CHARACTERISATION OF REPRODUCTIVE PARAMETERS IN DIFFERENT HORSE BREEDS

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OBJECTIVE

Evaluation and characterisation of the 10 main reproductive parameters considering the influence of several productive traits and situations.

INTRODUCTION

Reproductive traits are crucial for the survival of species in natural populations. In domestic species, they have major influence on economical effectiveness of breeding.

Reproductive efficiency in horses is usually described as low due to several limits in reproductive techniques and fertility problems lead to profitability difficulties as breeding animals are expensive.

Pura Raza Española (PRE)

MATERIALS

Pedigree data for 8 Spanish horse breeds:

- **Pura Raza Española**, PRE: sport performance
- **Arab Horse**, A: sport performance
- **Anglo-Arab Horse**, AAH: sport performance
- **Caballo de Deporte Español**, CDE: sport performance
- **Spanish Trotter Horse**, STH: sport performance
- **Purebred Menorca Horses**, PRMe: sport performance endangered population
- **Burguete**, BUR: meat production, endangered population
- **Jaca Navarra**, JN: meat production,endangered population

Pedigree data used ranged from 307,831 (PRE) to 2,315 horses (JN).

Arab Horse (A)

Parameters were estimated using ENDOG program v 4.8. and particular programs.

Spanish Trotter Horse (STH)

Caballo de Deporte Español (CDE)

Anglo-Arab Horse (AAH)

RESULTS AND DISCUSSION

Table 1 shows that in general, reproductive parameters were lower for those breeds used for meat production (BUR) and highest for those breeds with sports performance (STH, AAH, CDE). These suggests that in breeds with sport performance the intensity of selection is higher and a greater reliability for the selection of future breeding horses is looked for. Thus, animals with sports objectives are functionally tested before their use for reproductive purposes.

However, PRE population stands out for its low AFF, ALF, AIF and A12F results. This can be due to the fact that PRE studs are usually more professional than others and they bred their animals with clear economic objectives.

The imbalance in sex ratio observed in meat production populations can be explained because breeders registered a significantly higher number of females in the official Studbook because of their reproductive potential, whereas the males with inadequate characteristics are directly send to slaughter and not declared within it.

The rest of studied populations presented an equilibrate number of females and males, except in PRMe population (with no significant deviation from the expected 1:1 sex ratio) because the economic value of males is higher than this of females due to cultural reasons and female foals with worse characteristics could not be declared within the official Studbook.

Table 1. Maximum, minimum and (standard errors) of reproductive parameters in dams and sires of the different Spanish breeds.

Parameters	AFF (days)	ALF (days)	AIF (days)	I12F (days)	ARL (days)	GI-s (years)	GI-d (years)	SR(%F)	SR(%M)
MINIMUM VALUE DAMS ♀	1937.63 (±2.57) **PRE**	3770.40 (±7.22) **PRE**	431.83 (±0.84) **PRE**	598.85 (±1.83) **PRE**	1255.78 (±23.84) **BUR**	8.99 (±0.18) **BUR**	8.95 (±0.07) **BUR**	48.00 **PRMe**	25.19 **JN**
MAXIMUM VALUE DAMS ♀	3446.99 (±13.50) **STH**	4179.00 (±78.80) **PRMe**	1086.22 (±15.69) **AAH**	1097.76 (±28.28) **AAH**	2657.72 (±115.21) **PRÁ**	10.78 (±0.06) **CDE**	11.09 (±0.04) **CDE**	74.81 **JN**	52.00 **PRMe**
MINIMUM VALUE SIRES ♂	1789.93 (±32.83) **BUR**	3395.32 (±88.62) **BUR**	-	-	1564.34 (±70.65) **BUR**	8.01 (±0.17) **BUR**	7.96 (±0.07) **BUR**	47.90 **PRMe**	25.45 **JN**
MAXIMUM VALUE SIRES ♂	3744.76 (±22.80) **STH**	4926.55 (±31.49) **STH**	-	-	2225.55 (±43.18) **STH**	13.01 (±0.12) **STH**	13.26 (±0.06) **STH**	74.55 **JN**	52.10 **PRMe**

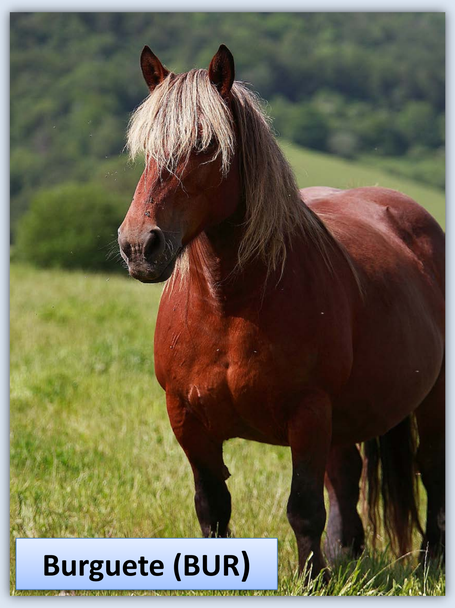
Where: AFF is Age at first foaling. ALF is Age at last foaling. AIF is Average interval between foaling (computered only in dams). I12F is Interval between first and second foaling (estimated only in dams). ARL is Average reproductive life. GI was computed for the 4 paths of selection: GIs is Generational interval dam/sire-son. GId is Generational interval dam/sire-daughter and SR is Sexual rate of Females (F) and Males (M).

CONCLUSIONS

- ❑ Reproductive parameters are influenced by the status and purpose of the breed.
- ❑ Differences observed between the analysed breeds could be explained more by zootechnical than by physiological reasons.

PERSPECTIVE

These parameters should be used in order to define the reproductive management of these populations within the official breeding programs.



Burguete (BUR)

Jaca Navarra (JN)

Purebred Menorca Horses (PRMe)