

Introduccion and objectives:

The Animal Reproduction Unit of the Medicine and Surgery Department (UAB) is working to form a sperm bank of the sheep breeds Xisqueta and Aranesa, and the goat breed Blanca de Rasquera. This work focuses on the two sheep breeds both of which are currently a very small population and present high consanguinity (Jordana et.al., 2010a i b).

The objective is to make a good health and reproductive assessment of studs in order to describe and classify their potential and reproductive ability, in order to contribute to the preservation of this species in danger of extinction.

Parameters of the animal, ejaculate and sperm will be analysed to assess the best exemplars as well as those who are infertile or subfertile.

Material and methods:

Procedure:



Electroejaculator:
Sampling for 3 months
Once a week
Analysis of the first six weeks

1.- Male assessment

Scrotal circumference (Measuring tape)
Reaccion time

2.- Ejaculated assessment

Motility and concentration
Volume
Macroscopic assessment

3.- Sperm assessment (0 vs 4 hours)

TGC

HOST

4.- Statistic analysis

ANOVA and Pearson correlation at SPSS 22.0

Subjects:



Xisqueta
Males 69 i 75



Aranesa
Males 77,84 i 85

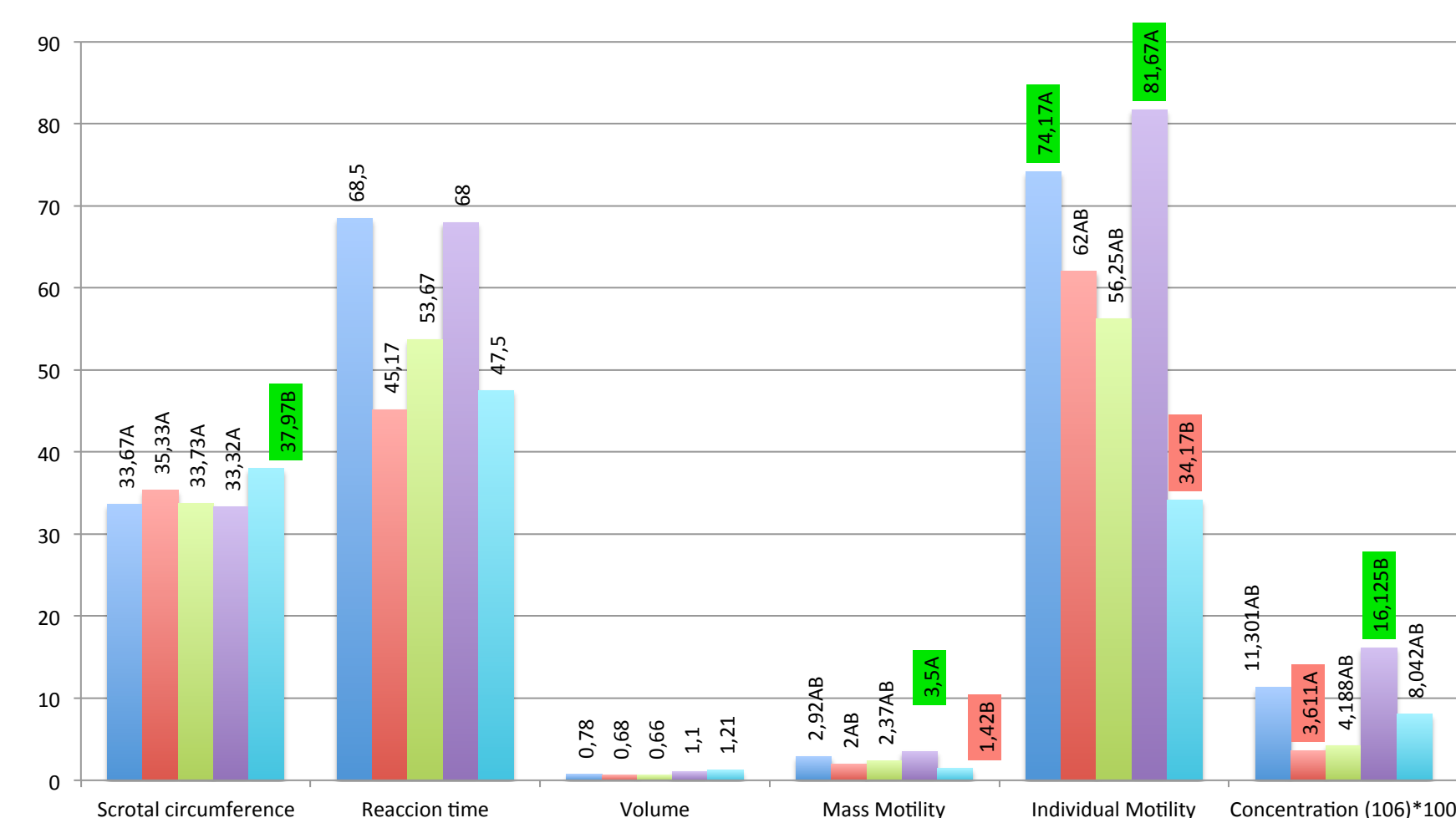
5 years old

Results and Discussion:

Values of the parameters related to male and ejaculate (means; n = 5, r=6)

Values for better semen quality p<0,05

Values for lower semen quality p<0,05



The male 84 (Aranesa) obtains better results at individual and massal motility and at sperm concentration. The male 85 (Aranesa) is the one that has a poorer semen quality. The male 75 (Xisqueta) gives a bad result at concentration, but with an acceptable motility. The male 69 (Xisqueta) gives acceptable results in general, particularly with regard to individual motility.

Correlations among parameters studied at 0 hours

Positive correlation

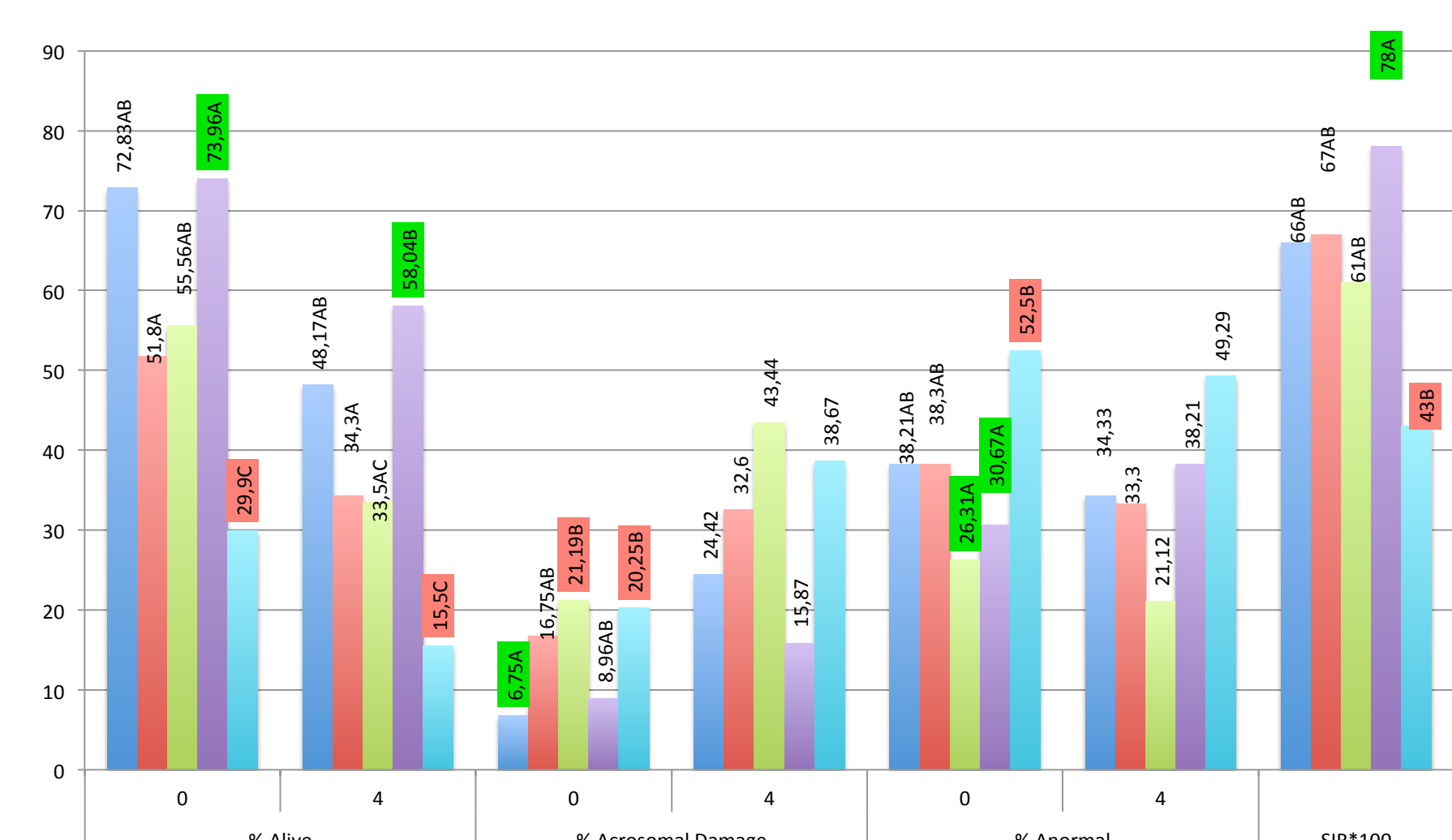
Negative correlation

*p<0,05 **p<0,01

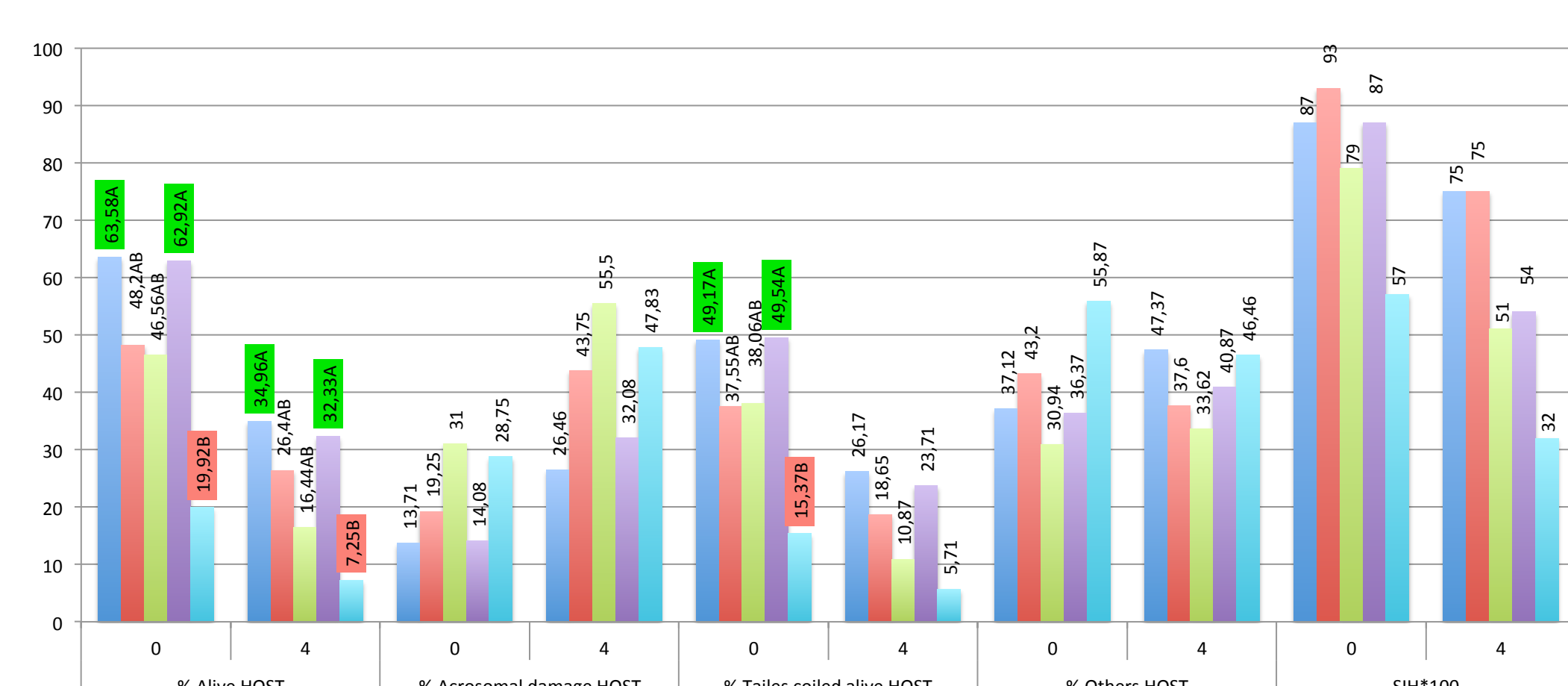
	Scro. Circ.	Reaccion time	Vol.	MM	IM	Conc. (10 ⁶)	% Alive	% Acro. Damage	% Anorm.	% Alive HOST	% Acro. Damage HOST	% Coiled tail HOST	% Others HOST
Scrotal circ	1	-0,413*		-0,618**	-0,742**		-0,689**	0,512**	0,426*	-0,530**		-0,523**	0,433*
Reaccion t		1		0,462*		0,392*	0,433*			0,393*			
Volume			1										
MM				1	0,732**	0,574**	0,668**	-0,610**		0,540**	-0,531**		
IM					1		0,718**	-0,694**		0,654**	-0,501**	0,583**	
Concent. (10 ⁶)						1							
% Vius							1	-0,658**	-0,420*	0,811**	-0,473*	0,751**	-0,470*
% Acro. Damage								1		-0,498**	0,652**	-0,47*	
% Anormals									1				0,752**
% Alive HOST										1	-0,641**	0,945**	-0,547**
% Acro. Damage HOST											1	-0,610**	
% Coiled tail HOST												1	-0,646**
% Others HOST													1

Scrotal circumference is associated with worse sperm quality, as it correlates with more acrosome damage, more abnormalities, more reaction time, fewer live sperm and less mobility in all circumstances. This contradicts the results of Manazza (2004); Gonzalez and Palacios (2012); Perez et.al. (2014); and Vega et.al. (2001); who found that both sheep and other species, contrary to what happens in this study, showed a positive relationship between greater scrotal circumference and better viability parameters. This contradiction may be due to our too small sample size, or to anomalous behavior of male 85.

Values of sperm quality in fresh at TGC solution (0h) and at 4h after cooling, between males, and survival rates in the Refrigeration (SIR) (mean, n = 5, r=6)



Values of sperm quality in fresh at HOST solution (0h) and at 4h after cooling, between males, and survival rates at HOST (SIH) (mean, n = 5, r=6)



The variables significantly more favorable in the best male (also 84) the most deficient in the worst (also 85) were as follows:

- Mass as well as individual motility
- Concentration of sperm
- Percentage of alive sperm and alive in the HOST solution
- Acrosome damage and percentage of sperm abnormalities
- Percentage of coiled tails alive in the HOST solution

Once semen was cooled, and therefore at the time of forming a bank, the only features characteristics of the best individual that have remained where:

- The percentage of live sperm in TGC and HOST solutions
- The survival rate after Refrigeration (SIR)

Conclusions:

- The type of analysis carried out could be useful in selecting the best animals to act as studs, as some of the variables in the analysis of semen have allowed to clearly distinguish the best male as well as the worst, and therefore a candidate for removal.
- Even though in endangered races it is needed to design special protocols to use successfully subfertile males for AI purposes.
- Some characteristics of individuals, and therefore easy to explore, such as a greater reaction time, may be predictive of good results in the analysis of semen. As for scrotal circumference, the present results contradict those found in the literature.
- The sample size don't really allow to consider the results as being conclusive, but are encouraging and support the interest of replicating the study with a larger number of animals, and thus establish a comparison between the two races.

References:

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