



## Changes on body weight and body condition in the *Lusitano* broodmare



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## Changes on body weight and body condition in the *Lusitano* broodmare

### Introduction

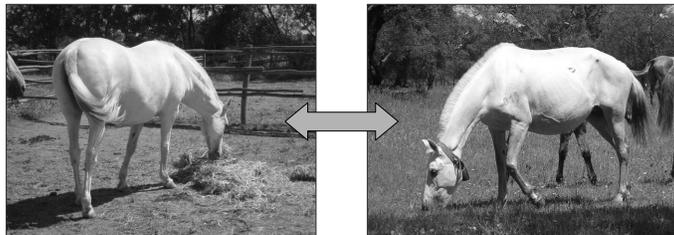
#### **Along the breeding cycle (gestation-lactation):**

- Live weight of the broodmare may vary between 13 to 20% (considering different breeds);
- Reaching the highest and the lowest values before and after foaling;

Martin-Rosset *et al.*, 1986;  
Lawrence *et al.*, 1992;  
Cassil *et al.*, 2009.

#### **Body weight changes, could reflect variations:**

- weight of *conceptus* (in particular *foetus* growth at the end of gestation);
- digestive contents;
- body reserves.



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## Changes on body weight and body condition in the *Lusitano* broodmare

### Introduction

**Mares are able to store and mobilize body fat reserves along the year**

Method for the evaluation of body reserves ⇨ **Body Condition Scoring (BCS)**

**BCS can be used as an easy and practical method for assessing mares body reserves and its changes, enabling to:**

- monitor the adequacy of feeding plans to each physiological/productive phase;
- introduce diet adjustments whenever any significant “alteration” is detected;
- add information to body weight evaluations.

**Adequate amount of body reserves  
in the broodmare**

(positive effect)

Reproductive      Productive  
(performances)



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### Introduction

Why *Lusitano*?



**Puro Sangue Lusitano (Stud-Book):**

- ≈13,500 horses;
- 4,000 to 5,000 broodmares. (APSL, 2010)

- Main local horse breed in Portugal;
- Most ancient saddle horse (5,000 years)  
(maintained as fight horse trough the centuries)
- Functional and behavior characteristics  
(docility, agility and courage)



Increased worldwide interest as a sport and leisure horse!



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## Changes on body weight and body condition in the *Lusitano* broodmare

### Objective

To characterize body weight (BW) and body condition (BC) changes along the productive cycle in the *Lusitano* broodmare under two feeding systems:



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## Changes on body weight and body condition in the *Lusitano* broodmare

### Materials & methods

- 60 *Lusitano* broodmares (five stud-farms) ;
- monthly assessed for **BW** and **BCS**,  
first month of gestation (**1G**) → first month after foaling (**1L**);
- 111 complete productive cycles.

**P+S** (three stud-farms)

- two breeding seasons;
- 38 mares;
- 55 gestation cycles;
- (11 non-lactating – barren mares)
- average age: 10.7 ± 0.5 years  
[6 – 18 y]



**P** (two stud-farms)

- three breeding seasons;
- 22 mares;
- 56 gestation cycles;
- (3 non-lactating – maiden mares)
- average age: 9.5 ± 0.6 years  
[3 – 22 y]



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## Changes on body weight and body condition in the *Lusitano* broodmare

### Materials & methods



- BW determined with a portable electronic scale (Iconix FX, New Zealand)
- BC evaluated according to INRA-HN-IE (1997) method (scale of 0 to 5 points)
- 0.25 point precision was used.



(INRA-HN-IE, 1997)

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## Changes on body weight and body condition in the *Lusitano* broodmare

### Materials & methods

• **All mares were maintained on pasture** (floristic composition was typical of the natural rainfed pastures of Mediterranean areas, with a high biodiversity);

- **mares on P+S system were daily supplemented** (commercial compound feeds and preserved forages) according to pasture availability and stud farm practices;
- **mares on P system were rarely supplemented** (only on fall/winter periods with grass hay, when pasture was scarce);
- **stoking rate was always below 0.6 head per ha.**



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## Changes on body weight and body condition in the *Lusitano* broodmare

### Materials & methods

• **Breeding and foaling dates** were used to determine which BW and BCS evaluations correspond to which month of gestation.

Statistical analyses (SAS, Institute Inc., Cary, NC, USA)

**Data were grouped according to foaling season:** Feb-Mar and Apr-May

#### Mixed model:

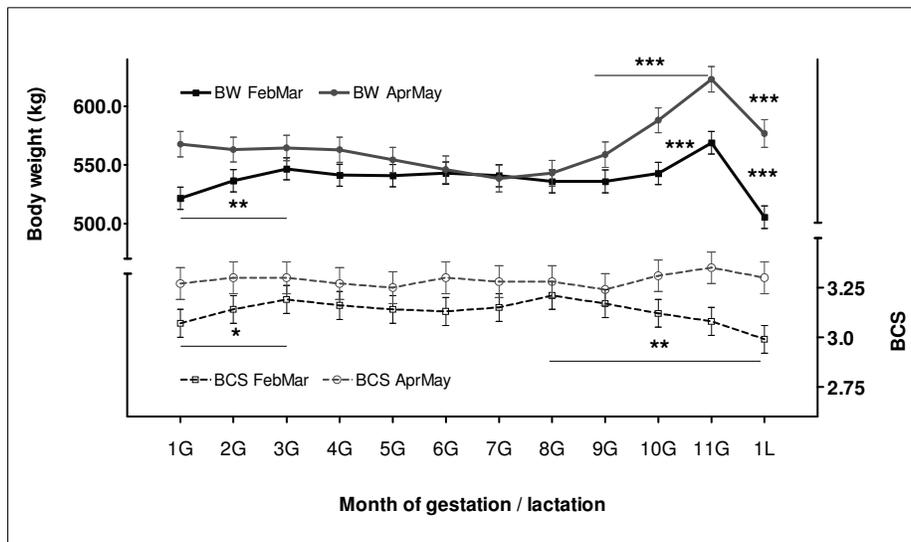
- foaling season (fs), gestation month (gm) and interaction fs\*gm - fixed factors;
- mares - random factor;
- measurements at different times (gm) in the same mare were treated as repeated measures within foaling season.

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### Results

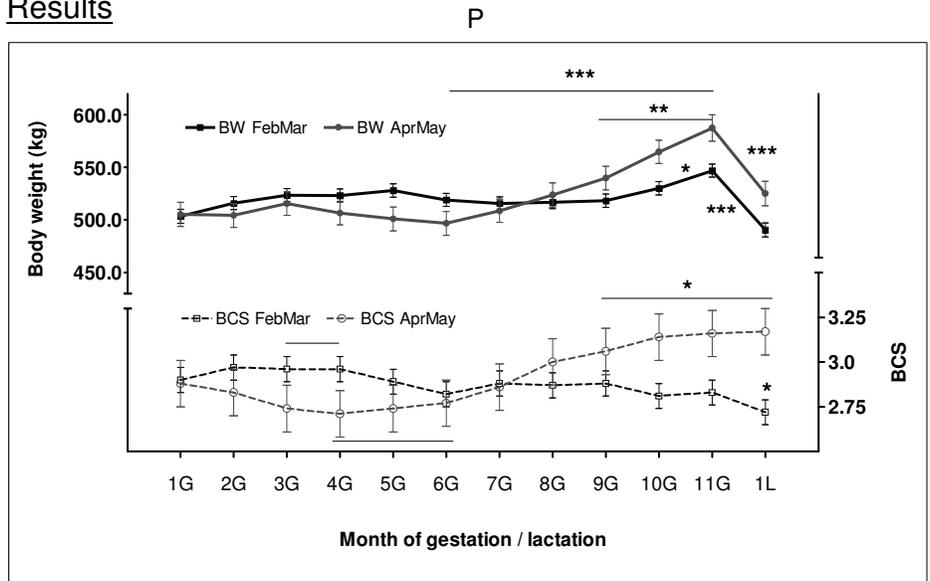
P + S



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Changes on body weight and body condition in the *Lusitano* broodmare

Results

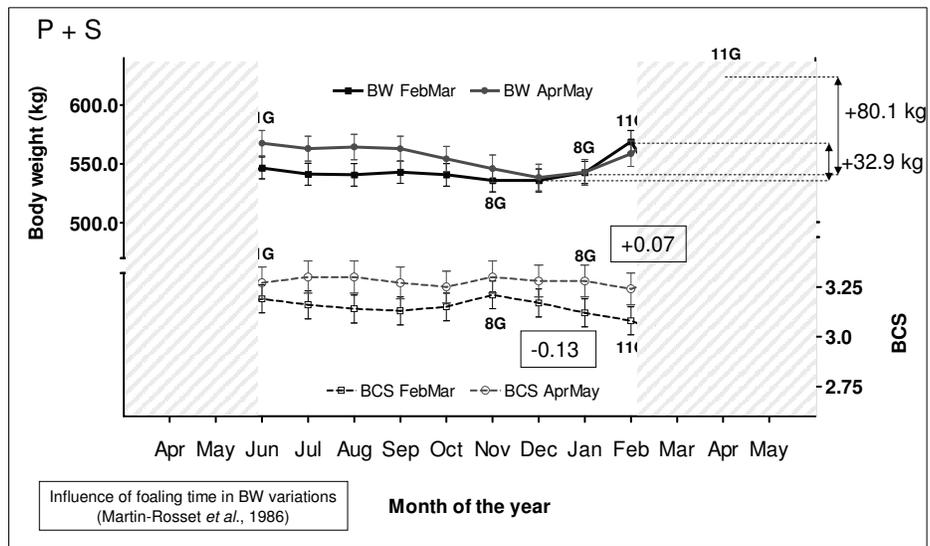


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Results & Discussion

Last trimester of gestation



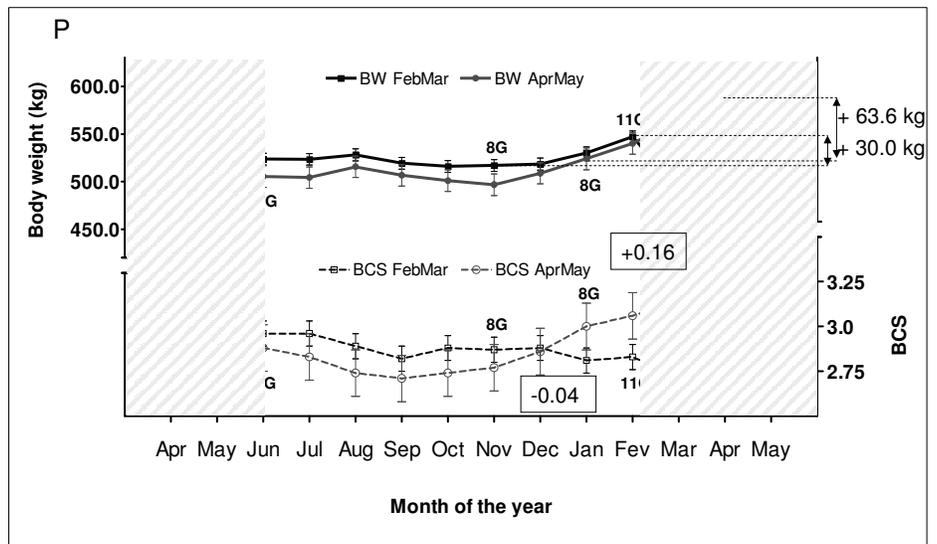
Influence of foaling time in BW variations  
(Martin-Rosset *et al.*, 1986)

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**Changes on body weight and body condition in the *Lusitano* broodmare**

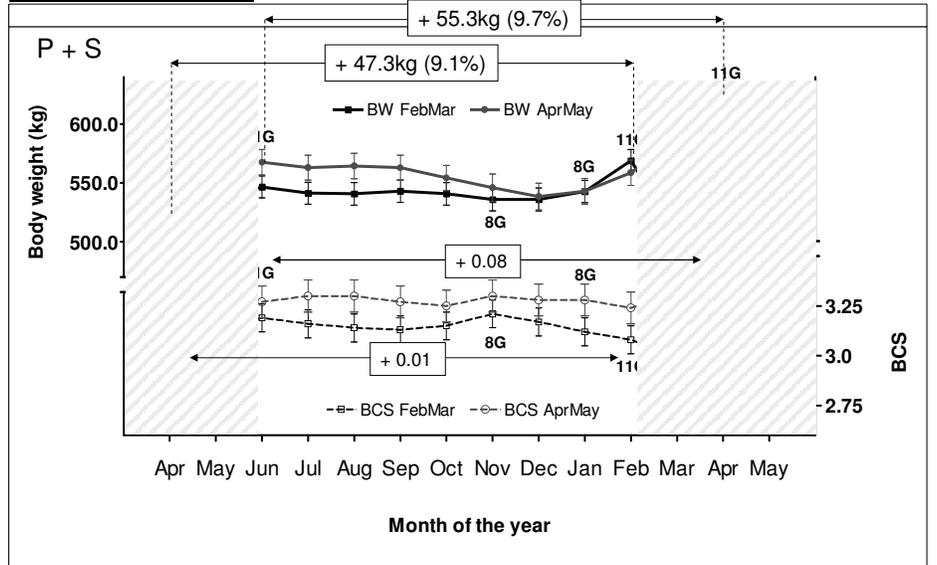
**Results & Discussion**

Last trimester of gestation



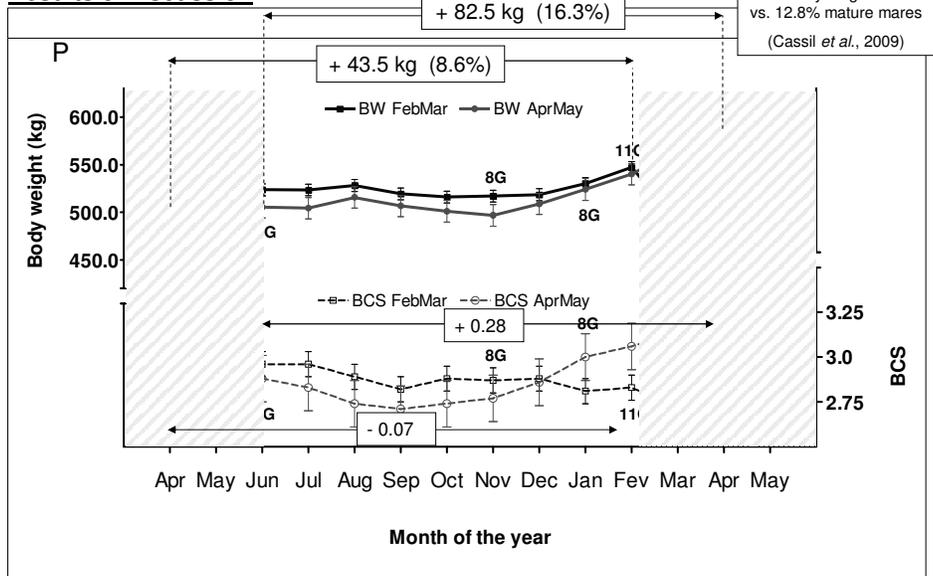
**Changes on body weight and body condition in the *Lusitano* broodmare**

**Results & Discussion**



### Changes on body weight and body condition in the *Lusitano* broodmare

#### Results & Discussion



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### Changes on body weight and body condition in the *Lusitano* broodmare

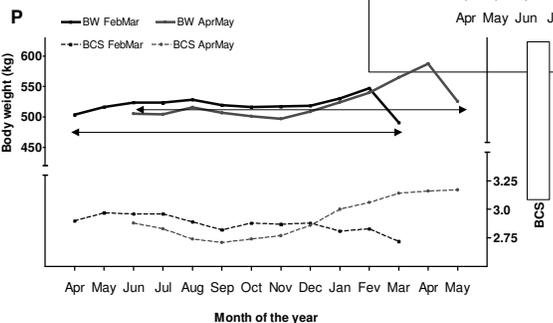
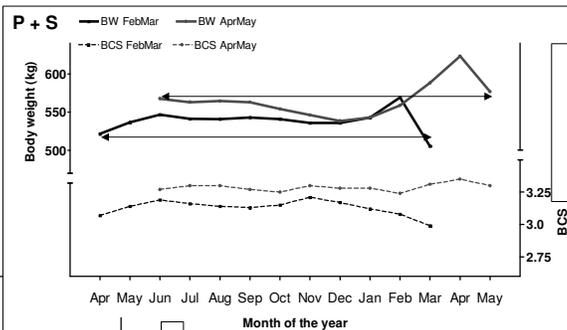
#### Results & Discussion

**BW variation along the year (1G-1L):**

- + 63.3kg (12.5%) (11G-1L)
- + 84.5kg (14.9%) (7G-11G)

**BCS**

- [0.22] (8G-1L)
- [0.11] (9G-11G)



**BW variation along the year (1G-1L):**

- + 56.3kg (11.2%) (11G-1L)
- + 90.7kg (17.9%) (6G-11G)

**BCS**

- [0.25] (2G-1L)
- [0.46] (4G-1L)

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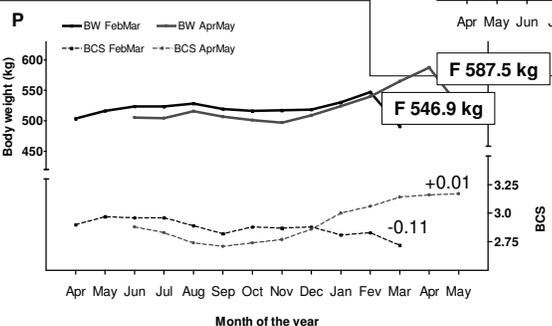
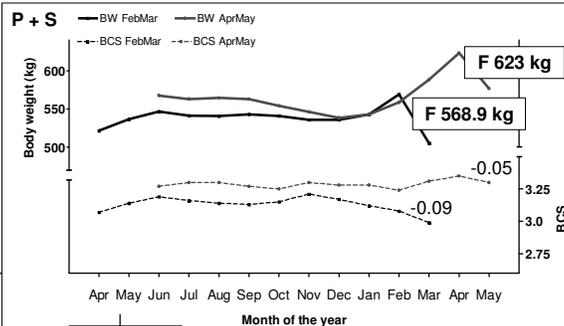
## Changes on body weight and body condition in the *Lusitano* broodmare

### Results & Discussion

Loss of weight at foaling:

- 63.3 kg (12.1%)

- 46.3 kg (8.2%)



Loss of weight at foaling:

- 56.3 kg (11.2%)

- 62.4 kg (12.3%)

Loss of weight at foaling 11%-15%  
(Martin-Rosset *et al.*, 2006)

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## Changes on body weight and body condition in the *Lusitano* broodmare

### Conclusions

- Throughout the productive cycle, BW and BC changes were observed on both feeding systems;
- BW varied between 11.2 % - 12.5 % for Feb-Mar mares and between 14.9 % - 17.9 % for Apr-May mares.
- Major BW changes were observed in the last trimester of gestation with higher values for Apr-May foaling mares of both systems;
- Small changes on BC were observed, with amplitudes of 0.22 points in P+S system and 0.46 points on P system;
- On both systems, BC of Feb-Mar foaling mares decreased on the last trimester of gestation until 1L;
- The largest increase in BW and BC along the gestation was shown by Apr-May mares.

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### Conclusions

- Results suggest that changes in BW and BC in the *Lusitano* broodmare, managed on grazing systems, are influenced by pasture production cycle, regardless of some differences in feeding regimes.
- These data associated with knowledge on mares' fertility and foals' growth until weaning will contribute for better decisions about the more appropriate feeding plans and foaling seasons, in order to achieve the higher efficiency for the production system.



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Thank you!

Takk så mye!



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