Editorial: Selected keynote lectures of the 73rd annual meeting of the European Federation of Animal Science (Porto, Portugal)

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Editorial: Selected keynote lectures of the 73rd annual meeting of the European Federation of Animal Science (Porto, Portugal)

L.E. Hernández-Castellano [a,*], C. Giromini [b,c], M. Tretola [d,e], L. Puillet [f], M. Herskin [g], N. Castro [a]

[a] IUSA-ONEHEALTH 4. Animal Production and Biotechnology, Institute of Animal Health and Food Safety, Universidad de Las Palmas de Gran Canaria, 35412 Arucas, Spain
[b] Department of Veterinary and Animal Sciences (DIVAS), Università degli Studi di Milano, Via dell'Università 6, 29600 Lodi, Italy
[c] CRC, Innovation for Well-Being and Environment, Università degli Studi di Milano, 20122 Milano, Italy
[d] Agroscope, Animal Biology Group, La Tioleyre 4, 1725 Posieux, Switzerland
[e] Department of Veterinary Medicine and Animal Sciences (DIVAS), University of Milan, 26900 Lodi, Italy
[f] Université Paris-Saclay, INRAE, AgroParisTech, UMR Modélisation Systémique Appliquée aux Ruminants, 91120 Palaiseau, France
[g] Department of Animal and Veterinary Sciences, Aarhus University, 8830 Tjele, Denmark

Introduction

The European Federation for Animal Science (**EAAP**) aims to improve the knowledge and the dissemination of research results regarding animal science. The scientific structure of the EAAP is based on study commissions. The current study commissions are on (1) Animal Genetics, (2) Animal Health and Welfare, (3) Animal Nutrition, (4) Animal Physiology, (5) Livestock Farming Systems, (6) Cattle, (7) Horse, (8) Pig, (9) Sheep and Goat, (10) Insects, and (11) Precision Livestock Farming. The Annual meeting organised by this society provides an excellent opportunity for the application of new ideas in practice through many parallel sessions, a plenary meeting, poster presentations, and discussions about scientific achievements in livestock production all around the world. All these activities make the Annual meeting of the EAAP one of the largest animal science events in the world.

In the present supplement, eight review papers selected by the different EAAP study commissions from all invited speakers at the 73rd Annual Meeting of the EAAP (Porto, Portugal) are included.

Introducing the review papers of this issue

Nutrition plays a crucial role in the sustainable development of livestock production systems. However, finding solutions associated with optimizing nutrition while reducing greenhouse gas emissions pose significant hurdles. In this supplement, the challenges faced in ruminant nutrition, the efficiency of pig and poultry nutrition, and the promising potential of insects as a novel and sustainable source of animal feed are reviewed. Enhanced nutrient balance, feed quality, and dietary additives have led to improved feed efficiency and reduced environmental footprint. Incorporating technologies such as precision feeding, which optimise nutrient delivery based on individual animal requirements, further enhances efficiency and sustainability. Thus, the combination of low-cost sensors and comprehensive mathematical models to analyse the generated farm big data contributes to reduce the environmental impact of livestock farming, while reducing production costs and labour requirements. However, there are important challenges for the precision livestock farming associated to new precision feeding and management. All these aspects are reviewed in this supplement by Pomar and Remus (2023). Another relevant issue that contributes to the environmental impact of livestock farming is methane production, especially that associated to ruminants (i.e., cattle, sheep, and goats). The complex digestive system of ruminants produces methane as a byproduct of rumen and enteric fermentation, representing a challenge in terms of both nutrition and environmental impact. In the present supplement, González-Recio et al. (2023) describe the current knowledge on the genetic control that cows exert on the rumen microbiota composition and how that can regulate feed digestion, feed efficiency, methane emissions and health status. Regarding the nutrition of both ruminants and pigs, special focus has been made on the period around parturition. In this supplement, Veshkini et al. (2023) review the role of essential fatty acids and conjugated linoleic acid on dairy cows around calving, providing insights into the mechanisms by which they can influence different variables related to metabolism, energy homeostasis and partitioning, immunity, and inflammation. Similarly, this supplement includes different aspects about swine nutrition such as the targeted nutrition during sow gestation (Langendijk et al., 2023), especially on the middle of gestation, as the placenta grows during that period which in turn limits the foetal size. Additionally, this supplement also describes the use of functional amino acids to modulate the gut barrier function and immunity in piglets (Luise et al., 2023), showing that supplementation with amino acids during the weaning phase enhances the physiological functions of piglets. In addition, these authors also revise the potential synergies of each amino acid related to gut health. In this supplement, Pinotti et al. (2023) describe the potential of using food losses, food waste, ex-food or former food products to promote the circular economy and reduce the environmental impact of swine production. Poultry has also received

* Corresponding author.
E-mail address: lorenzo.hernandez@ulpgc.es (L.E. Hernández-Castellano).

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attention in the last years. In this supplement, Korver (2023) revise several aspects related to nutrition, health and welfare of both broiler chickens and laying hens and the future challenges that this industry will face.

To address the challenges in livestock nutrition and environmental impact, the use of insects as a sustainable source of animal feed has been considered promising and with a great potential to fulfil animal energy requirements. Insects, such as mealworms and black soldier flies, are highly nutritive and can be reared using organic waste streams, contributing to circular economy practices. The most recent advances in insect-based feed are reviewed in this supplement by Sogari et al. (2023).

Ethics approval

Not applicable.

Data and model availability statement

Not applicable.

Author ORCIDs

Lorenzo E. Hernández-Castellano: https://orcid.org/0000-0003-2729-0434.
Carlotta Giromini: https://orcid.org/0000-0002-3717-5336.
Marco Tretola: https://orcid.org/0000-0003-3317-4384.
Laurence Puillet: https://orcid.org/0000-0003-2358-7302.
Mette Herskin: https://orcid.org/0000-0002-3744-4524.
Noemí Castro: https://orcid.org/0000-0002-3026-2031.

Author contributions

L.E. Hernández-Castellano wrote the manuscript. All authors revised and approved the manuscript.

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The authors have not stated any conflicts of interest.

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