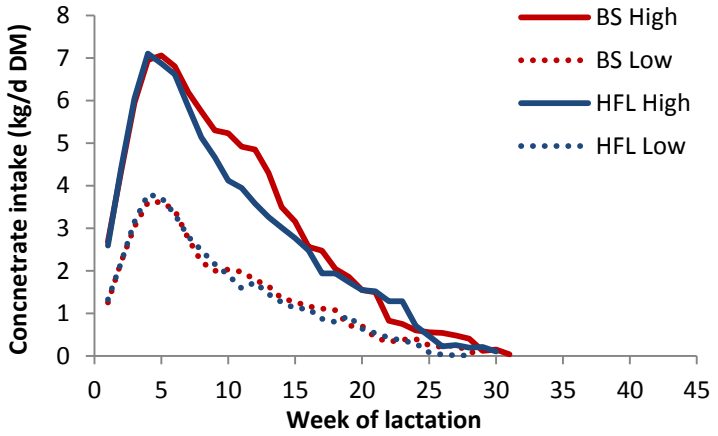
Holstein Friesian lifetime performance (**HFL**)

Selected for superior lifetime performance:

- Lifetime performance of ancestors
- Fitness

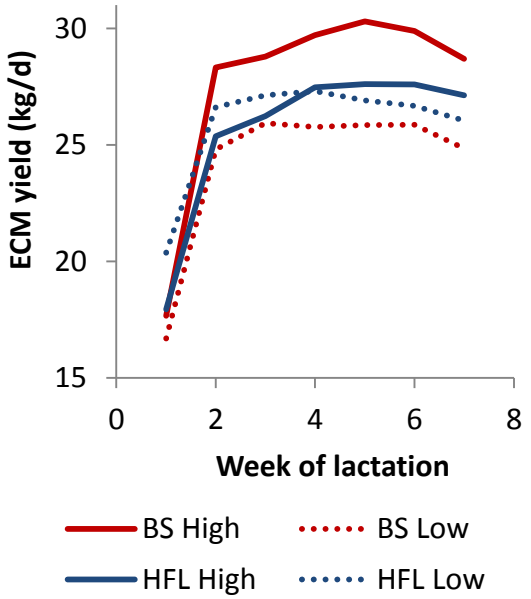
Experiment & methods

- 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)



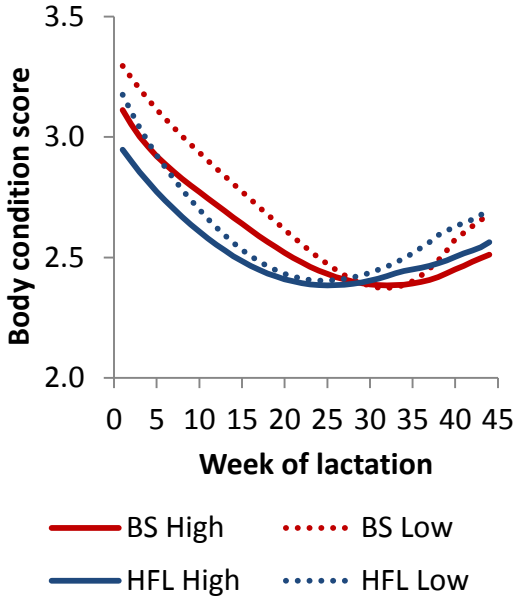
Early lactation

	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 1st 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
1st 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!

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

Marco Horn[1], Andreas Steinwidder[2], Johann Gasteiner[2], Mogens Verstergaard[3] and Werner Zollitsch[1]

[1]BOKU-University of Natural Resources and Life Sciences, Austria

[2]AREC Raumberg-Gumpenstein, Austria

[3]Aarhus University, Denmark