



Bern University
of Applied Sciences



Breeding for meat quality in Swiss beef cattle

Hannes Joerg
Professor for Animal Genetics
EAAP 2013, 26.8.2013, Nantes, France



Bern University
of Applied Sciences

Meat Quality in Natura Beef

Meat quality traits

Effects of breed crossings

Genome-wide association study

Breeding with molecular markers

Natura Beef

- Calves slaughtered with 10 months
- 24'000 calves per year with breeding data
- 200'000 calves with breeding and carcass data
- A selection due to breeding data until one week before slaughtering is possible
- The slaughtering is standardised.
- Crossings Limousin x dairy breed, Angus x dairy breed

6 Samples

	Animal 1	Animal 2	Animal 3	Animal 4	Animal 5	Animal 6
CH TAX	C	C	H	H	T+	T+
Fat classe	2	2	2	3	2	2
Sex	male	male	male	female	male	female
Breed	Limousin OB	Charolais Lim/SF	Charolais	Limousin Sim	Angus	Charolais
Age (days)	305	329	328	327	325	322
Carcass weight (kg)	282	217	235	208	232	169

Samples of longissimus dorsi (LD)
Samples of biceps femoris (BF)

Temperature and pH



Temperature and pH

	A 1	A 2	A 3	A 4	A 5	A 6
pH LD	5.60	5.57	5.47	5.43	5.61	5.56
pH BF	5.47	5.43	5.40	5.39	5.45	5.45

Colour



Colour

	A 1	A 2	A 3	A 4	A 5	A 6
L* LD	38.9	40.0	44.5	38.5	37.7	40.4
L* BF	43.8	39.5	44.3	39.7	40.3	42.1
a* LD	13.9	13.1	12.3	15.8	14.8	10.8
a* BF	16.1	16.4	17.1	16.7	17.6	14.9
b* LD	10.9	8.4	10.5	11.3	10.0	7.3
b* BF	13.7	10.4	14.6	12.2	13.8	13.7
K/S 525-730 LD	3.6	3.2	2.3	4.0	4.1	2.8
K/S 525-730 BF	2.8	3.7	2.8	3.8	3.9	3.1

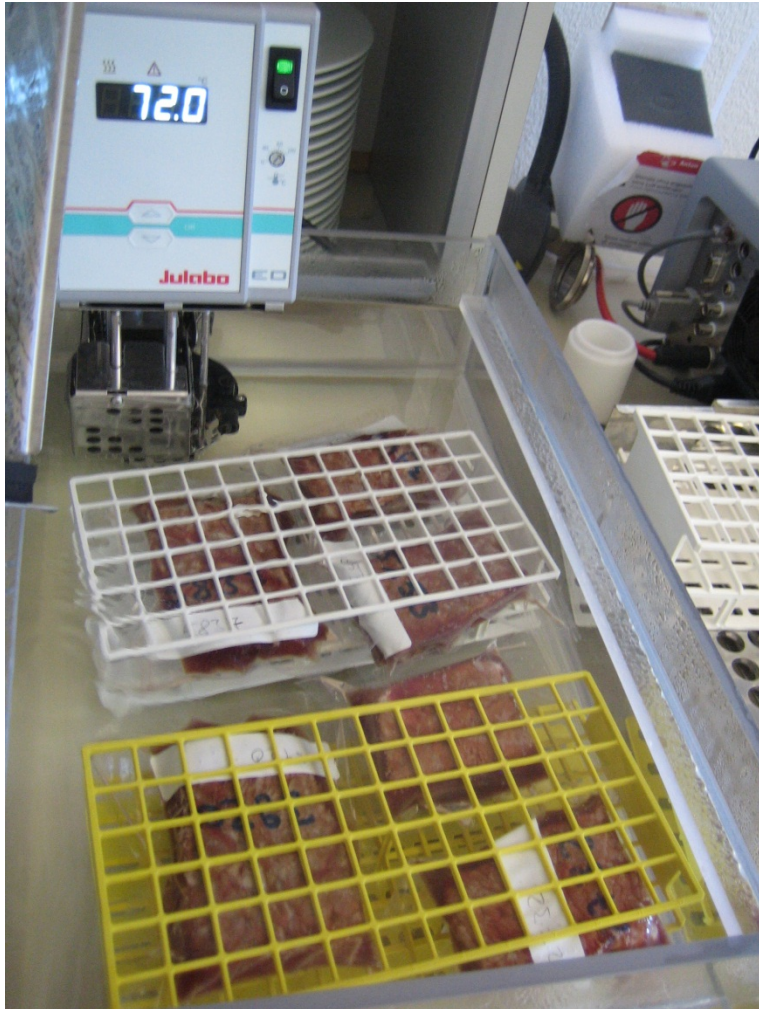
L* = Brightness

a* = red colour

b* = yellow colour

K/S 525-730 = Pigmentation (Absorption difference between wave length 525 and 730)

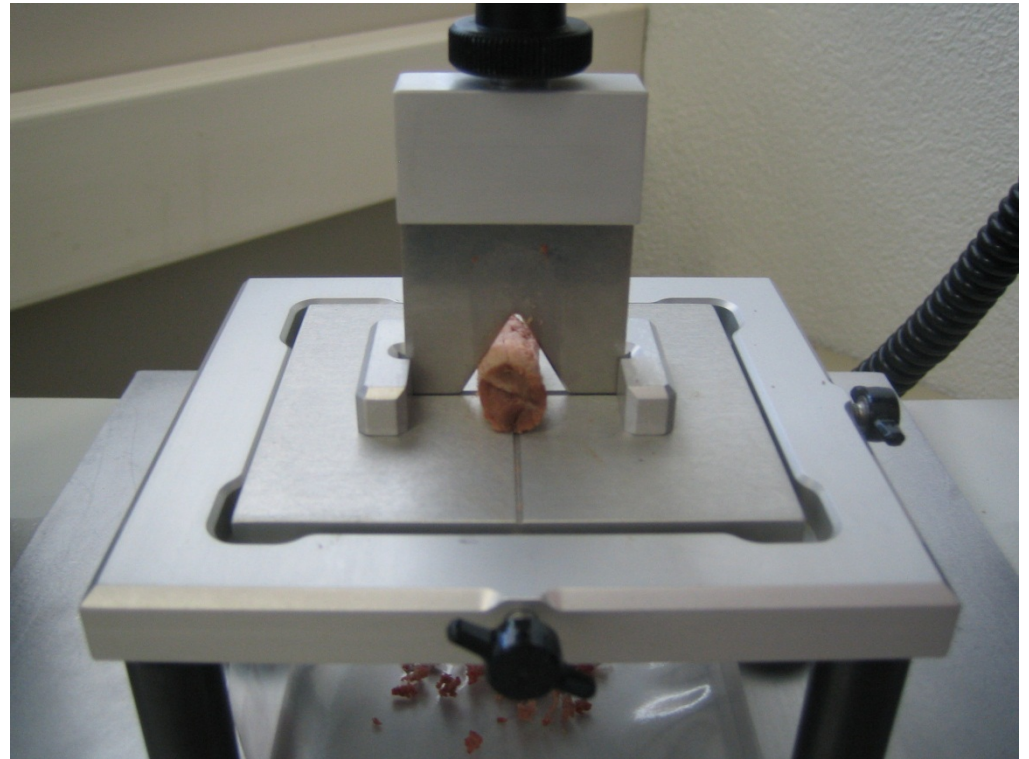
Cooking loss



Cooking loss

	A 1	A 2	A 3	A 4	A 5	A 6
Cooking loss LD (%)	20.9	21.1	23.2	22.0	22.6	25.3
Cooking loss BF (%)	29.0	28.1	28.3	27.8	28.6	29.4

Warner-Bratzler shear force



Warner-Bratzler shear force

	A 1	A 2	A 3	A 4	A 5	A 6
Force LD (N)	26.8	33.2	31.6	23.3	26.2	28.4
Force BF (N)	45.1	40.8	38.2	47.6	46.7	40.7

Intra muscular fat and water content



Intra muscular fat and water content

	A 1	A 2	A 3	A 4	A 5	A 6
IMF LD (%)	0.44	0.29	1.11	2.48	0.60	0.37
IMF BF (%)	0.61	0.31	0.99	3.28	1.05	1.17
IMW LD (%)	75.6	75.6	74.3	72.6	75.7	74.8
IMW BF (%)	75.1	75.0	74.3	72.3	74.9	74.7

Mutterkuh Schweiz

- ❖ Tony Aufdermauer
- ❖ Urs Vogt

ALP

- ❖ Pierre-Alain Dufey

Bell AG

- ❖ Roderich Balzer
- ❖ Stefan Seiler

HAFL

- ❖ Alexander Burren
- ❖ Christine Flury
- ❖ Hannes Jörg
- ❖ Maria Schafroth
- ❖ Martin Scheeder
- ❖ Rahel Tobler

