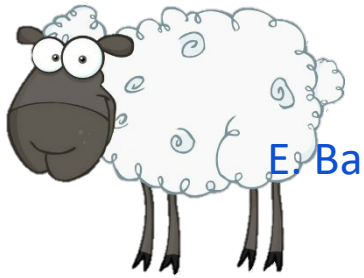
75th EAAP Annual Meeting
1/5 September 2024 · Florence, Italy

IS THERE ANY INTERACTION BETWEEN FEED EFFICIENCY AND RESILIENCE IN DAIRY EWES SUBJECTED TO UNDERFEEDING?

1) FEED INTAKE AND MILK YIELD



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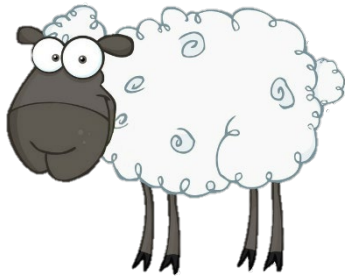
POSTERS

IS THERE ANY INTERACTION BETWEEN FEED EFFICIENCY AND RESILIENCE IN DAIRY EWES SUBJECTED TO UNDERFEEDING?

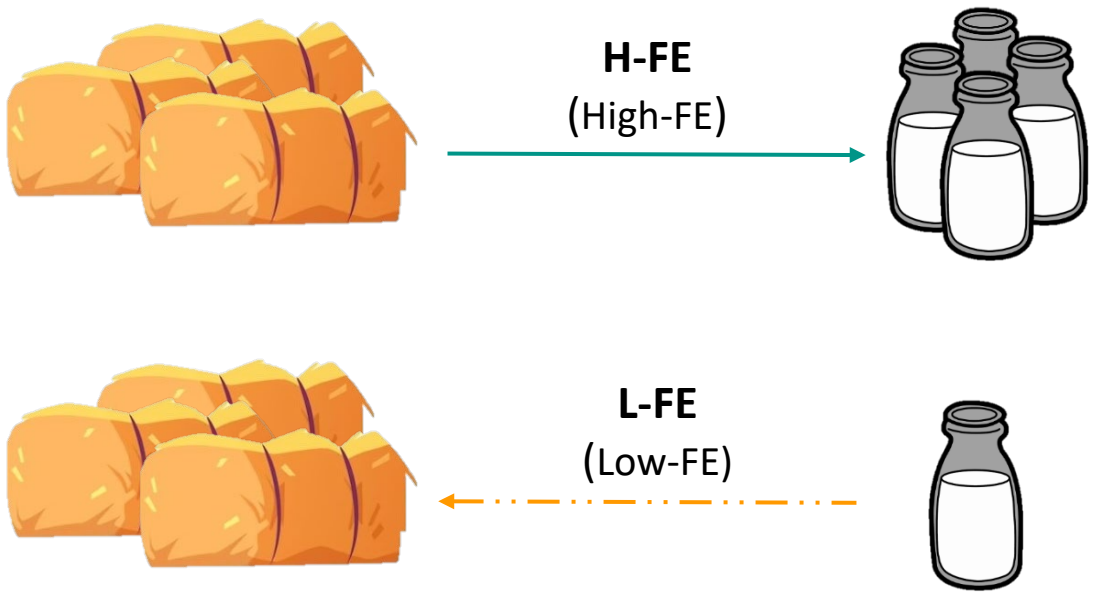


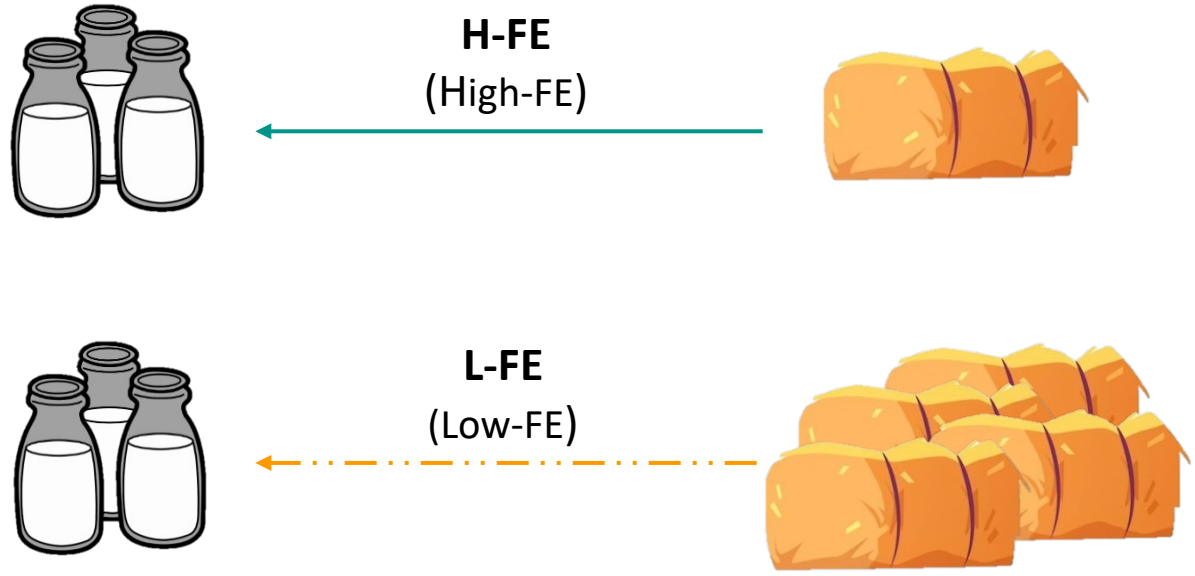
2) RUMINAL FERMENTATION PARAMETERS

3) MILK FATTY ACIDS

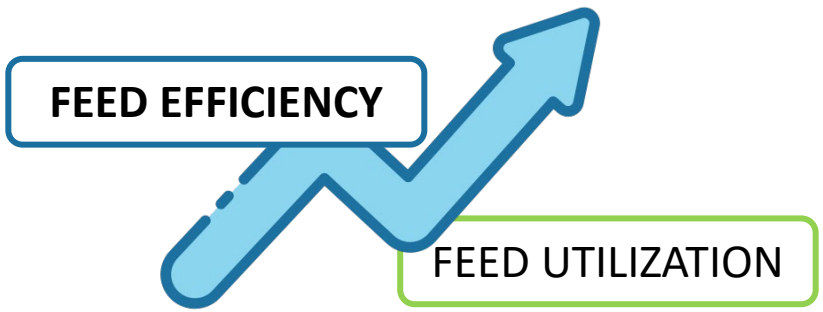
FEED EFFICIENCY

Relates intake to animal performance.





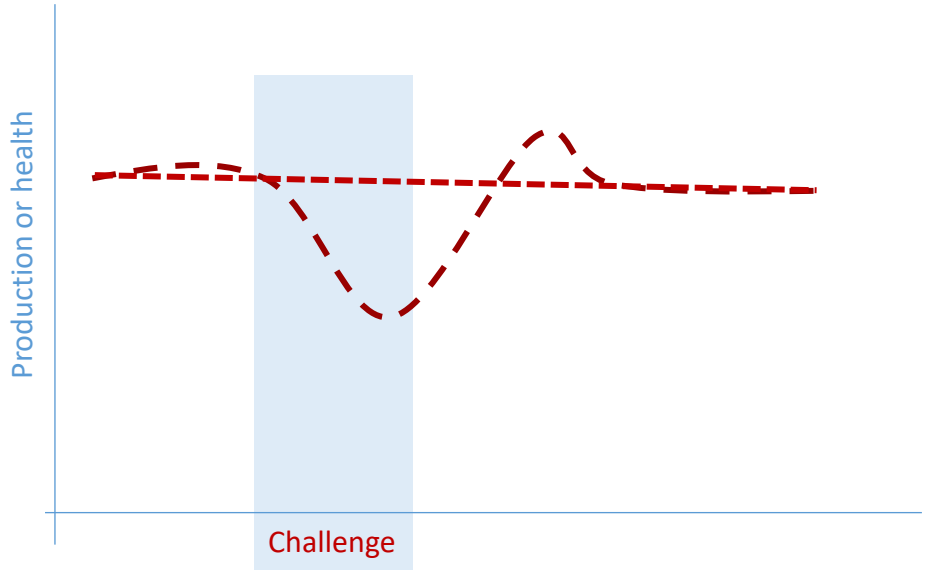
Introduction



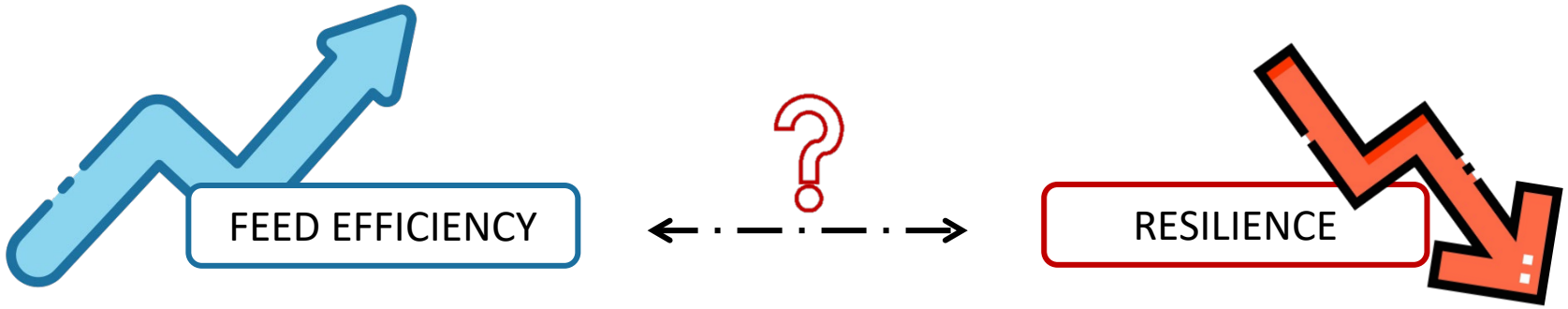
Introduction

RESILIENCE

Ability of an animal subjected to a disturbance to sustain or quickly revert to its previous production or health status.



Introduction



Introduction

RESILIENCE

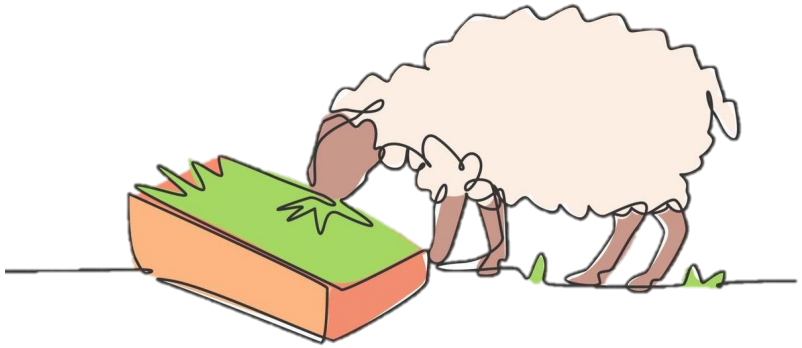
Global instability

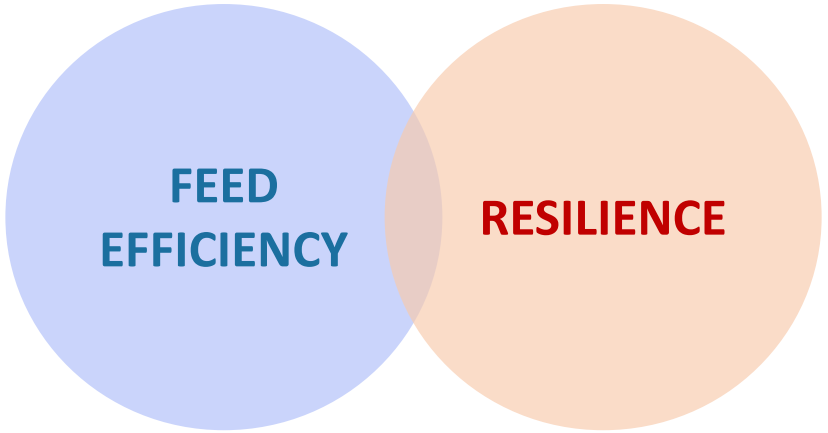
Climate change emergency

Ensure production in the future, especially with potential upcoming nutritional challenges.

Introduction

Variation in response and recovery ⇢ NUTRITIONAL CHALLENGE



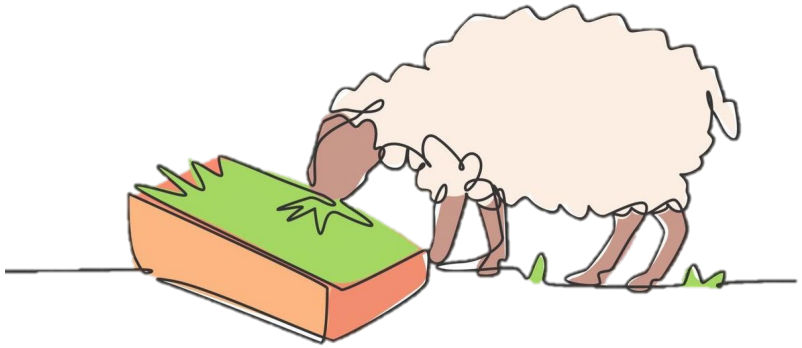


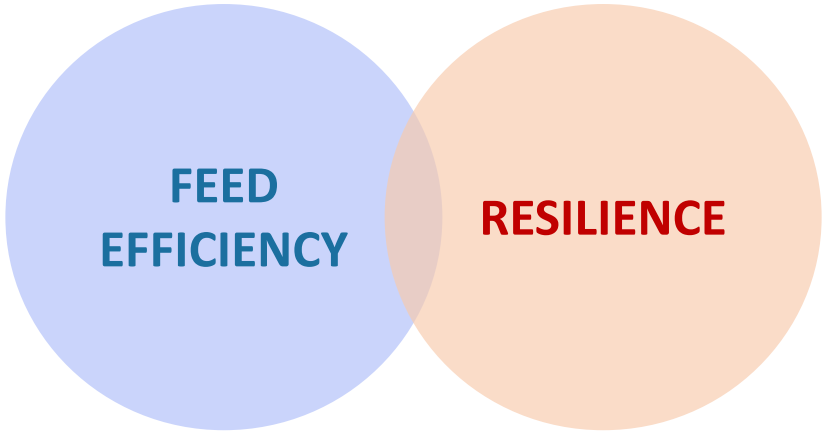
Introduction

Variation in response and recovery

In sheep with divergent efficiency

NUTRITIONAL CHALLENGE



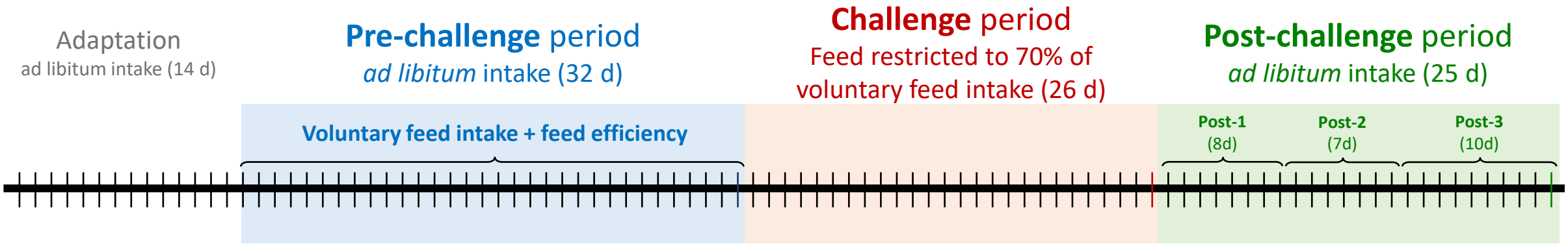


Experimental animals

40 lactating Assaf ewes
housed in individual pens and
fed a 50:50 TMR (*ad libitum*)

Material and Methods

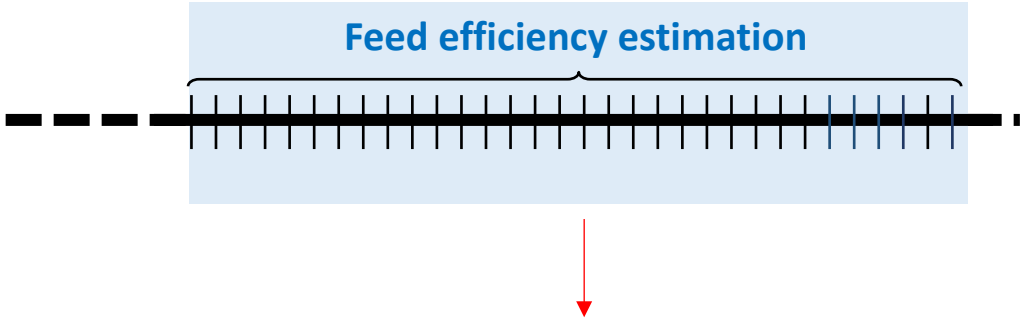
Experimental design



Material and Methods

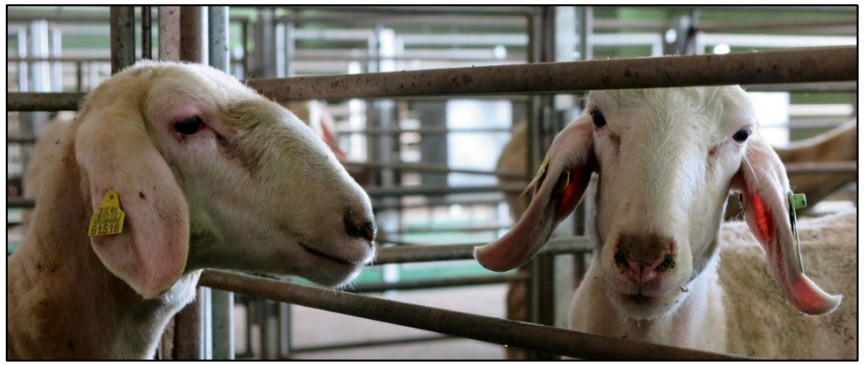
Pre-challenge period

ad libitum intake (32 d)



DM intake + milk production

+ milk composition + body weight change

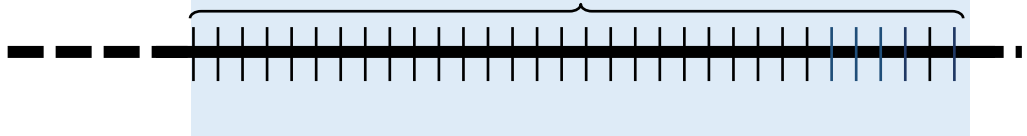


Material and Methods

Pre-challenge period

ad libitum intake (32 d)

Feed efficiency estimation



DM intake + milk production

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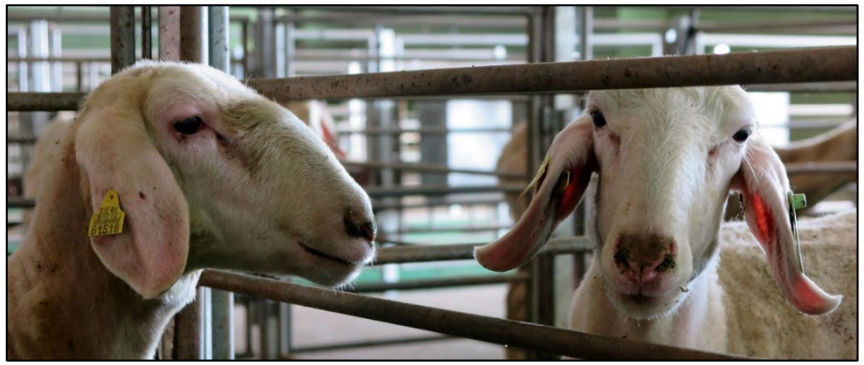


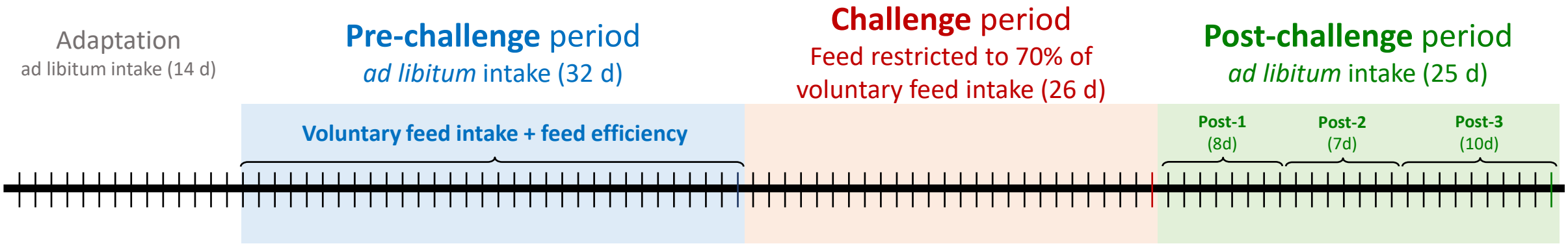
RESIDUAL FEED INTAKE (RFI)

2 groups with divergent feed efficiency

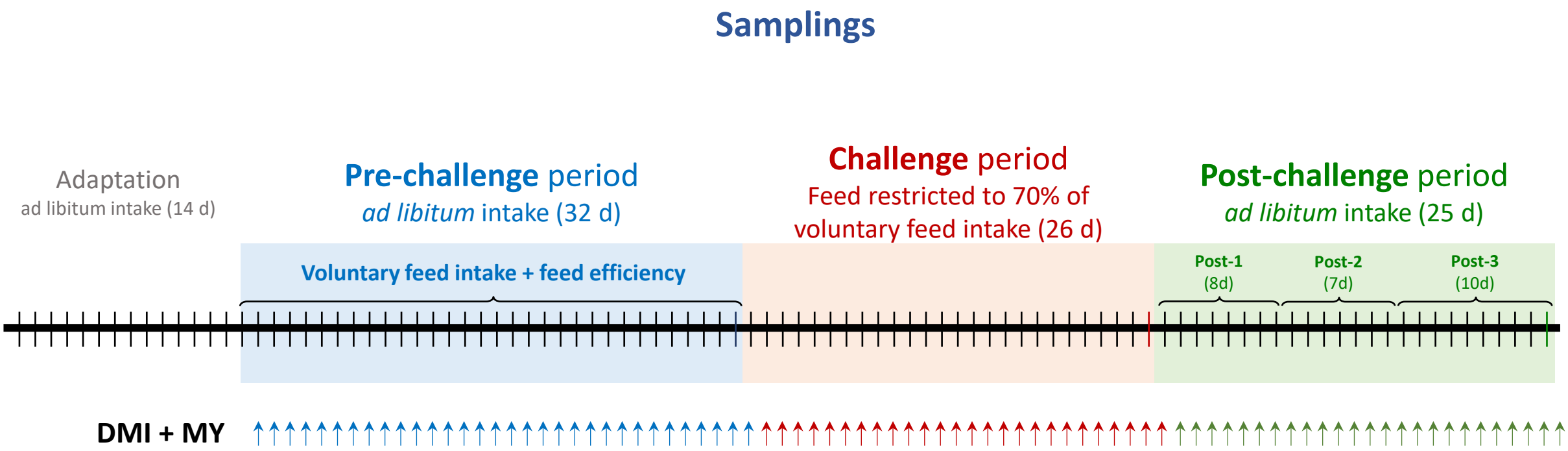
- High feed efficiency (**H-FE**; *n*=8)
- Low feed efficiency (**L-FE**; *n*=8)

Material and Methods

Experimental design



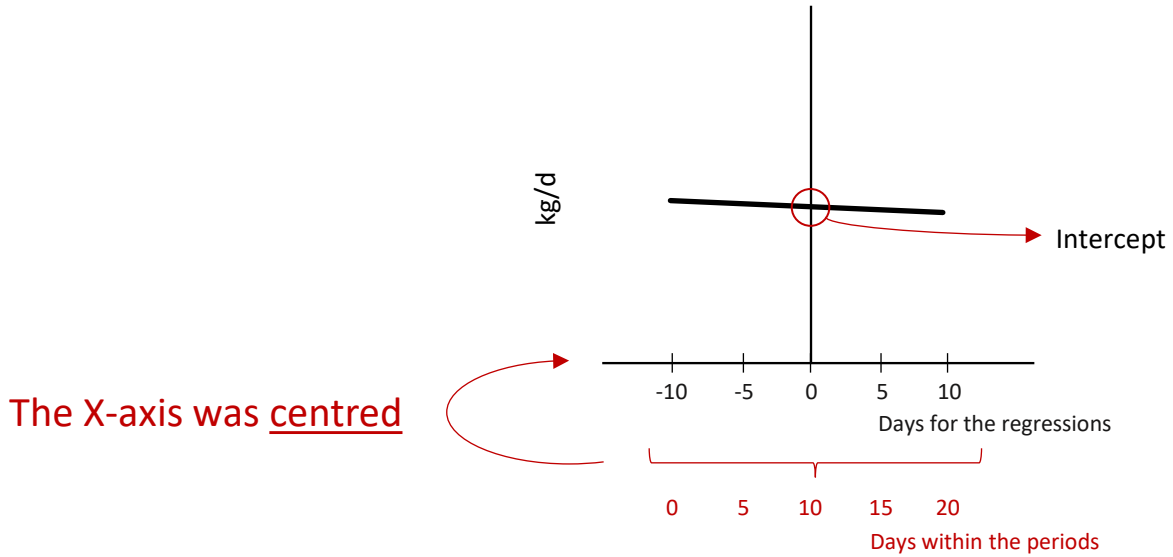
Material and Methods



Material and Methods

DM intake + Milk yield → **Linear Regression Model**

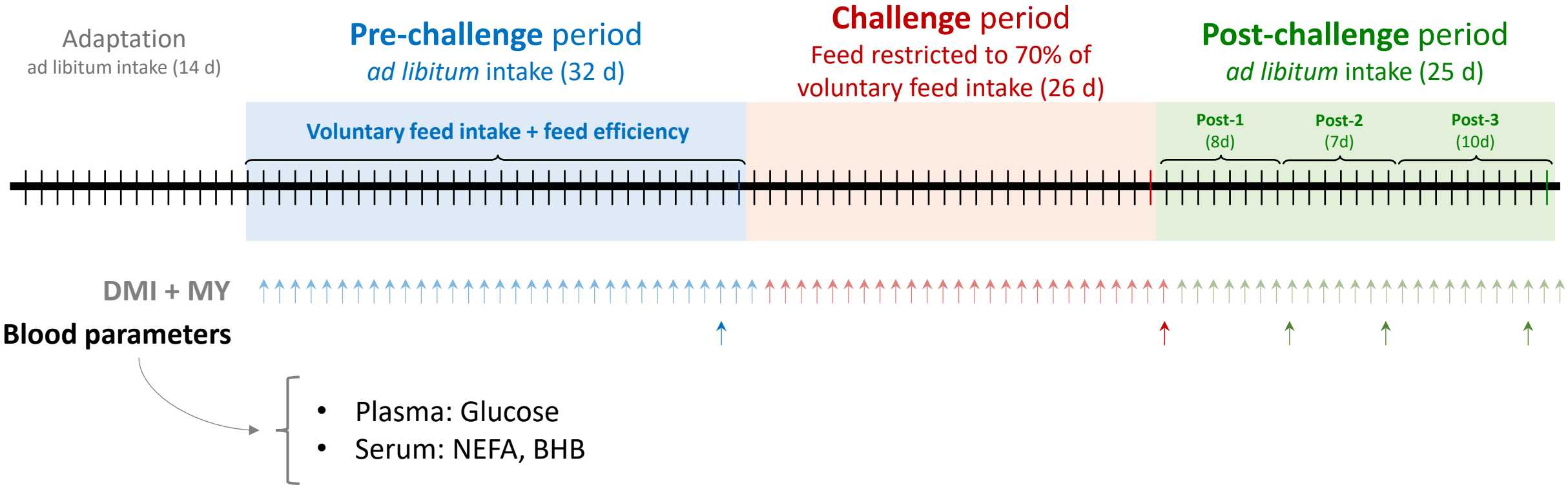
For each animal and period



The X-axis was centred

Material and Methods

Samplings



Material and Methods

Repeated measurements analysis

Proc MIXED

(animals nested within the group)

Intercepts and slopes:

- DMI
- MY
- Glucose
- NEFA
- BHB

Material and Methods

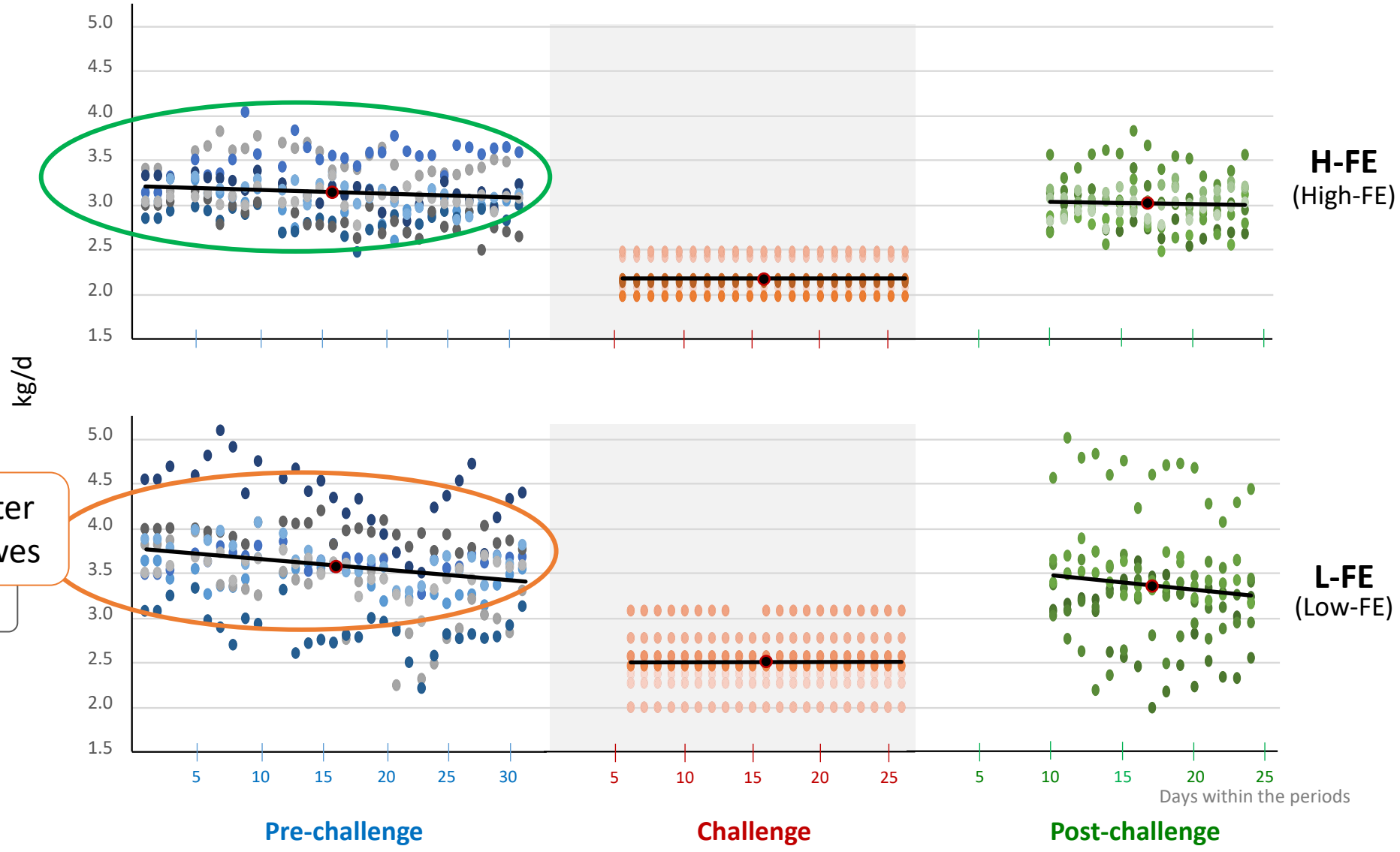
Principal component analysis (PCA)

Relationship: RFI ⟷ Data collected during the whole experiment

Data included:

- DMI + MY intercepts and slopes
- Milk composition
- BW
- Milk metabolites
- Blood metabolites
- Ruminal fermentation parameters

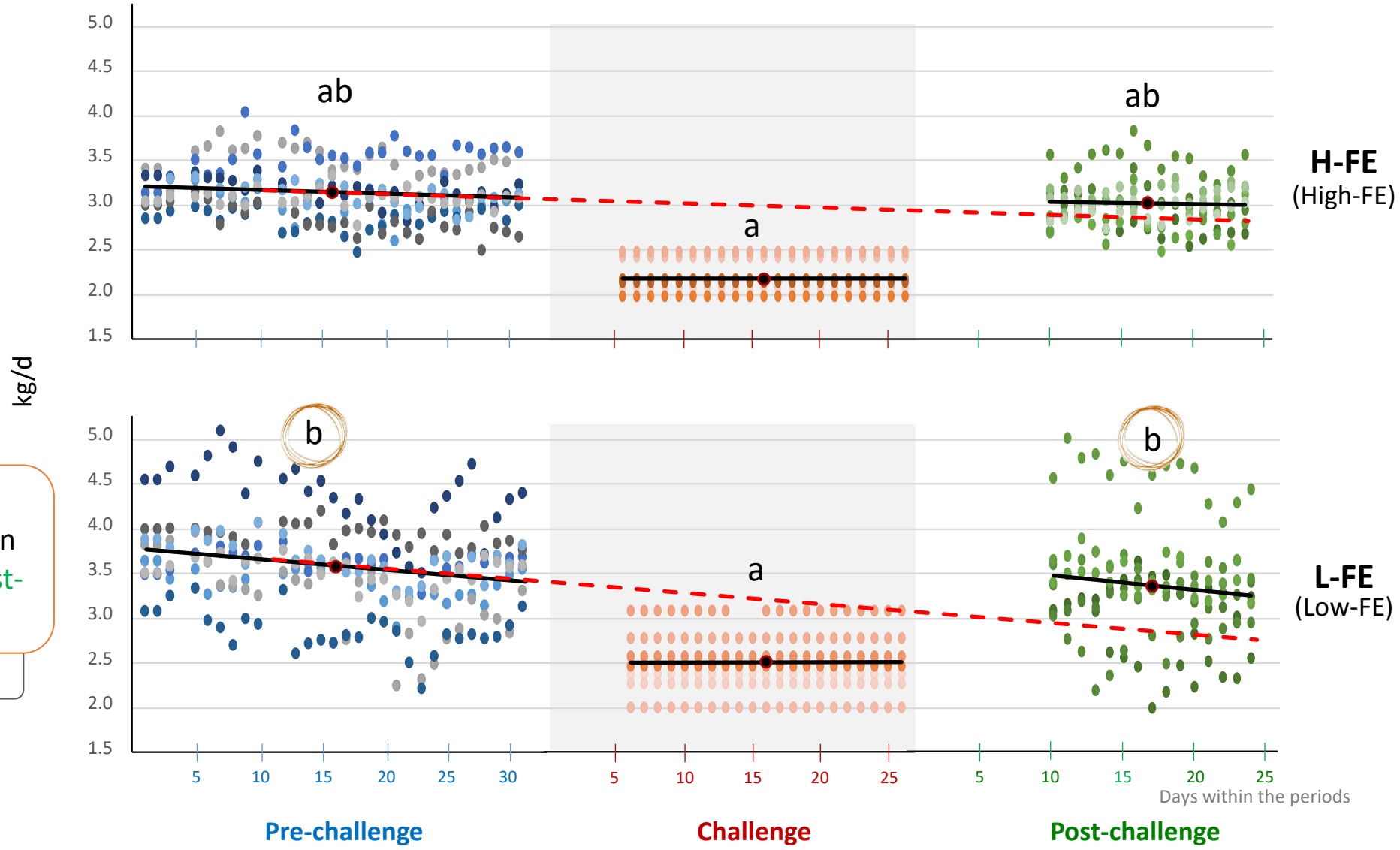
Results: **Dry matter intake**



Trend to greater DMI in **L-FE** ewes

Group: P<0.10

Results: **Dry matter intake**

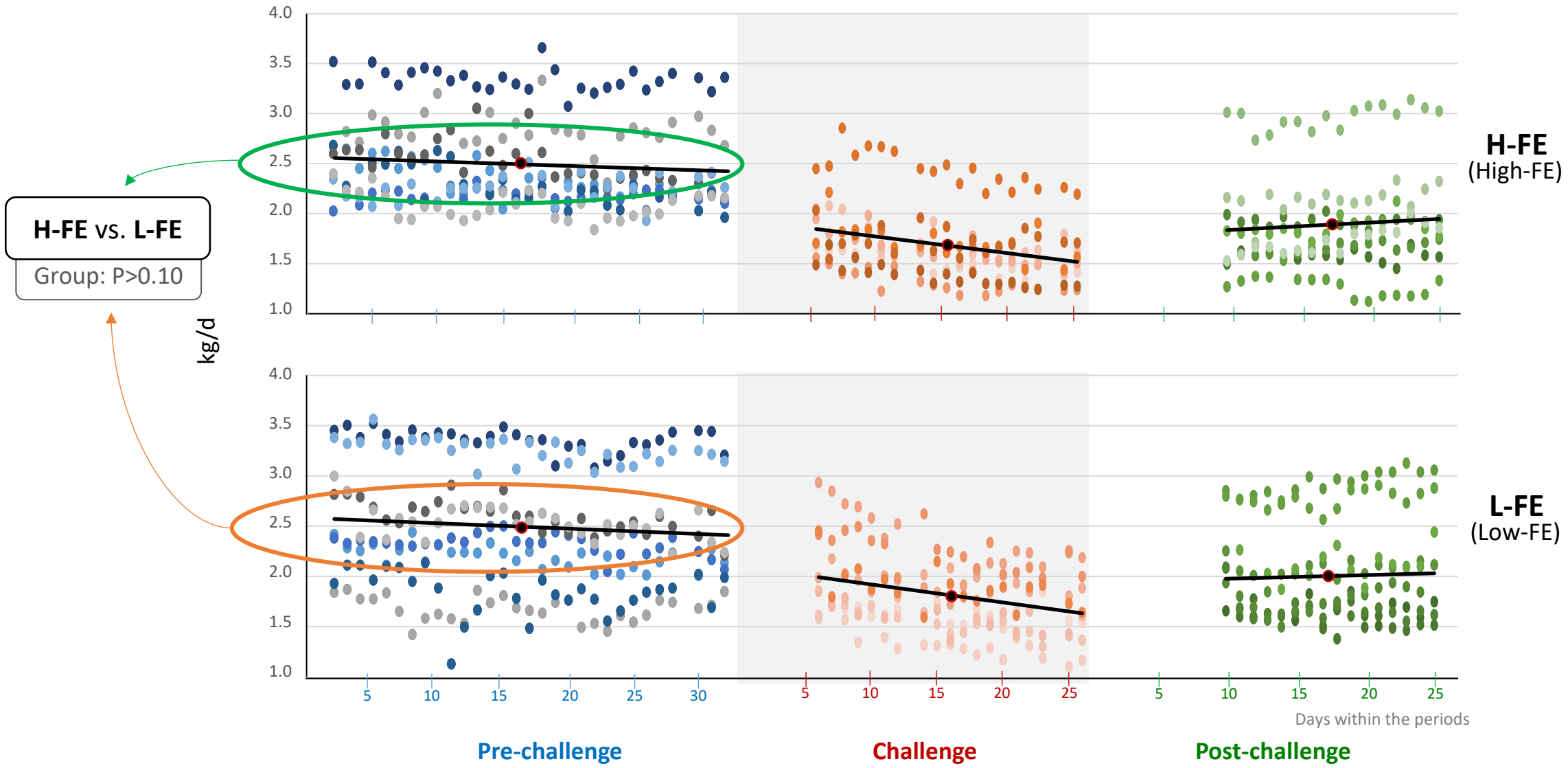


Slopes of **L-FE** more negative in the pre- and post-challenge

Gr x Pe: P<0.01

[a, b, c] Superscripts indicate significant differences (P < 0.05) due to the interaction of G x P.

Results: **Milk yield**



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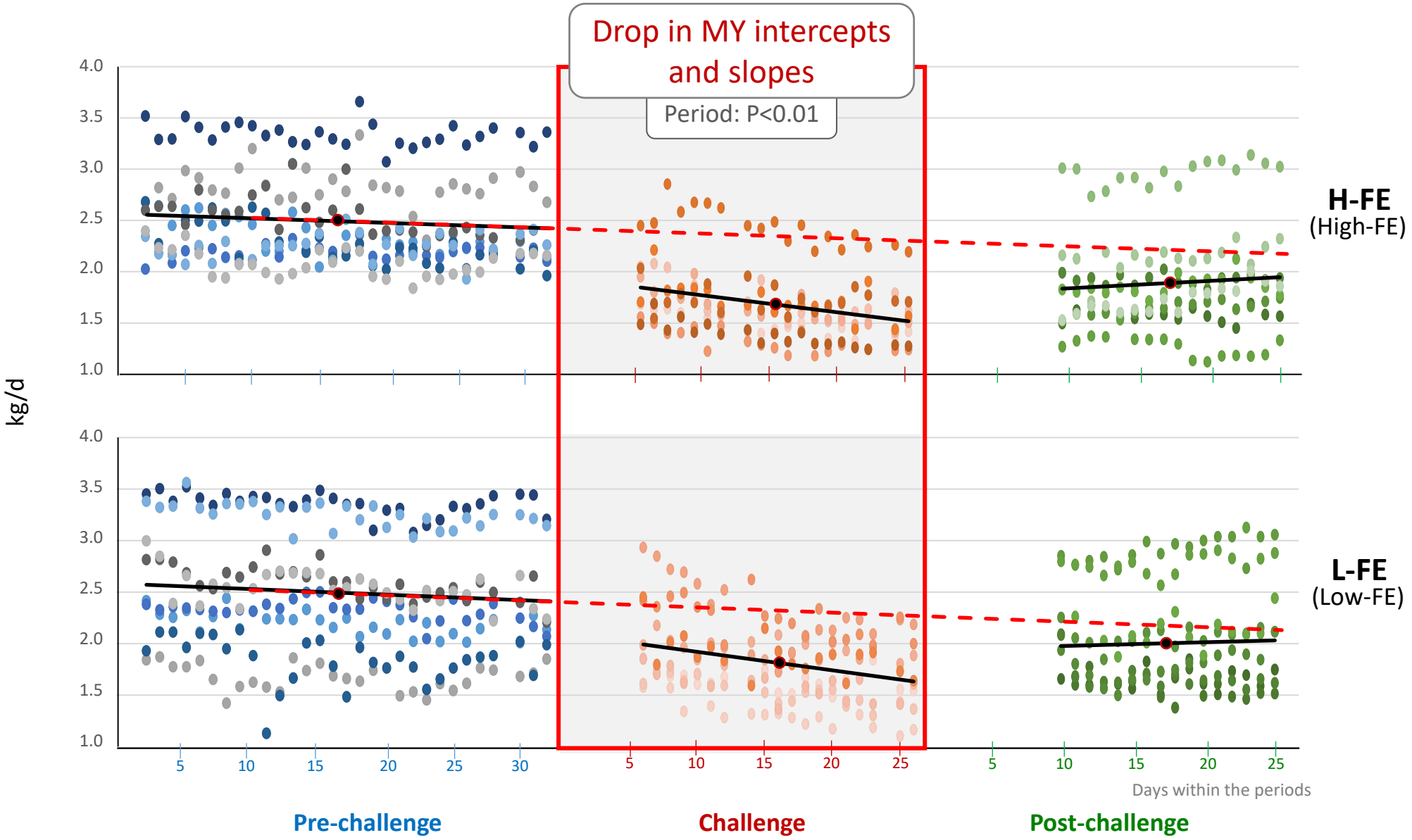

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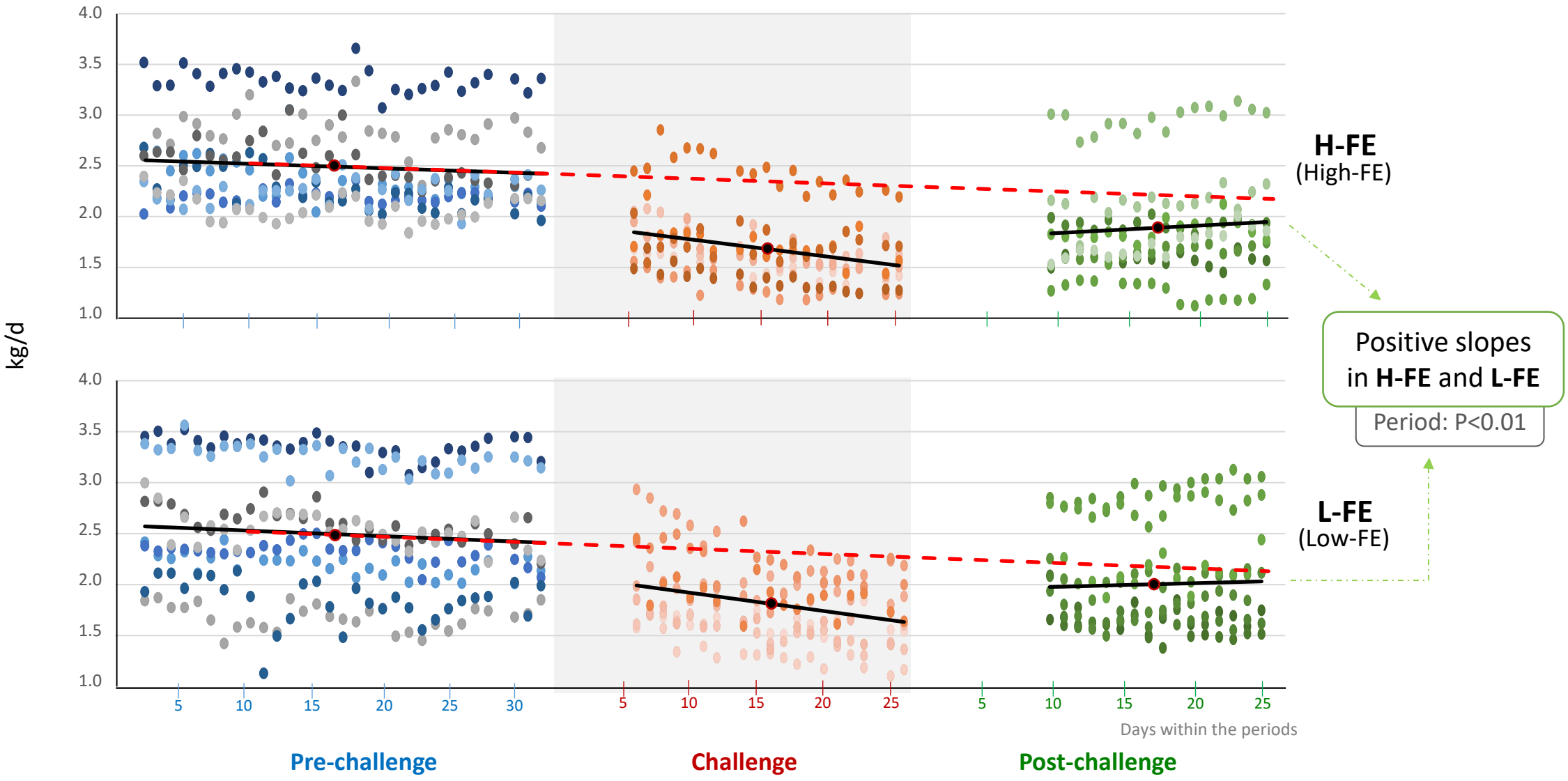

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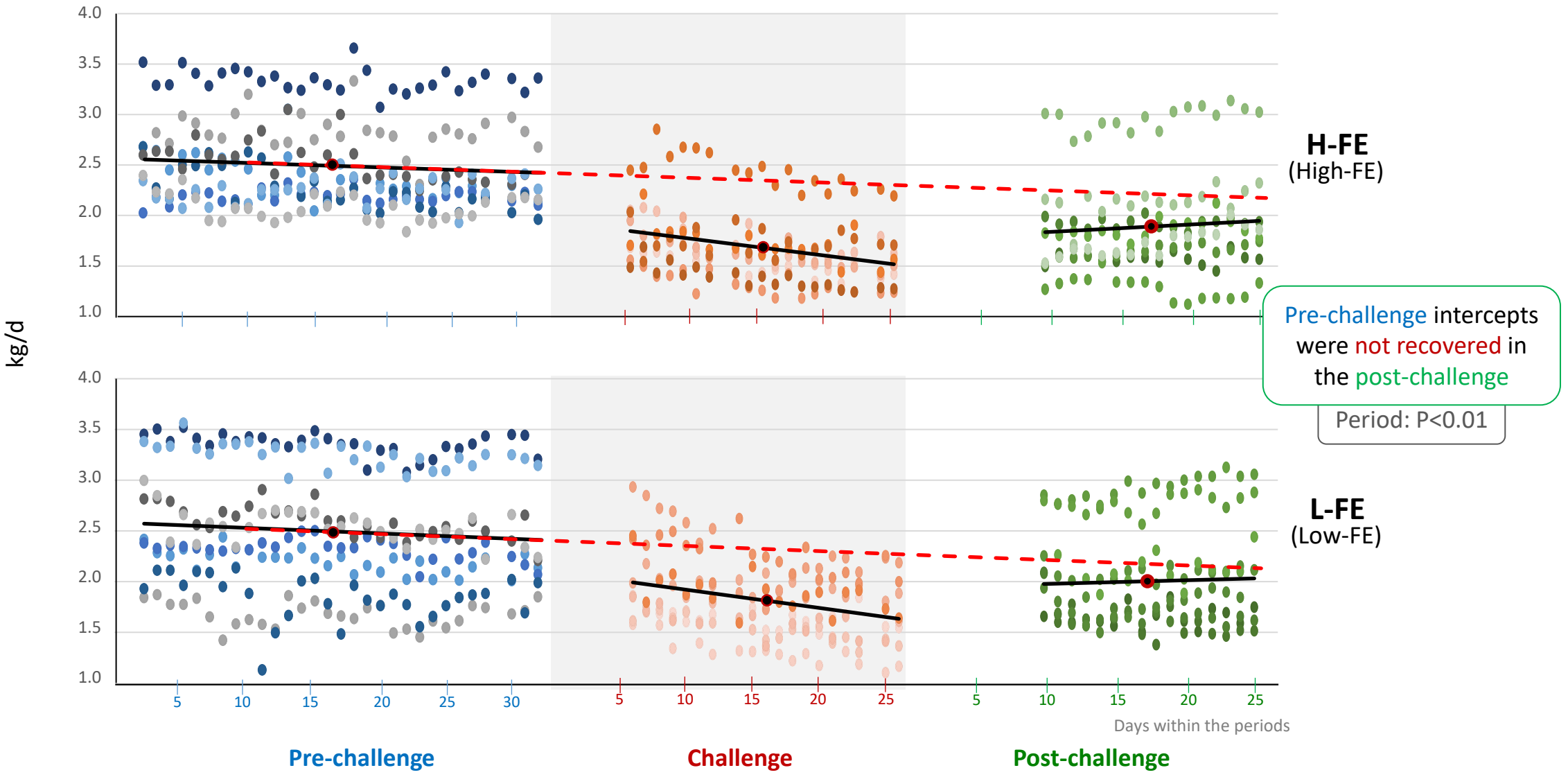
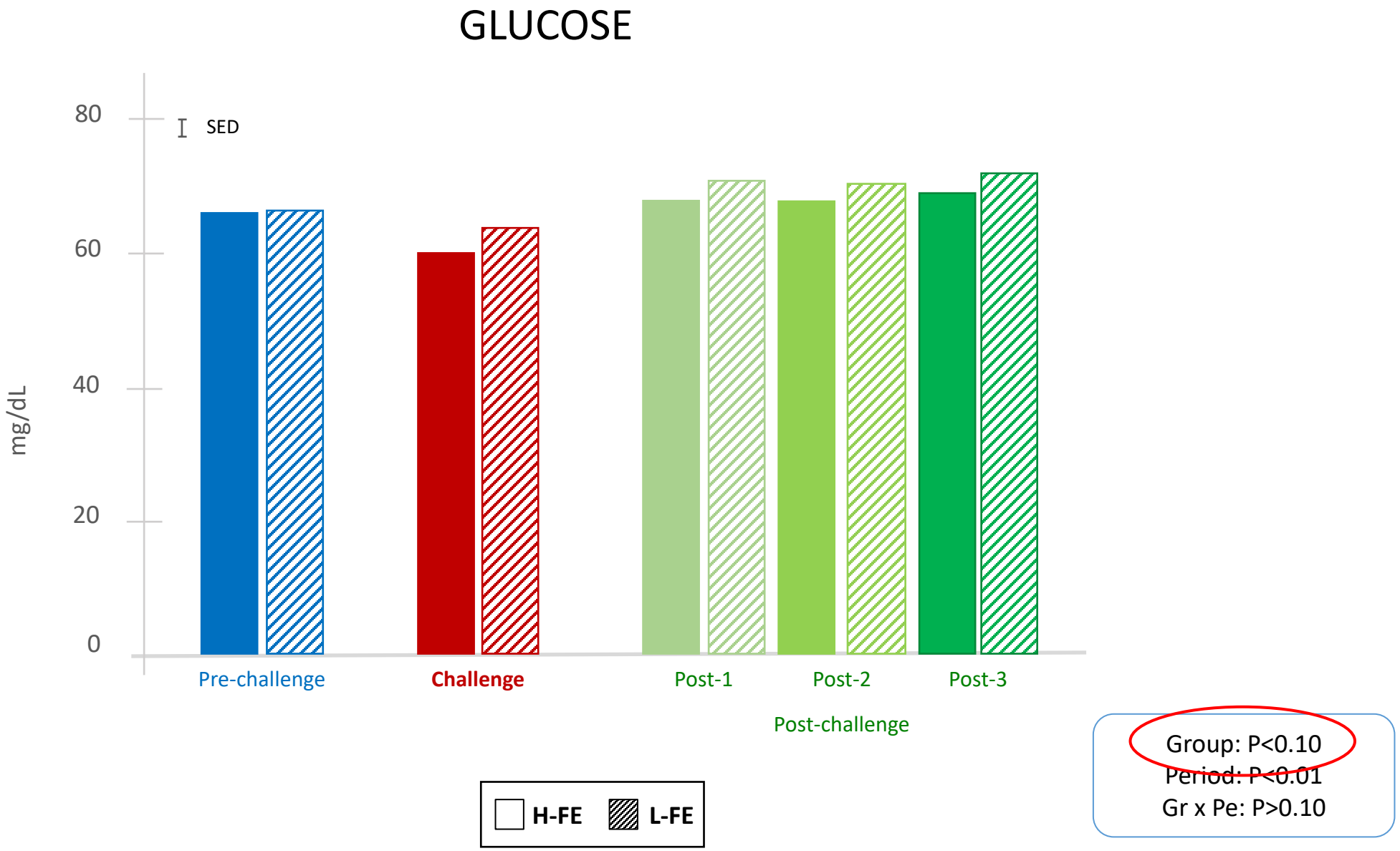
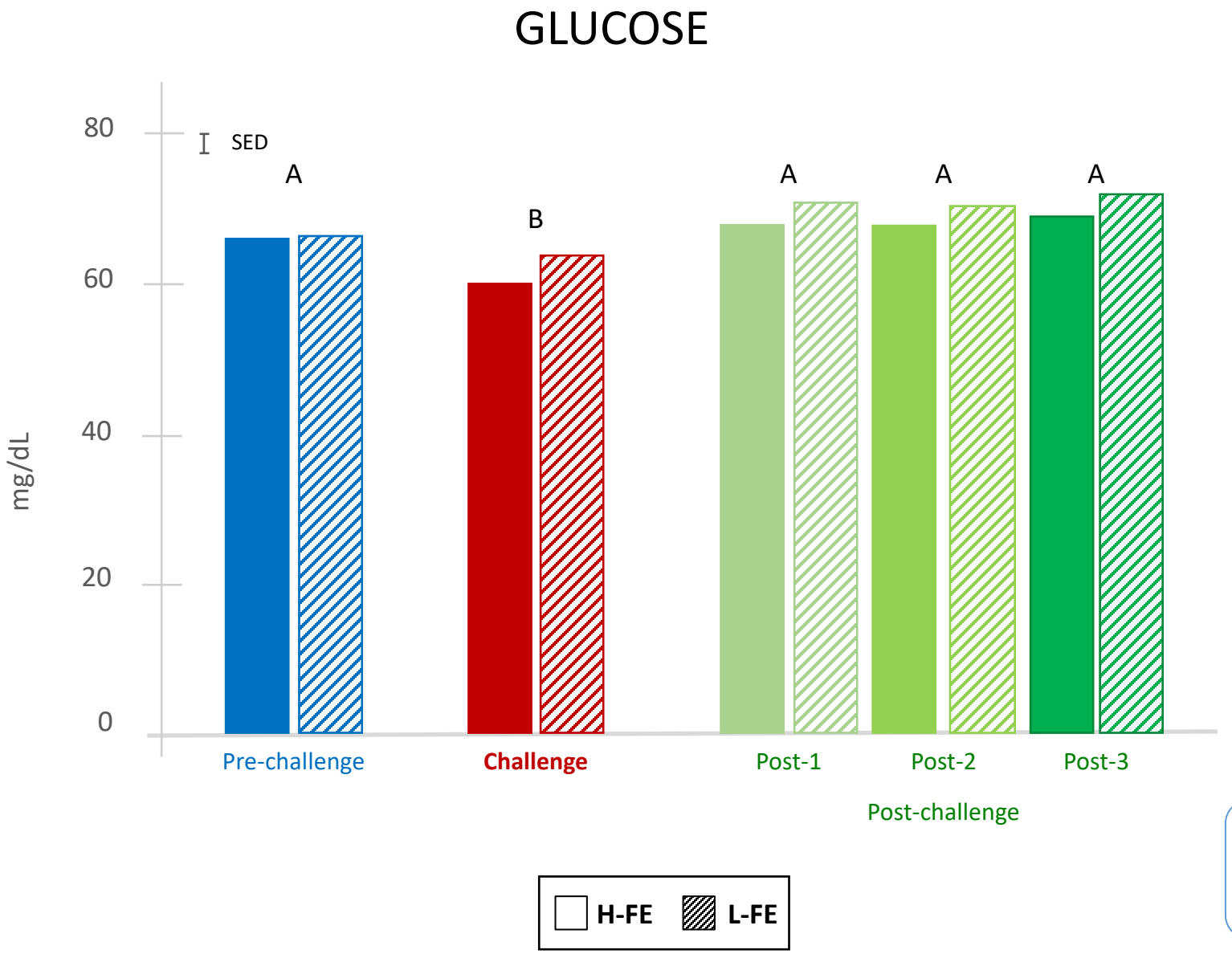


Results: **Blood metabolites**



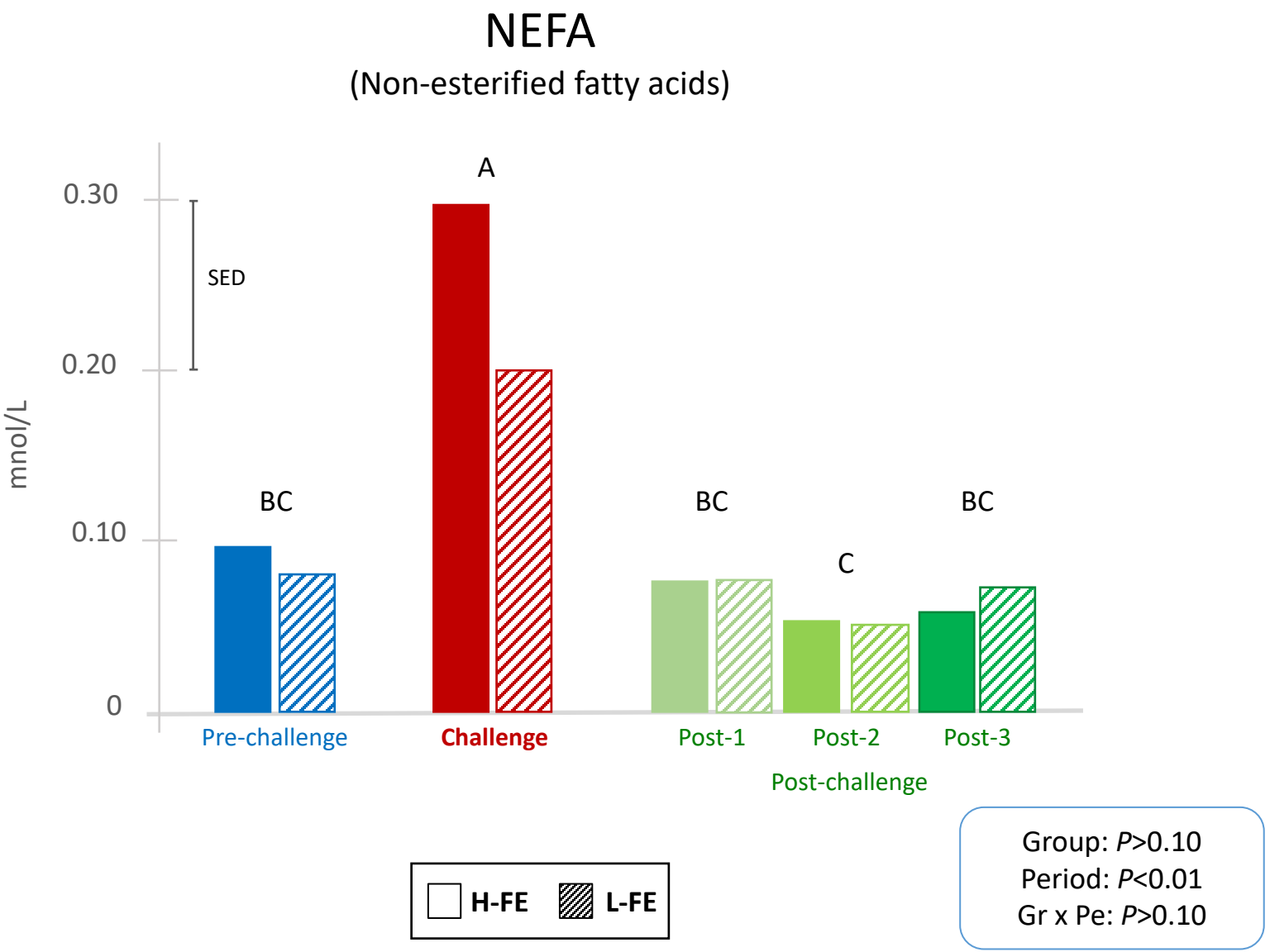
Results: **Blood metabolites**



Group: P<0.10
Period: P<0.01
Gr x Pe: P>0.10

[A, B] Superscripts indicate significant differences (P < 0.05) due to the Period.

Results: **Blood metabolites**



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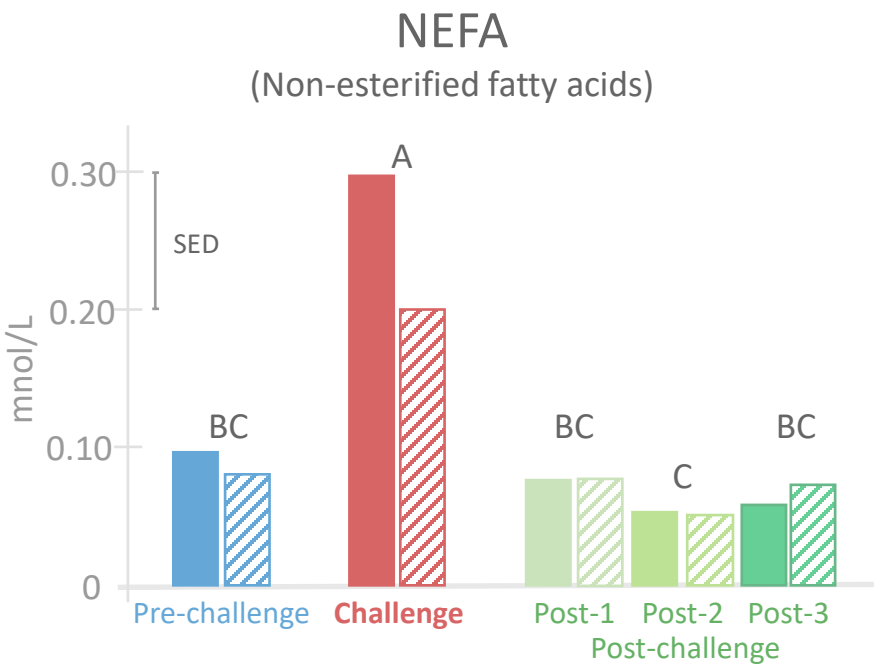
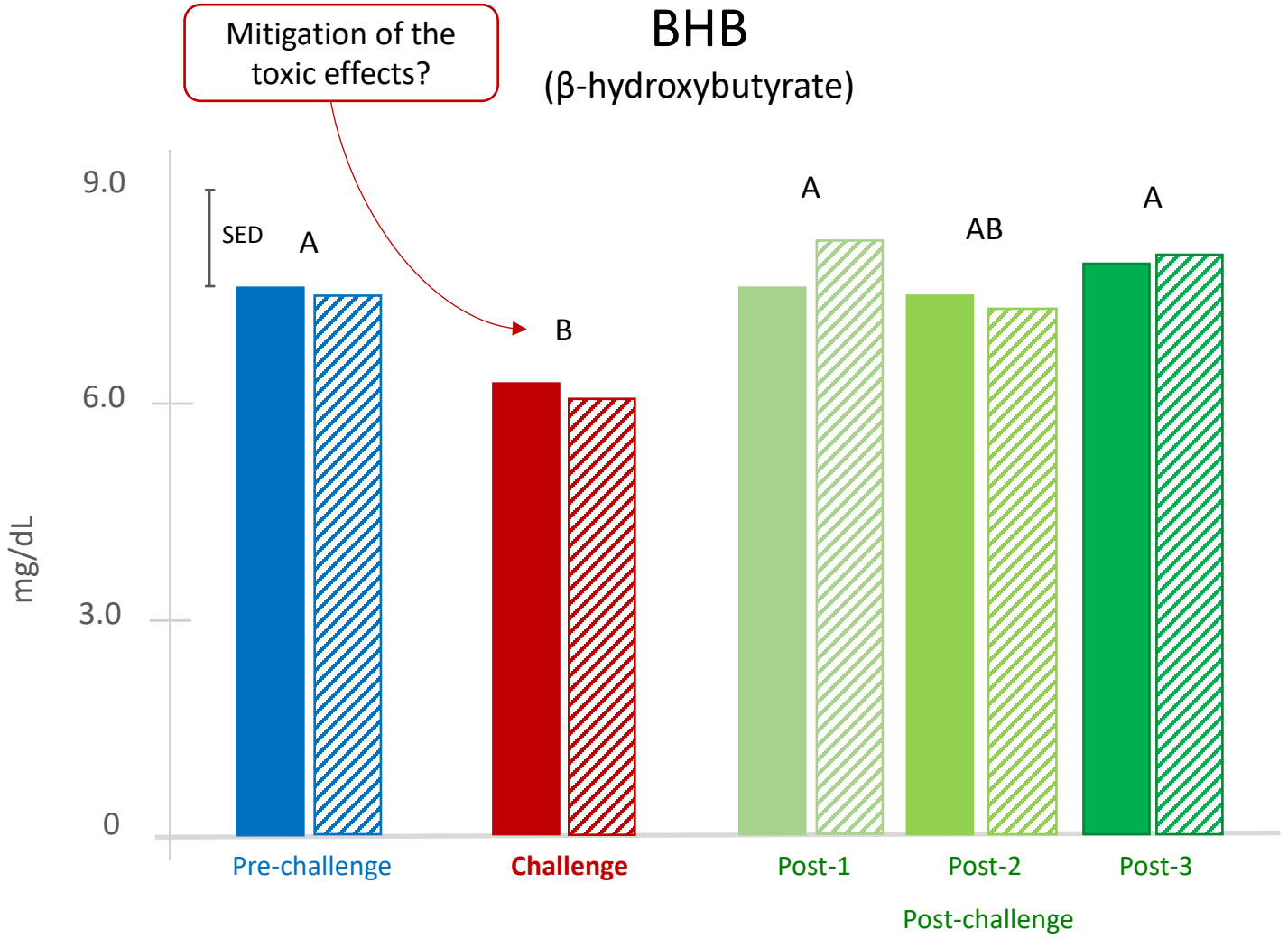
Results: **Blood metabolites**





H-FE L-FE

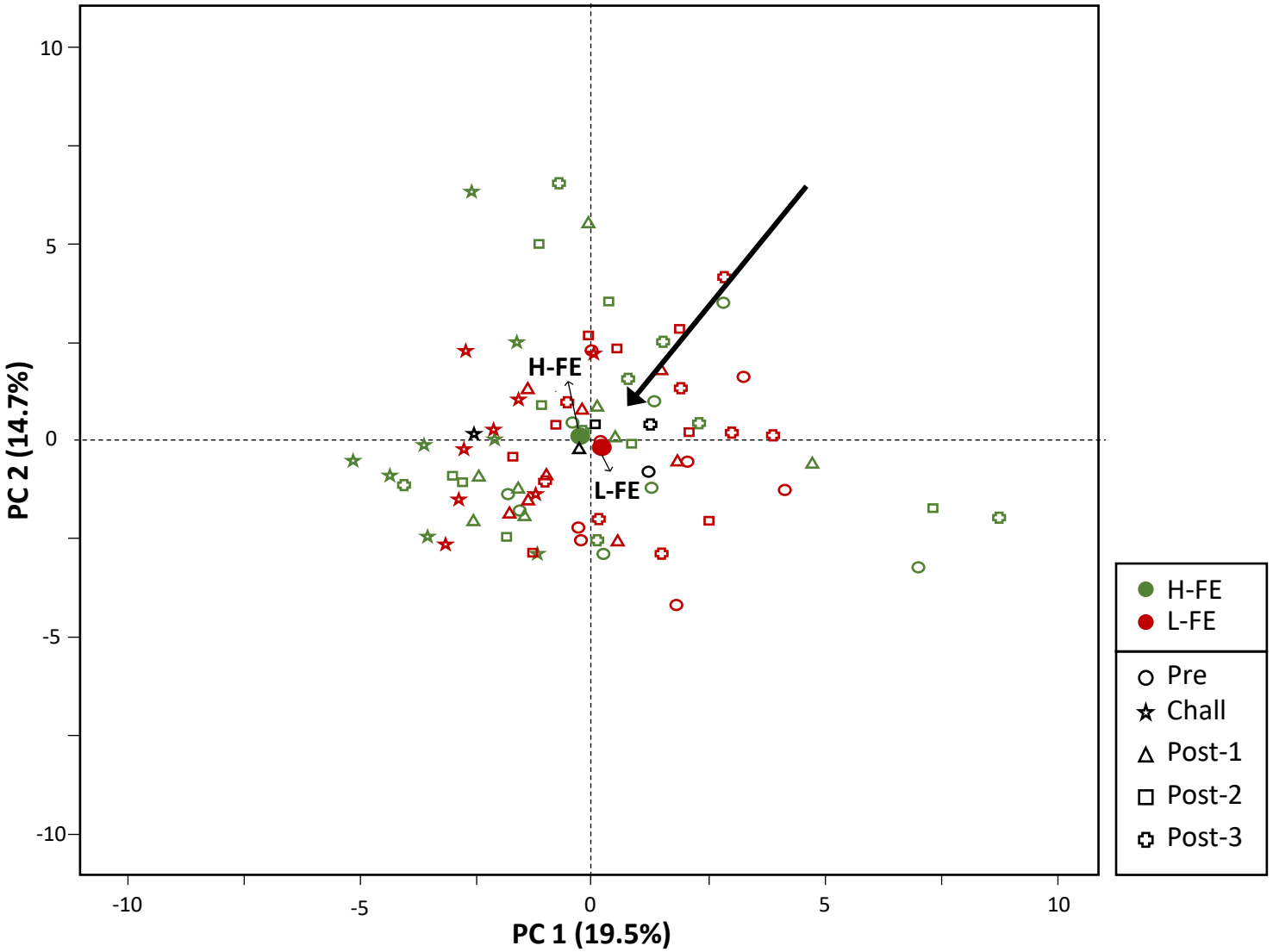
Group: *P*>0.10
Period: *P*<0.01
Gr x Pe: *P*>0.10

[A, B, C] Superscripts indicate significant differences (P < 0.05) due to the Period.

Results: **PCA**

Relation:

Efficiency (RFI) ⟷ All parameters measured



Conclusions

1. The **response** to the nutritional challenge and **recovery** of the **more efficient ewes** appears to be **similar to** that of the **less efficient ewes**.

2. The results suggest that **improving efficiency would not negatively affect the resilience of dairy ewes**.

THANK YOU