

Milk and concentrate intakes in Salers calves modify body composition at weaning and feeding efficiency in young bulls' production

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ALIMENTATION
AGRICULTURE
ENVIRONNEMENT

INRA

+40% of concentrate (kg/LU/year)
on Charolais farms
since 1990

Veysset, Lherm et al. 2005 and pers. com.



Concentrate supply
on suckling Salers farms

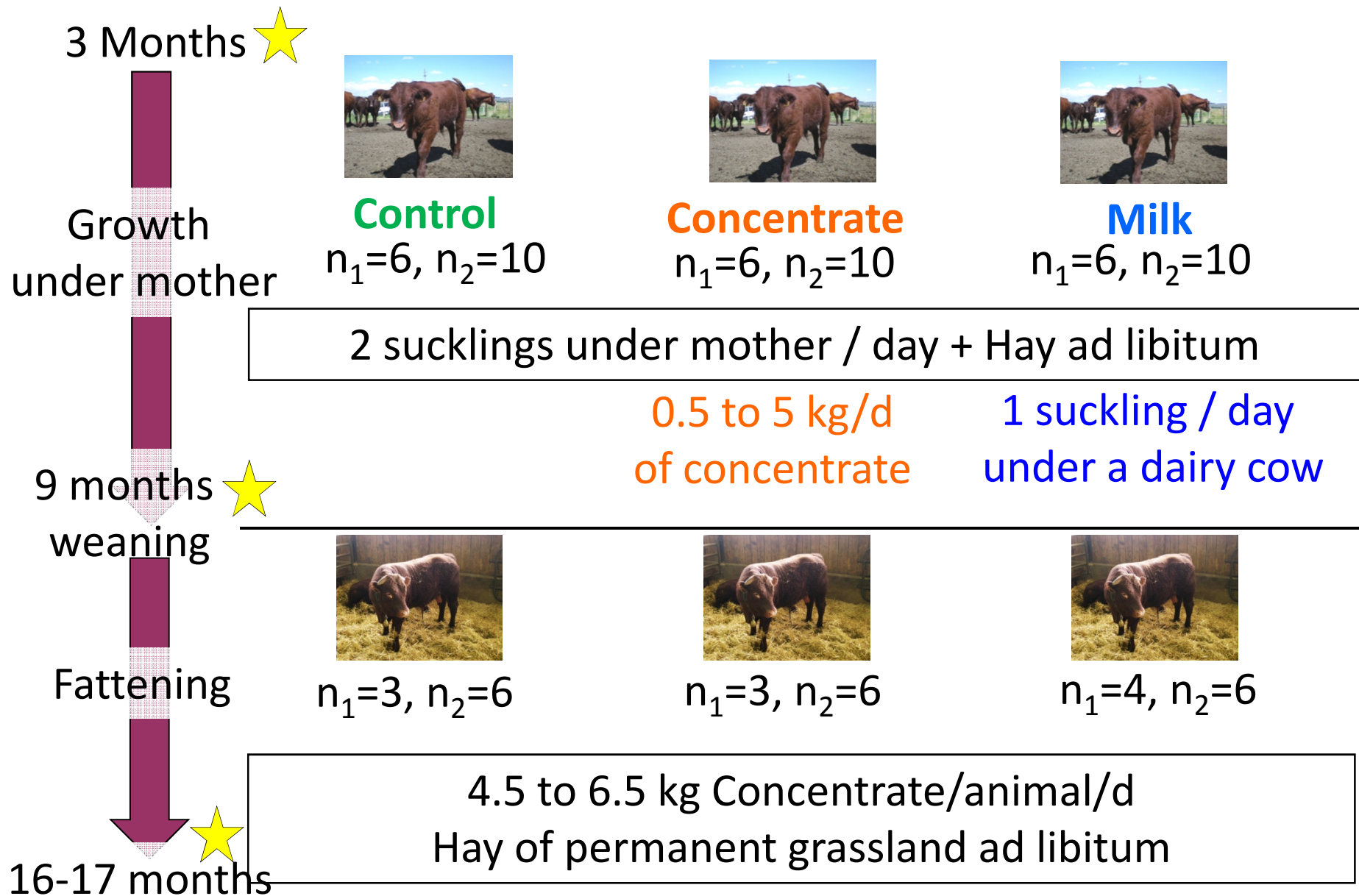
Salers cow / Milk
production



How does the ratio Milk/forage/concentrate before weaning modify:
growth trajectory
body and carcass composition
Feeding efficiency

Before weaning and residual impact during fattening

Experimental design: 2 series, $n_1=18$, $n_2=30$



Measurements:

From
3 months
to weaning



milk



hay



concentrate

Intake

Growth & Slaughter



Carcass weight

Viscera compartments

6th rib dissection

Fattening



Hay and
concentrate
Intakes:
individual





Contrasted treatments before weaning

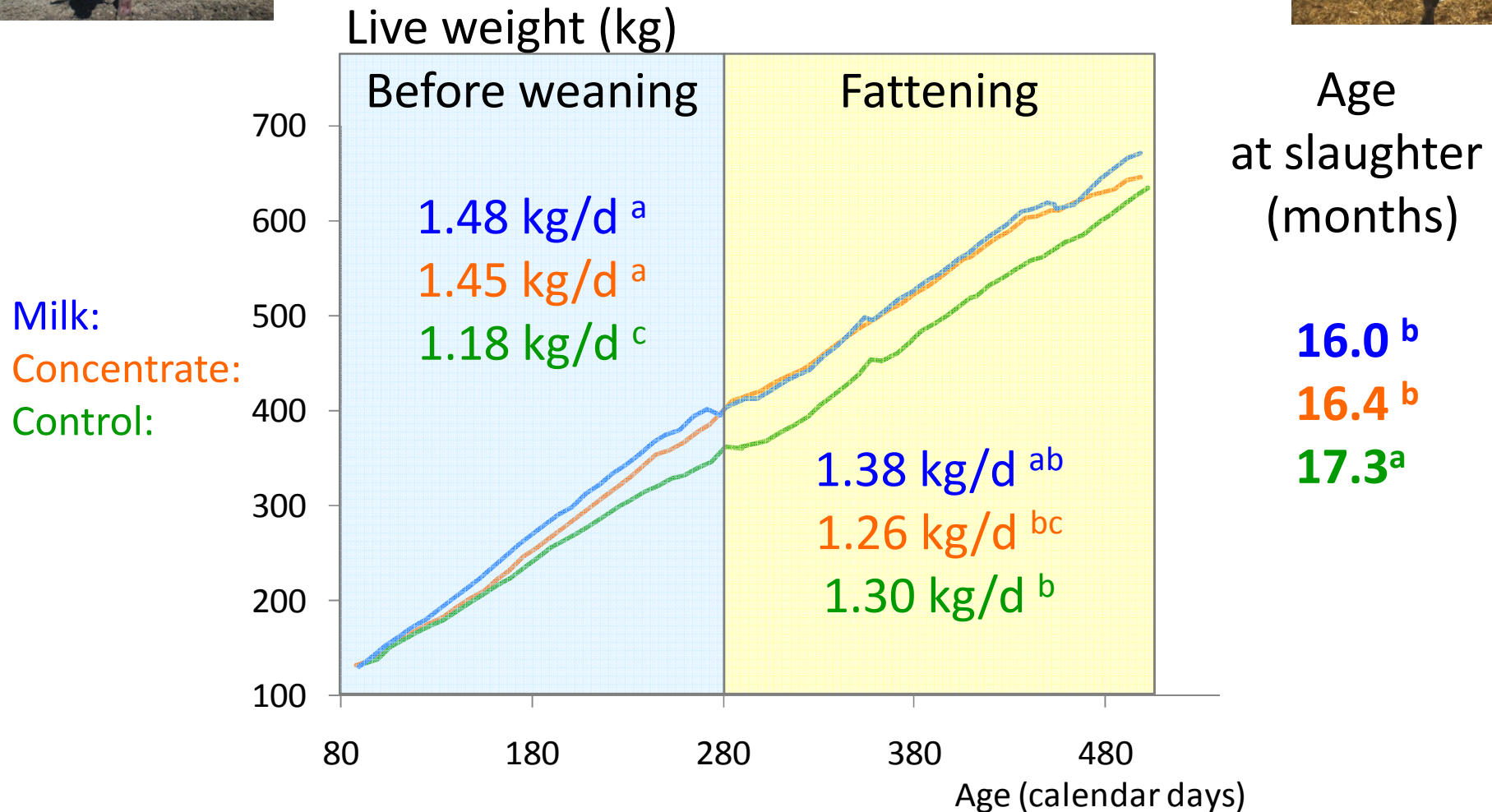
Intake Before weaning		Control	Concentrate	Milk
Milk	(g. d ⁻¹ .kg ^{0.75})	108±6.7^a	103±6.5^a	185±6.5^b
Hay ¹	(gDM.d ⁻¹ .kg ^{0.75})	50±2.2^a	36±2.2^b	31±2.2^b
Concentrate	(gDM.d ⁻¹ .kg ^{0.75})	-	37±2.9	-
Metabolisable Energy ¹	(kJ.d ⁻¹ .kg ^{0.75})	762±18.1^c	992±18.1^a	837±18.1^b

Intake during fattening		Control	Concentrate	Milk
Hay	(gDM.d ⁻¹ .kg ^{0.75})	38±1.8	40±1.8	40±1.8
Concentrate	(gDM.d ⁻¹ .kg ^{0.75})	41±1.2	39±1.2	39±1.2
Metabolisable Energy	(kJ.d ⁻¹ .kg ^{0.75})	887±22.3	887±22.3	883±20.9

¹Calculated from the measurements of the second series of experiment



The feeding treatments resulted in different growth trajectories



Different evolutions of average daily gains between weaning and fattening for the three groups



Body composition

Weaning	Control	Concentrate	Milk
Carcass Weight (kg)	180±6.3^b	224±6.3^a	220±6.7^a
<i>Body composition at a same EBW (315kg)</i>			
Liver	3.9±0.15^b	4.5±0.14^a	3.9±0.12^b
Non-Carcass fat	6.7±0.41^c	11.7±0.41^a	8.8±0.41^b
<i>Carcass composition at a same CW (208 kg)</i>			
Muscles	143±1.4^a	138±1.3^b	143±1.1^a
Carcass fat	24.4±1.19^b	31.5±1.16^a	26.8±0.77^b
Slaughter			
Carcass Weight (kg)	365±6.3^b	393±5.2^a	401±5.1^a

different profile in AA between milk and concentrate (Labussière et al. 2009)

Viscera development / maintenance requirements

Feeding efficiency



Weight gain by amount of metabolizable energy intake (g.MJ⁻¹)

	Control	Concentrate	Milk
Before weaning ¹	24.8±0.51 ^a	22.1±0.51 ^b	26.5±0.51 ^a
Fattening	13.7±0.53	12.8±0.53	14.1±0.50
Early fattening ¹	17.2±0.49 ^a	13.1±0.49 ^b	15.8±0.49 ^a

¹Calculated from the measurements of the second series of experiment

Low feeding efficiency in the concentrate group with a residual effect during early fattening: maintenance and gain composition
The control group: compensatory growth during early fattening

Conclusions and perspectives

About 40% less concentrate in the Milk group.
The milk production potential of suckling cows is of high importance

Consequences of the milk supply at the whole farm level?

Further investigate differences in protein and lipids gains
between treatments

To be included into dynamic growth models
of beef cattle from birth to slaughter



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