

Influence of GH genotype and feeding regime on reproductive parameters in Serra da Estrela ewes

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MINISTÉRIO DA AGRICULTURA
E DO MAR



Introduction

GROWTH HORMONE (*GH*):

- ✧ Involved in the processes of:
 - sexual differentiation and pubertal maturation
 - gonadal steroidogenesis, gametogenesis and ovulation

- ✧ **PITUITARY GH2-N** – endocrine role on granulosa, and luteal and thecal cells, oocyte, endometrium and mammary gland

- ✧ **PLACENTAL GH2-Z** – endocrine role on endometrium and mammary gland **AND** local autocrine or paracrine effects in placenta
 - pregnancy maintenance,
 - lamb survival and lamb body weight

Objective

STUDY THE EFFECTS OF:

✦ GH2-Z gene copy genotypes:

AA (R9R/S63S)

AB (R9C/S63S)

AE (R9R/S63G)

✦ Feeding regime during pre-pubertal phase:

Restricted Gr – growth rate of 79 g/day

Normal Gr – growth rate of 106 g/day

on 90 ewe lambs reproductive parameters of Serra da Estrela primiparous ewes



Material and Methods

ONSET OF OVARIAN CYCLICITY

✧ Blood samples:

- ✓ once every 10 days, from 5 month of age till forty days after the first oestrous detection

✧ Plasma progesterone levels (P4):

- ✓ Determined by RIA

✧ Cyclic when:

- ✓ $P4 \geq 0.5 \text{ ng mL}^{-1}$
- ✓ Peak every 17 days

ONSET OF PUBERTY

- ✧ 1st oestrous detected by rams with marking harness



Material and Methods

OESTROUS SYNCHRONIZATION

- ✦ 20 mg FGA intravaginal sponges - 12 days
- ✦ 500 UI eCG after sponge removal

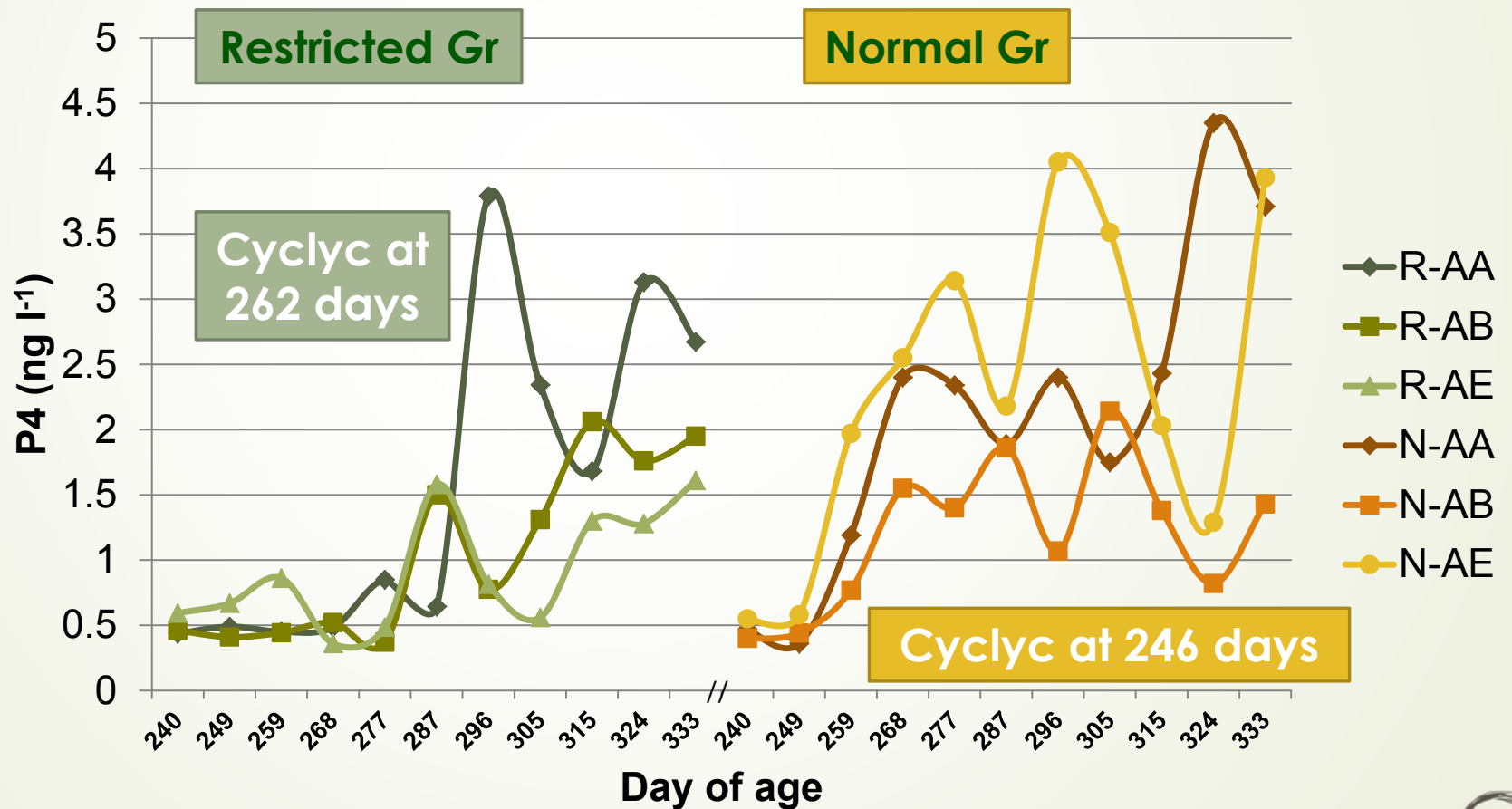
ARTIFICIAL INSEMINATION (AI)

- ✦ Cervical AI - 55 h after sponge removal
- ✦ 300×10^6 spz refrigerated semen (15 °C)
- ✦ Natural mating - 17 days after AI (during 30 days)



Results

PROGESTERONE LEVELS

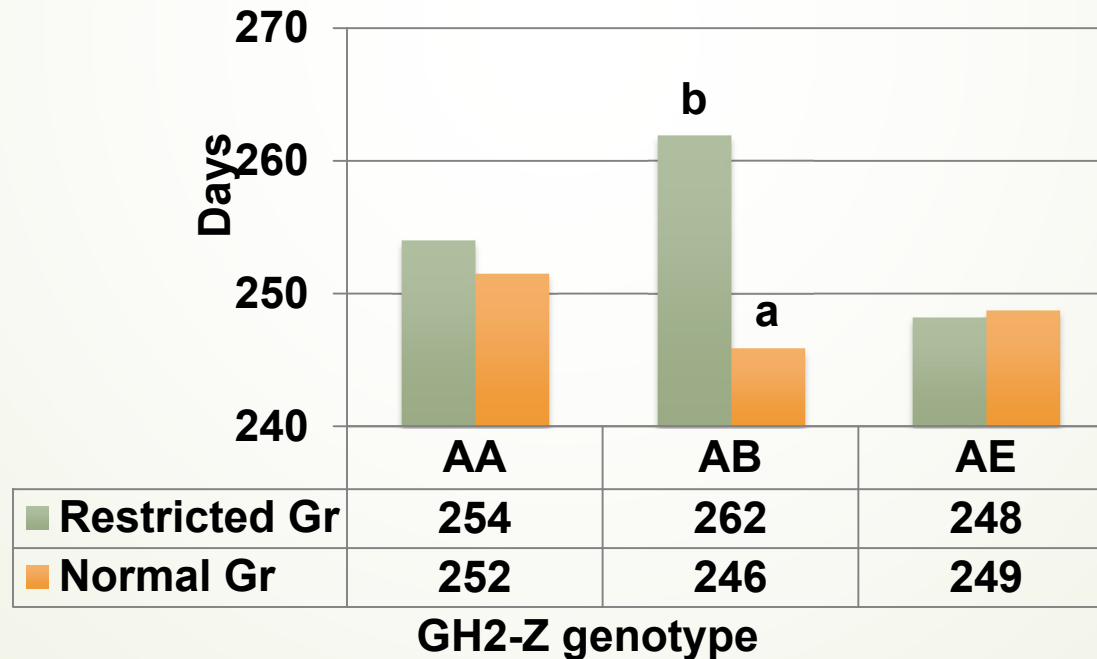


Results

CYCLICITY

Age at cyclicity – 251 days

Group R > **Group N** in **AB** genotype



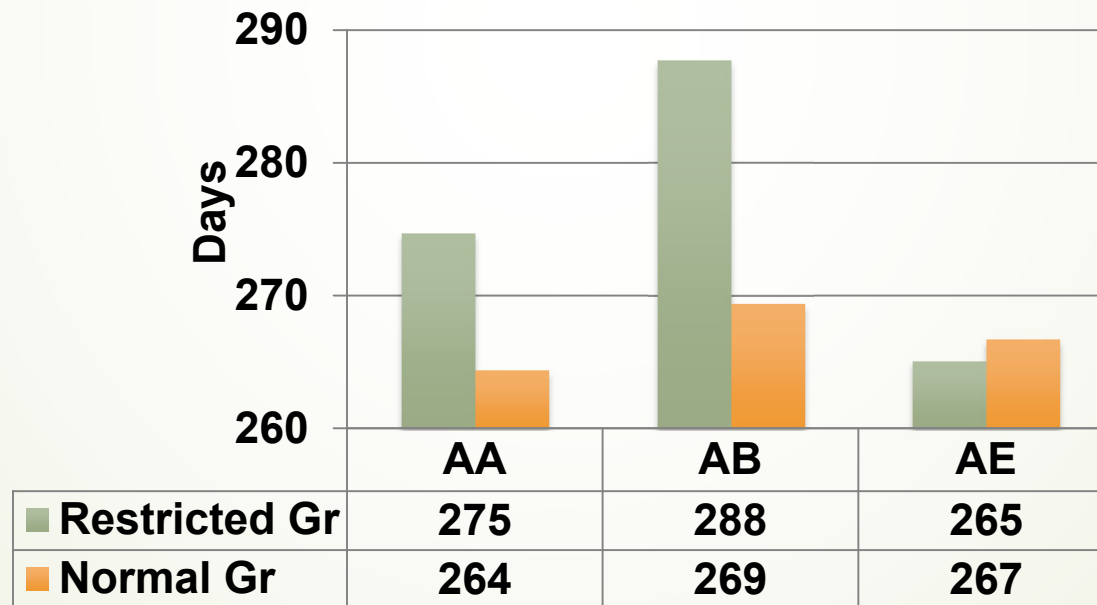
(a, b – P<0.05)

Results

PUBERTY

Age at puberty - **273 days**

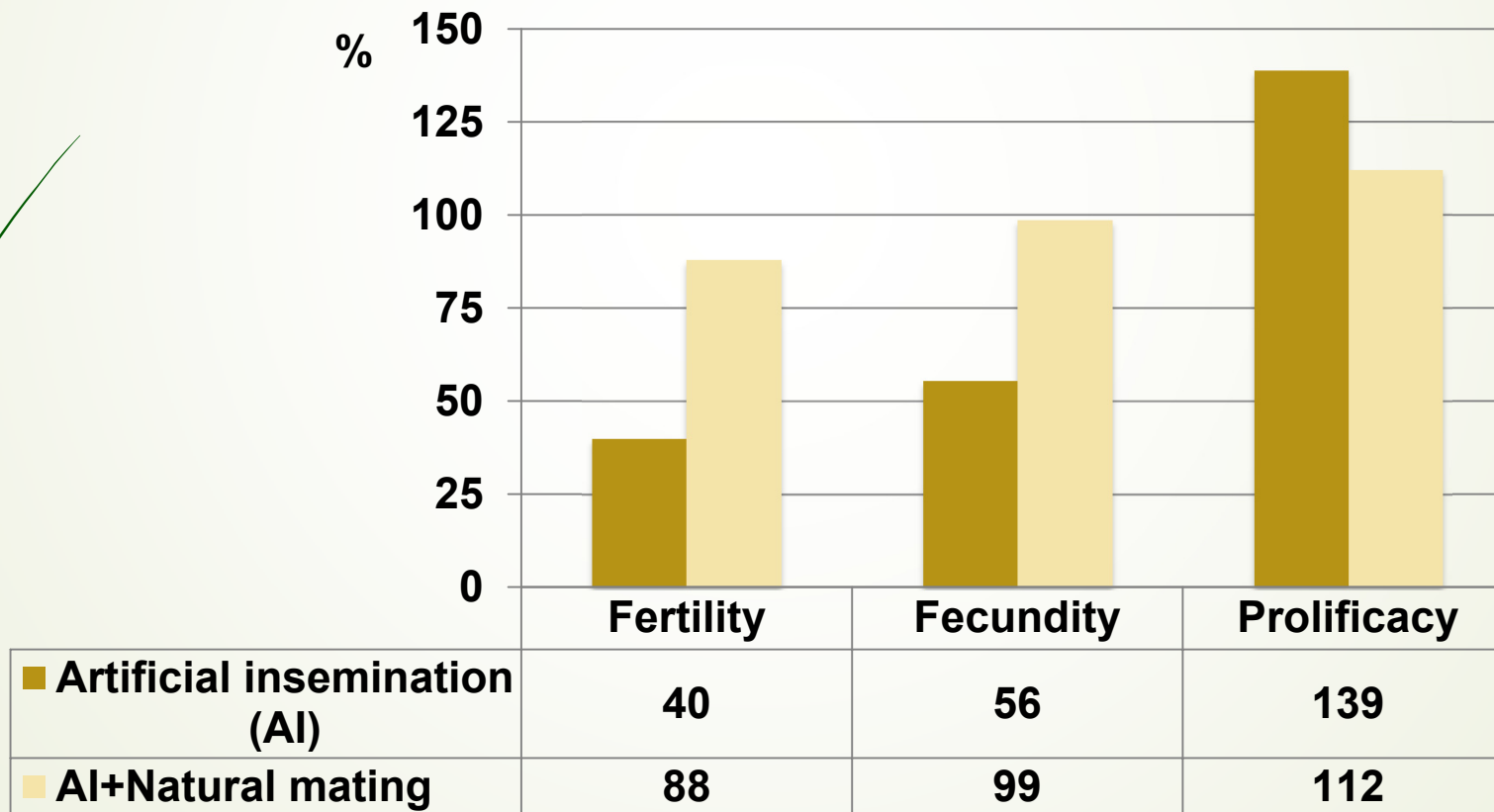
Not affected by genotype nor feeding regime



GH2-Z genotype

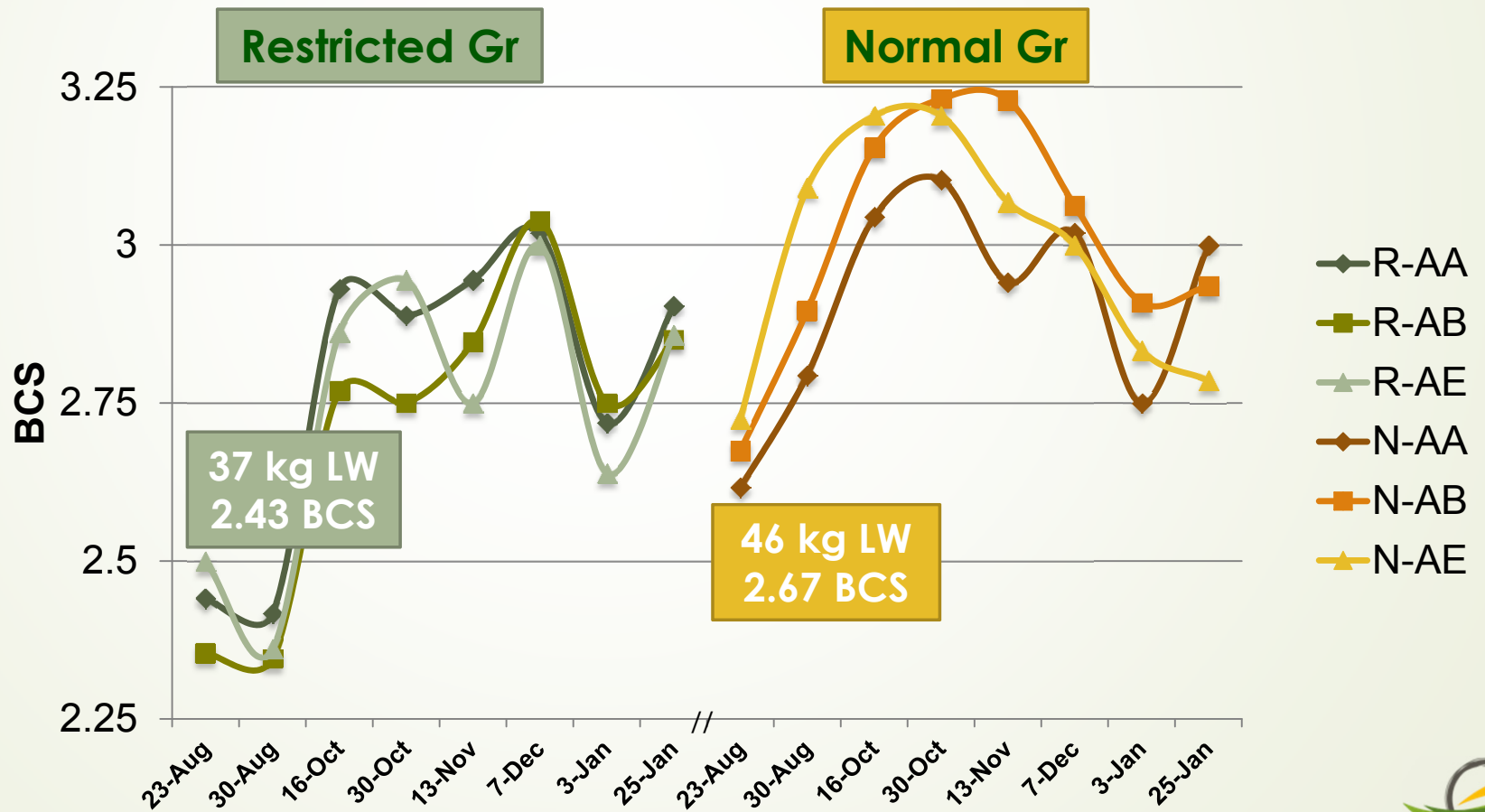
Results

REPRODUCTIVE PARAMETERS



Results

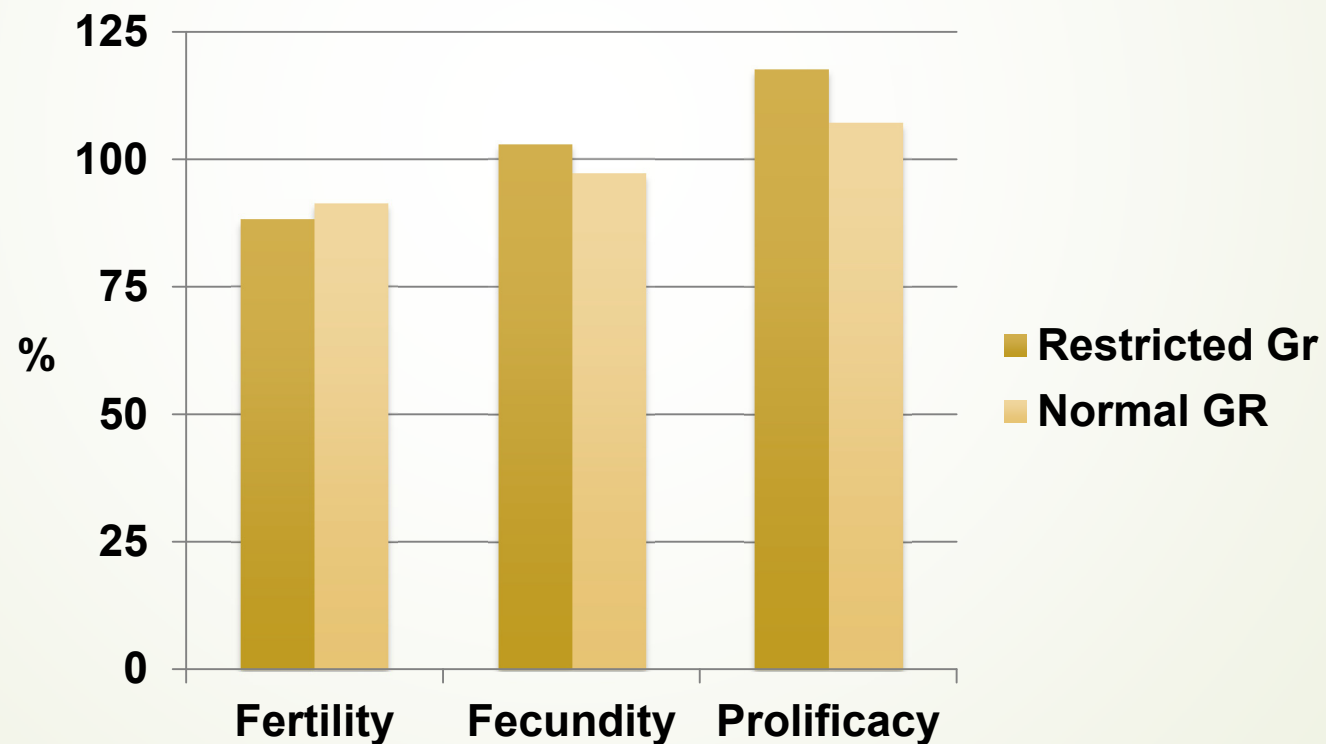
GESTATION BODY CONDITION SCORES



Results

REPRODUCTIVE PARAMETERS

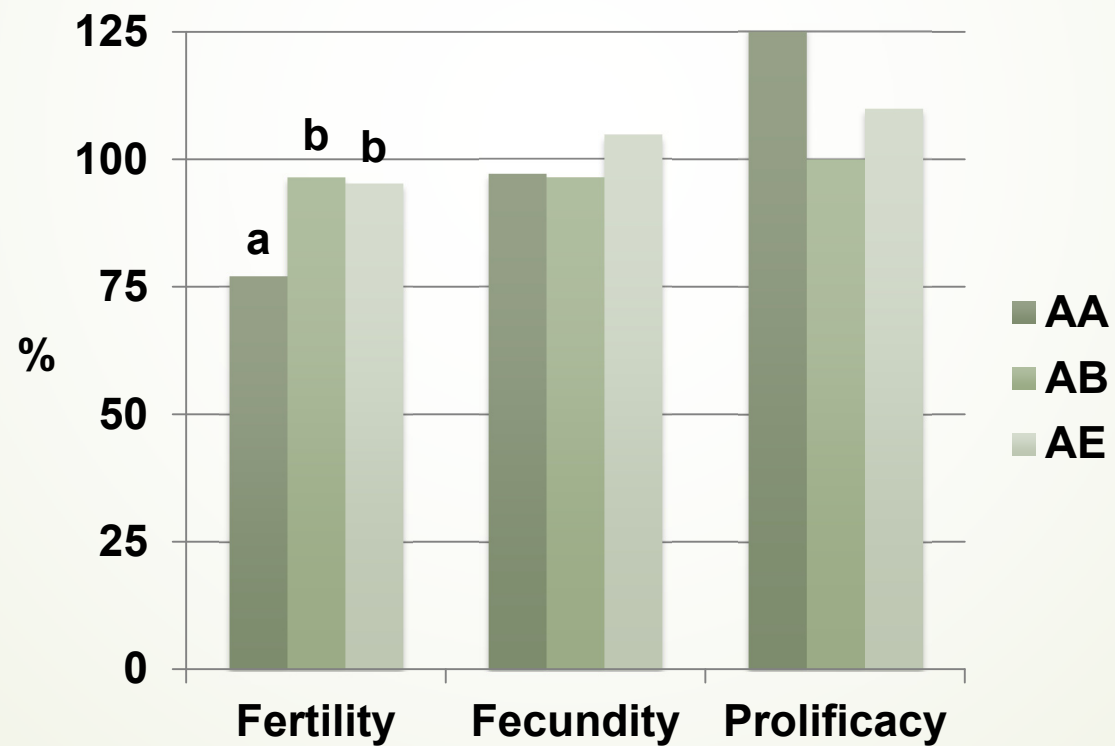
AI + NATURAL MATING BY FEEDING REGIME



Results

REPRODUCTIVE PARAMETERS

AI + NATURAL MATING BY GH2-Z GENOTYPE



a, b – P<0.05

Conclusions

ONSET OF OVARIAN CYCLICITY

- ✧ **252 days of age**
- ✧ Not affected by ewes' GH genotype
- ✧ **Group R > Group N** in AB genotype

ONSET OF PUBERTY

- ✧ **273 days of age**
- ✧ Not affected by genotype nor feeding regime

Conclusions

FERTILITY

- ✦ **40%** for AI primiparous Serra da Estrela ewes
- ✦ **GH2-Z** genotypes **AB** and **AE** positively affect **fertility**
96% AB = 95% AE > 77% AA GH2-Z genotypes
- ✦ Not affected by feeding regime

PROLIFICACY

- ✦ Tended to be **higher** in **GH2-Z** genotype **AA ewes**
and in **restricted feeding regime**

Thanks for your attention!

