SEMEN QUALITY IN RABBITS AFTER 18TH GENERATIONS

VI Trobada d'Estudiants de Doctorat

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1. INTRODUCTION

Breeding schemes for meat production in rabbits involved a three-way cross of specialized lines. Two maternal lines selected for reproductive traits to generate crossbred does, which are mated by paternal line males (selected for growth rate) to produce the rabbits meat (Baselga, 2000). For seminal traits genetic differences between lines, within lines and crossbreed males were found (see review Piles *et.al.*, 2013) and its genetic parameters indicates a moderate repeatability and low to moderate heritability (García-Tomás et al., 2006; Lavara et al., 2011, Tussel et al, 2015; Brun et al., 2016). Tussel *et.al.* (2012) reported a moderate h^2 for concentration, volume and sperm production, suggesting the latter as better trait for a selection program. A negative genetic correlation have been found between daily gain and the morphometry of sperm heads (Lavara et al., 2013). Most of the previous studies have been focused on sperm parameters and DNA integrity, little attention has been paid to seminal plasma or sperm composition to explain differences observed in fertility of males.

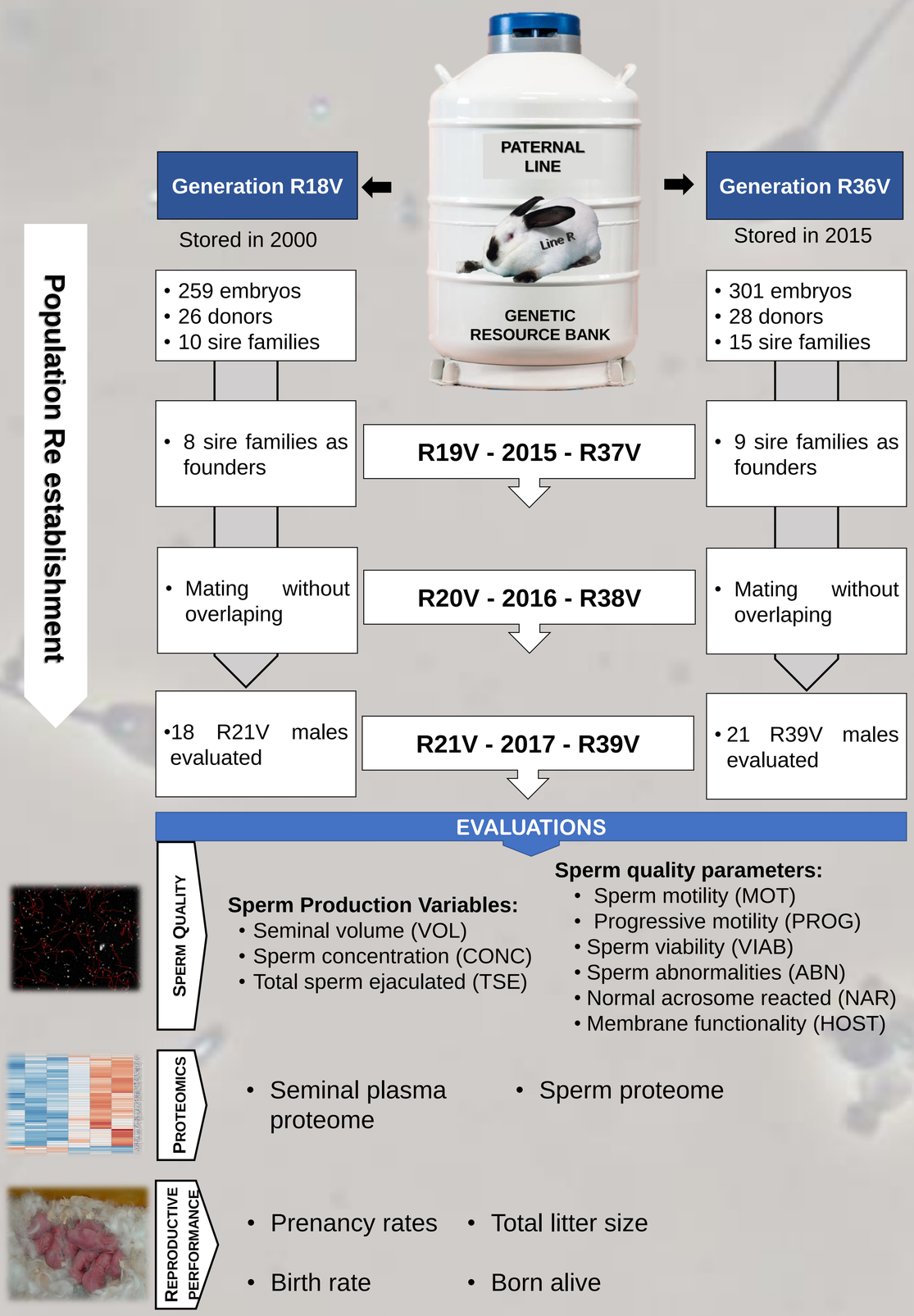
2. OBJECTIVES:

The aim was to evaluate if selection program by daily gain in fattening period has changed:

- Sperm quality parameters
- Plasma and sperm proteome
- Reproductive performance of semen when it is used in artificial insemination.

To do this we use a re-derived population obtained from vitrified embryos 18th generations before.

3. MATERIAL AND METHODS:



4. RESULTS

4.1. Sperm quality parameters

Table 1. Contrast (standard error) between groups.

	R39V-R21V (EE)
Sperm production variables	
Vol (ml)	-0,1 (0,072)
CONC (x 10^6 spz/ml)	38,6 (78,57)
TSE (x 10^6 sperm)	-10,2 (26,58)
Sperm quality variables	
MOT (%)	4,8 (7,73)
PROG (%)	0,5 (5,02)
VIAB (%)	-3,9 (3,86)
ABN (%)	12,8* (3,89)
NAR (%)	1,3 (3,32)
HOST (%)	-5,2 (5,52)

***** Means statistical differences (P<0.05)
VOL: Eyaculate volumen; **CONC**: Spermatic concentration; **TSE**: Total sperm per eyaculate; **MOT**: Percentage of sperm motility; **PROG**: Percentage of progressive motility; **VIAB**: Percentage of viable sperm; **ABN**: Percentage of abnormal forms; NAR: percentage of normal apical ridge; **HOST**: Hypo-osmotic swelling test;

4.2. Seminal plasma and sperm proteome

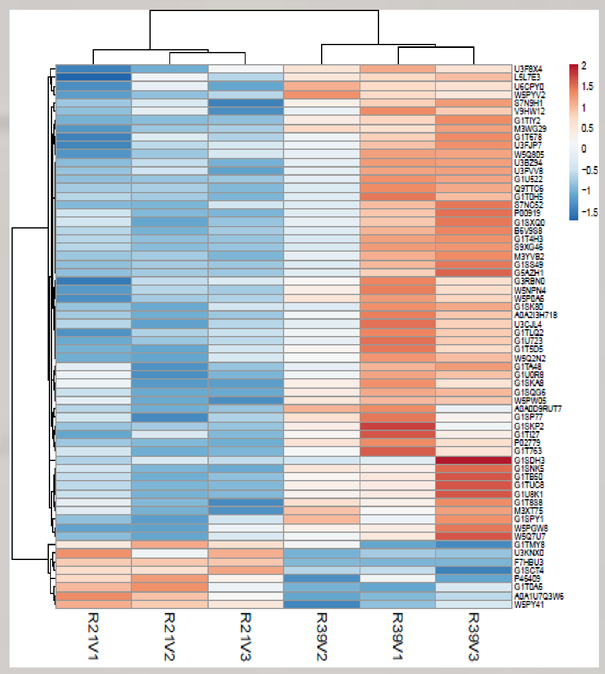


Fig. 1a. Heat map representing levels of differentially expressed seminal plasma proteins between male groups (R21V y R39V).

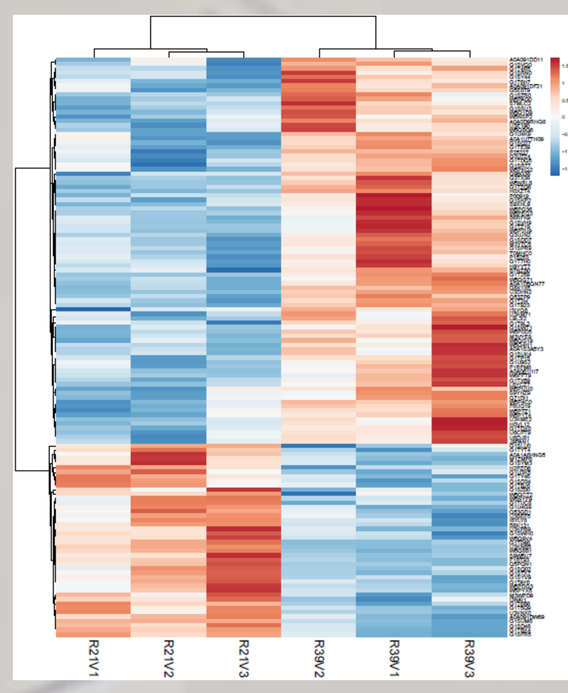


Fig. 1b. Heat map representing levels of differentially expressed semen proteins between male groups (R21V y R39V).

4.3. Reproductive performance

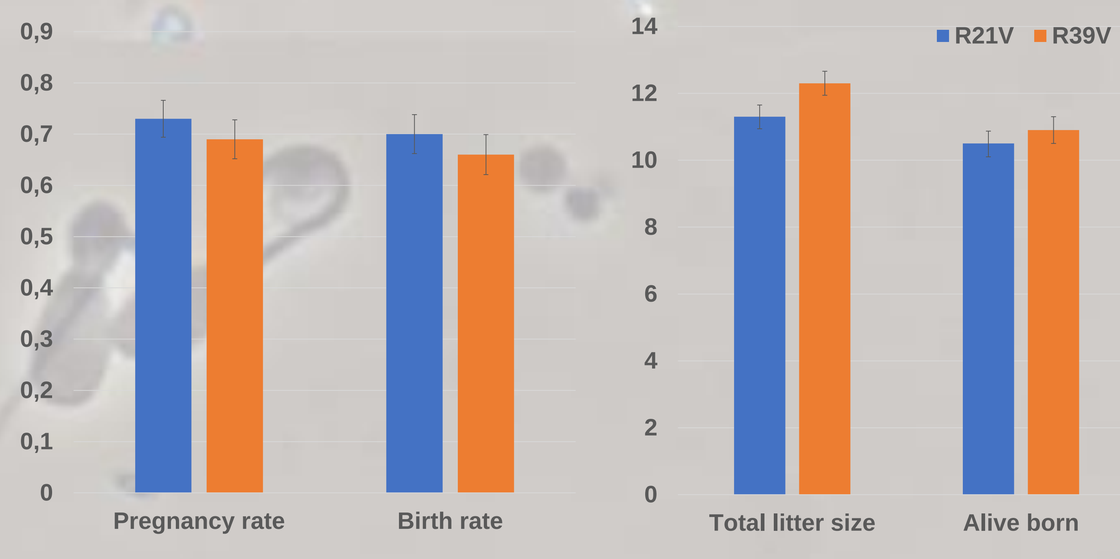


Fig 2. Reproductive performance of inseminated does.

5. CONCLUSION.

Our work reveals differences in abnormal sperm ratio, seminal plasma and sperm proteome between generations, but do not affect either motility sperm parameters or reproductive performance when semen doses were used under commercial purpose.

6. REFERENCES

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