



**HAL**  
open science

## Individual adaptive responses of meat ewes facing an abrupt nutritional challenge after lambing

Eliel González García, Marcelo Gindri, Laurence Puillet, Nicolas N.C. Friggens

### ► To cite this version:

Eliel González García, Marcelo Gindri, Laurence Puillet, Nicolas N.C. Friggens. Individual adaptive responses of meat ewes facing an abrupt nutritional challenge after lambing. 74th Annual Meeting of the European Federation of Animal Science, Aug 2023, Lyon, France. pp.755, 10.3920/978-90-8686-936-7. hal-04195713

**HAL Id: hal-04195713**

**<https://hal.inrae.fr/hal-04195713v1>**

Submitted on 4 Sep 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# **Book of Abstracts of the 74<sup>th</sup> Annual Meeting of the European Federation of Animal Science**



**Book of abstracts No. 29 (2023)  
Lyon, France  
26 August – 1 September, 2023**

# Book of Abstracts of the 74<sup>th</sup> Annual Meeting of the European Federation of Animal Science

Lyon, France, 26 August – 1 September, 2023



## EAAP Scientific Committee:

F. Miglior  
L. Pinotti  
L. Boyle  
D. Kenny  
M. Lee  
M. De Marchi  
V.A.P. Cadavez  
S. Millet  
R. Evans  
L. Gasco  
M. Pastell  
G. Pollott (secretary)  
H. Spoolder (chair)



## Session 65

### Individual adaptive responses of meat ewes facing an abrupt nutritional challenge after lambing

*E. González-García<sup>1</sup>, M. Gindri<sup>2</sup>, L. Puillet<sup>2</sup> and N.C. Friggens<sup>2</sup>*

<sup>1</sup>INRAE, PHASE, SELMET, Univ Montpellier, CIRAD, INRAE, L'Institut Agro Montpellier SupAgro, 34060 Montpellier, France, <sup>2</sup>INRAE, PHASE, Université Paris-Saclay, INRAE, AgroParisTech, UMR MoSAR, 75005, Paris, France;

[eliel.gonzalez-garcia@inrae.fr](mailto:eliel.gonzalez-garcia@inrae.fr)

Simulating a climate change event, responses of Mediterranean meat ewes when facing an abrupt nutritional challenge (**NC**; i.e. fed with cereal straw of very low nutritional value only) were studied at a very sensitive physiological stage (i.e. just after lambing). Forty Romane ewes were chosen at early-mid pregnancy (around 2 mo) according to parity (20 primiparous, **PRIM**; 20 multiparous, **MULT**); feed efficiency genetic line [residual feed intake (**RFI**); inefficient, RFI-, n= 10 per parity; efficient, RFI+, n= 10 per parity); litter size (i.e. bearing twins, diagnosed by ultrasonography); and **BW** and body condition score (**BCS**) [initial **BW** and **BCS** (mean  $\pm$ SD): 51.6 $\pm$ 7.41 kg; 2.5 $\pm$ 0.20, respectively; representing average **BW** and **BCS** of their parity in the flock]. Effects on intake, ewes' **BW** and **BCS**, subcutaneous back-fat thickness (**BFT**), energy metabolism [plasma **NEFA**,  $\beta$ -**OHB**, glucose, urea, tri-iodothyronine (**T3**)], and lambs' growth were examined before, during and after **NC**. Individuals' profiles of the response-recovery of each ewe to **NC** were described using a piecewise mixed-effects model and clustered using principal components analysis and Euclidean distance. **MULT** presented sharper  $\beta$ -**OHB** recovery from **NC** than **PRIM** ( $P \leq 0.05$ ). Parity or genetic line did not affect the other evaluated traits. Clusters of individuals' response-recovery to **NC** suggested three different adaptive strategies to **NC** (i.e. adaptation on acquisition, allocation or trade-off between acquisition and allocation of energy). Interestingly, ewes' response-recovery to **NC** demonstrated also to be related to lamb average daily gain (**ADG**, g/d), especially plasma  $\beta$ -**OHB** and **NEFA** ( $r \geq 0.50$ ). Results provide new insights in how such short and abrupt **NC** affect some key physiological parameters, and to what extent the impacts of **NC** and the ewes' potential response-recovery are influenced by the individual nature of the animals (i.e. observed inter-individual differences in the responses). This work was financed by the PRIMA ADAPATHERD project (<https://www.adapt-herd.eu/>).