Beef production in Spain: 3 millions > 2y females (2/3 beef +1/3 dairy)

Fotos: "Autochthonous Livestock in Spain". MARM y Feagas

Up to now breeding objectives have been related to

Two Groups of traits

Beef performance

Growth
Conformation
Carcass

Maternal performance

Maternal ability
Fertility
Calving easy

BLUP EBV are available for these traits in both breeds

Selection objectives are now also including

More efficiency:

Fertility

Functional Longevity

Health

Feed efficiency

Reduction of production costs

Quality of products:

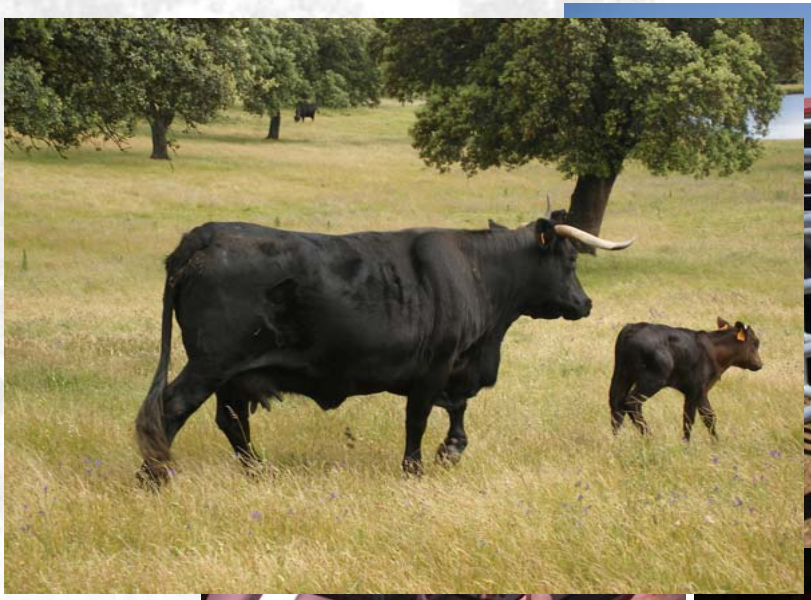
Ultrasounds to predict IMF

Panels

pH

Added values to products

Integrated Production System = Avileña Negra Ibérica



Ruminants Breeding

4 researchers

4 research assistants funded by research projects and colaborative work with industry.

3 Graduate students

In Beef:

- **More efficient way of using the information to predict Post weaning weight.**
- **Implementation of genomic selection in the Spanish Local Breeds**
- **Genetic bases of meat quality differences across the carcass**
- **Meat yield and the use of ultrasound to predict meat quality and quantity**

More efficient way of using the information to predict Post weaning weight

Modelo	LDM	D	Varianza Residual			
			1	2	3	4
Hete_ST_ST	-60.882,37	186,98	91,29	66,75	111,38	128,28
			[79,13-102,47]	*[63,3-69,62]*	*[100,64-123,78]*	*[120,21-136,66]*
Homo_SX	-61.056,60	180,40	88,73			
			[85,76-91,76]			
Hete_SX_ST	-60.901,54	187,64	90,76	66,79	111,53	128,77
			[79,64-102.02]	*[63,90-69,69]*	*[100,74-124,06]*	*[120,56-137,31]*
Homo_ST	-61.068,42	193,38	88,80			
			[85,58-91,61]			
Hete_SX_SX	-61.126,52	188,14	96,61	88,24		
			[84,45-108,69]	*[85,20-91,39]*		
Hete_ST_SX	-61.227,22	187,82	96,92	88,26		
			[84,98-109,45]	*[85,16-91,42]*		

bjetive

To study genetic differences between two muscles for beef quality traits.

WHY?

However……

☺ What are the genetic relationships among quality traits across muscles?.

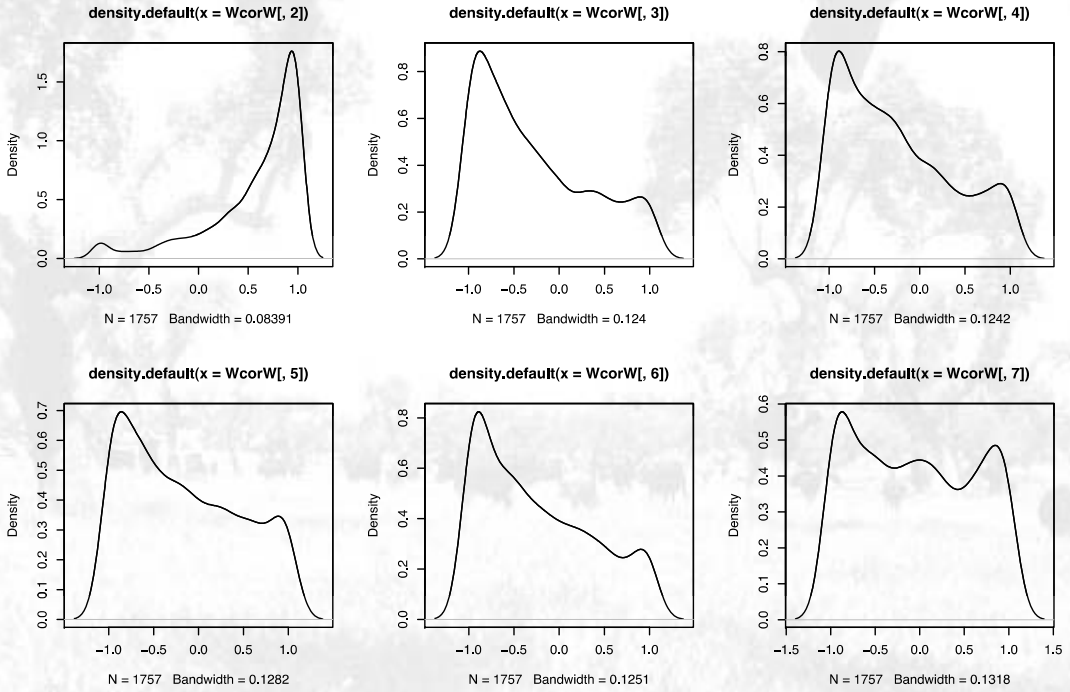
☹ Implications? GENOMIC SELECTION

Posterior means of the genetic correlations between FD and PM for different meat quality traits. Pb >0.8 and Pb >0

Traits	r_g	Pb >0.8	Pb>0
IMF(%)	0.05	0.18%	58%
Protein	0.45	19%	88%
WB	0.46	49%	98%
Tenderness	0.42	25	80%
Juiciness	0.27	18	69%
Flavor	0.31	0.03	73%

(Díaz et al., 2006; López de Maturana et al., 2010)

Architecture of genetic correlation



Diaz et al., 2011

Changes in functional relationship among genes depending of muscle types

Genes DE are located in QTL regions associated to meat quality

- **167 /205 DE genes located in 196 QTL regions.**

- **QTLs associated to IMF, tenderness, juiciness, fatty acid profiles, flavour, pH etc.**