

Book of Abstracts

of the 4th EAAP Regional Meeting 2026



Book of Abstracts No. 41 (2026)
Sassari – Italy
Mediterranean Region
20-22 May, 2026

Table of Contents

Summary

<i>The European Federation of Animal Science (EAAP)</i>	4
<i>Welcome to the 4th EAAP Regional Meeting in Sassari</i>	5
<i>Organizers of the 4th EAAP Regional Meeting</i>	6
<i>About the University of Sassari</i>	7
<i>EAAP Study commissions</i>	8
<i>Scientific Programme</i>	14
<i>Abstracts</i>	27
<i>Author index</i>	108

The European Federation of Animal Science (EAAP)

The main aims of the EAAP are to promote, by means of active co-operation between its members and other relevant international and national organisations, the advancement of scientific research, sustainable development and production systems; experimentation, application and extension; to improve the technical and economic conditions of the livestock sector; to promote the welfare of farm animals and the conservation of the rural environment; to control and optimise the use of natural resources in general and animal genetic resources in particular; to encourage the involvement of young scientists and technicians. More information on the organisation and its activities can be found at www.eaap.org.

Former Presidents

1949-1961	A.M. Leroy (France)
1961-1967	R. Trehane (United Kingdom)
1967-1972	J.M. Rijssenbeek (The Netherlands)
1972-1978	J.H. Weniger (Germany)
1978-1984	E.P. Cunningham (Ireland)
1984-1990	A. Roos (Sweden)
1990-1996	A. Nardone (Italy)
1996-2000	P. Solms-Lich (Germany)
2000-2004	A. Aumaitre (France)
2004-2008	J. Flanagan (Ireland)
2008-2012	K. Sejrsen (Denmark)
2012-2016	P. Chemineau (France)
2016-2020	M. Gauly (Germany)
2020-2024	I. Casasús (Spain)

Council members

President

- Jöel Berard (Switzerland)

Vice-Presidents

- Sam de Campeneere (Belgium)
- Gunnfríður Elín Hreiðarsdóttir (Iceland)

Council Members

- Peer Berg (Norway)
- Christian Lambertz (Germany)
- Nicolaj Ingemann Nielsen (Denmark)
- Moschos Korasidis (Greece)
- Nicolò Macciotta (Italy)
- Klemen Potocnik (Slovenia)
- Diana Ruska (Latvia)

FAO Representative

- Badi Besbes

Auditors

- Georgia Hadjipavlou (Cyprus)
- Zygmunt Maciej Kowalski (Poland)

Alternate Auditor

- Jeanne Bormann (Luxembourg)

Secretary General

- Andrea Rosati

The European Federation of Animal Science (EAAP) has close established links with its sister organizations of American Society of Animal Science (ASAS), American Dairy Science Association (ADSAS), Canadian Society of Animal Science (CSAS) and Asociación Latinoamericana de Producción Animal (ALPA) and is also member of the World Association for Animal Production (WAAP).



Welcome to the 4th EAAP Regional Meeting in Sassari

On behalf of the Organizing Committee of the University of Sassari, it is our honor and pleasure to welcome you to the 4th EAAP Regional Meeting, scheduled from May 20 to 22, 2026, in the city of Sassari, Italy.

This event represents a valuable opportunity to bring together scientists, researchers, and professionals from across Europe and beyond to address the key challenges of animal production in a rapidly changing world.

The scientific program will focus on major areas of relevance for the livestock sector, including animal genetics and the management of genetic resources, sustainable animal production systems, and innovations in precision livestock farming and digital technologies. Particular attention will also be given to animal nutrition and its role in improving productivity, efficiency, and environmental sustainability.

Sassari, with its rich historical and cultural heritage, provides an inspiring setting for this meeting. Participants will have the opportunity not only to engage in a stimulating scientific program but also to explore the city's traditions, nearby archaeological sites such as Nuraghe Santu Antine and *Complesso nuragico di Palmavera*, and the unique landscapes of northern Sardinia.

We are confident that the 4th EAAP Regional Meeting will be a dynamic and engaging event, fostering collaboration, knowledge exchange, and innovation. We look forward to welcoming you to Sassari for a productive and inspiring experience.

Sponsored by



Organizers of the 4th EAAP Regional Meeting

Chief of the Organizing Committee

Christina Ligda

ELGO - DIMITRA - Greece

International Scientific Board

- Gianni Battacone – University of Sassari – Italy
- Danijela Bojkovski – University of Ljubljana – Slovenia
- Isabel Casasús Pueyo – CITA Aragón – Spain
- Antonello Cannas – University of Sassari – Italy
- Xabier Diaz de Otalora Aguirre – Universitat Politècnica de València – Spain
- Giulia Foggi – ETH Zürich – Switzerland
- Georgia Hadjipavlou – Agricultural Research Institute – Cyprus
- Maria-Anastasia Karatzia – ELGO-DIMITRA – Greece
- Nicolò Pietro Paolo Macciotta – University of Sassari – Italy
- Maria do Rosário Fernandes Marques – INIAV – Portugal
- Filippo Miglior – University of Guelph – Canada
- Naceur M'hamdi – Institut National Agronomique de Tunisie – Tunisia
- Marie-Odile Nozières-Petit – INRAE – France
- Mikhail Odintsov-Vaintrub – Regrowth – Italy
- Ioanna Pouloupoulou – Agricultural University of Athens – Greece
- Andrea Rosati – European Federation for Animal Science (EAAP) – Italy
- Marija Špehar – Croatian Agency for Agriculture and Food – Croatia

Organizing Committee

- Nicolò Pietro Paolo Macciotta – University of Sassari – Italy
- Gianni Battacone – University of Sassari – Italy
- Antonello Cannas – University of Sassari – Italy
- Andrea Rosati – European Federation for Animal Science (EAAP) – Italy
- Federico Liguori – European Federation for Animal Science (EAAP) – Italy

About the University of Sassari



The University of Sassari, Italy, is a prestigious institution dedicated to research and education in agricultural sciences and related fields. Founded in 1562, it has a long and distinguished history of contributing to advancements in agriculture, environmental protection, and rural development. The university's mission is to provide high-quality education while fostering research that addresses contemporary challenges in agriculture and food production. As a key player in Italy's agricultural research landscape, the university focuses on a variety of disciplines, including animal science, plant breeding, horticulture, and agricultural economics. It comprises numerous experienced scientists who engage in innovative projects, collaborating with national and international research networks to enhance knowledge transfer and application in the agricultural sector. The University of Sassari is committed to sustainability and environmental stewardship, working to develop practices that support both agricultural productivity and the preservation of natural resources. The institution offers comprehensive educational programs that equip students with the necessary skills to address global agricultural challenges. In addition to its educational and research activities, the university maintains modern laboratories and research facilities, providing a conducive environment for cutting-edge studies.

For more information about the University of Sassari, you can visit their official website <https://www.uniss.it/>.

Scientific programme

Session 1. Animal Genetic Resources: Local and Transboundary Breeds in the Mediterranean: Diversity Aspects for Sustainable Livestock Farming

Date: Wednesday 20 May 2026; 14:30 – 18:15

Chair: Bojkovski / Hadjipavlou / Ligda

Theatre Session 1

Integrating phenotypic and genomic data to describe a Sicilian local cattle ecotype adapted to Mediterranean environments	27
<i>V. Floridia, A. Bionda, C. Cavallo, V. Lopreiato, P. Crepaldi, L. Liotta, M. Barbato, G. P. Patti</i>	
Evaluating landscape omics results in local sheep breeds from Mediterranean North African area	27
<i>M. Milanesi, E. Somenzi, E. Capra, P. Cozzi, B. Lazzari, B. Benjelloun, A. Carta, S. S. Gaouar, A. Jannoune, H. Khemiri, N. M'Hamdi, N. Tabet Aoul, G. Zitouni, M. Tixier-Boichard, A. Stella, P. Ajmone Marsan</i>	
The Rhodope Shorthorn cattle - an example of revival of an ancient breed	28
<i>S. Nikolov, Z. Ducheve, M. Ignatova, V. Nikolov</i>	
Transboundary Cooperation in the Conservation of the Bosnian Mountain Horse: The Slovenian Case Study	28
<i>D. Bojkovski, T. Flisar, M. Mesarič</i>	
Developing guidelines for transboundary breeding programmes to preserve endangered breeds in the European Union	29
<i>R. Bonifazi, J. Ten Napel, M. Schoon, M. Spoelstra, L. Balzar, H. Göderz, S. J. Hiemstra</i>	
Management of Transboundary breeds: The case of Sarakatsaniko sheep breed	29
<i>D. Tsiokos, Z. Ducheve, D. Chatziplis, C. Ligda</i>	
The ARDI2 project: Cooperation toward a cross-country breeding scheme involving French and Spanish dairy sheep breeds	30
<i>C. Pineda-Quiroga, J. M. Astruc, I. Granado-Tajada, A. Zubiri-Gaitán, K. Haugaard, F. Macedo, T. Roozen, E. Ugarte, Z. Vitezica</i>	
Manech and Latxa dairy sheep populations: are they becoming closer on a chromosome-by-chromosome basis?	30
<i>I. Granado-Tajada, E. Ugarte, J. M. Astruc, S. Rodríguez-Ramilo</i>	
Digital tools for monitoring and conservation of animal genetic resources: A national good practice example	31
<i>T. Flisar, D. Bojkovski, M. Šimon, K. Potočnik</i>	
R_P_M: A software to reconstruct pedigrees from molecular markers	31
<i>J. Fernández Martín</i>	
Comparing Stepwise Discriminant Analyses results across heterogeneous bovine datasets	32
<i>P. E. Milia, A. Cesarani, N. P. P. Macciotta, C. Dimauro</i>	
Supporting genetic management in European dromedary farming using genomic tools	32
<i>S. Bruno, C. I. Pastrana, J. Müller, A. Mehrotra, M. G. Molina, G. Bramante, E. Ciani</i>	

Tracing worldwide turkey expansion through biometrics: from Central America to the Mediterranean	33
<i>J. I. Salgado Pardo, A. González Ariza, J. V. Delgado Bermejo, C. Rivas López, J. M. León Jurado, S. P. Marelli, S. Cerolini, L. Zaniboni, A. Vargas Cornejo, M. Winter Dendena, M. Barrientos Morales, P. Cervantes Acosta, A. Hernández Beltrán, M. E. Camacho Vallejo</i>	

Poster Session 1

Population, Production and Social Determinants of Sustainability in Local Cattle Breeds: Examples from Croatia	33
<i>A. Ivanković, Z. Ivkić, M. Konjačić, N. Kelava Ugarković</i>	
Validation of Pedigree Accuracy in Istrian Sheep Using SNP Markers	34
<i>M. Špehar, D. Ceranac, J. Ramljak, Z. Barać, V. Držaić, B. Mioč, D. Jurković, Z. Ivkić, I. Pocrnic, A. Kasap</i>	
Population structure and genetic relationships among Mediterranean island cattle breeds	34
<i>P. E. Milić, A. Cesarani, N. P. P. Macciotta, C. Dimauro</i>	
Genome-wide SNP profiling of Greek insular sheep breeds to reveal population structure and diversity	35
<i>I. Apostolakis, V. Tsartsianidou, M. A. Karatzia, E. Boukouvala, A. Triantafyllidis, L. V. Ekateriniadou</i>	
The impact of grazing small ruminants on limiting the expansion of <i>Solidago gigantea</i> in Poland	35
<i>M. Pasternak-Chorosz, A. Kawęcka, M. Puchała</i>	
The quality of milk from Carpathian goats grazing on pastures containing <i>Solidago gigantea</i>	36
<i>M. Pasternak-Chorosz, A. Kawęcka, M. Puchała</i>	
Genetic resistance to scrapie in Ile de France breed in Bulgaria	36
<i>Z. Duchevev, M. Bozhilova-Sakova, T. Ivanova, E. Achkakanova</i>	
Genome-wide comparisons between whole-genome sequencing and high-density SNP data in Sicilian cattle breeds	37
<i>S. Tumino, G. Chessari, A. Antoci, M. Carlentini, S. Mastrangelo, A. Cesarani, S. Bordonaro, D. Marletta, A. Criscione</i>	
Frequency of the β-casein A2 gene in native cattle breeds: Polish Red and Polish Black-and-White	37
<i>I. Radkowska, K. Ropka-Molik, D. Rubiś</i>	
Assessment of leptin receptor genotypes in Majorcan Black pigs	38
<i>P. Pascual, J. Jaume, J. Estany</i>	
Estimation of Breeding Values and genetic parameters for Milk Yield in Patch-faced Maritza Sheep Breed	38
<i>H. Grosu, P. Zhelyazkova, D. Dimov, C. R. Cernitu</i>	
A regional swine semen production center to support small and medium pig farms in Sardinia	39
<i>F. Chessa, I. Cossu, F. Melis, G. L. Belloi, C. Nassif, M. Gallus, A. Manunta, G. Pozzato, G. Epifani, M. Dattena, L. Mara</i>	
Polymorphism of κ-casein (CSN3) in selected cattle breeds: Polish Black-and-White, Polish Red-and-White, Polish Red, and Simmental	39
<i>M. Skarwecka, I. Radkowska, K. Żukowski</i>	
Building a National Framework for Animal Genetic Resources Conservation: Strategic and Policy Perspectives from Poland	40
<i>E. Sosin, A. Chelmińska</i>	

Comparison of the processes of breeding native goats <i>J. Sikora, A. Kawęcka, M. Puchała</i>	40
Development dynamics of carpathian goats covered by the restoration program <i>J. Sikora, A. Kawęcka, M. Puchała, I. Peist</i>	41
Characterization of carcass traits and meat quality of the Italian Leccese chicken <i>M. Santoro, V. Landi, L. Forte, G. Rusco, P. De Palo, A. Maggiolino, N. Parabita, G. Centoducati</i>	41
Discovering an Italian local breed: growth performance and meat quality of Fasanese lamb <i>N. Parabita, V. Landi, L. Forte, C. Pierini, P. De Palo, M. Santoro, G. Calzaretto, G. Incampo, A. Maggiolino</i>	42
Assessment of the effects of the sheep genetic resources conservation program in Poland <i>A. Kawęcka, M. Puchała, M. Pasternak-Choros, J. Sikora, I. Peist, A. Miksza-Cybulska, R. Garstka</i>	42
Statistical and Demographic Characterization of Breeders Involved in Conservation Programmes for Cattle and Coldblooded Horse Breeds <i>E. Sosin, A. Chełmińska, J. Wójtowicz, M. Dziad, G. Polak</i>	43

Session 2. Smart farming and Digitalisation in Mediterranean Environments: Data, Technology and Innovation

Date: Wednesday 20 May 2026; 14:30 - 17:45

Chair: Odintsov Vaintrub / Karatzia

Theatre Session 2

A Multi-Stakeholder Approach Using Human-Centric Design for PLF Implementation in Mediterranean Upland Pastures <i>M. Odintsov Vaintrub, S. S. Colasante, M. Bianchini, M. Francioni, P. D'Ottavio</i>	43
Computer vision-based monitoring of pig behaviour in Mediterranean farms during hot periods <i>N. Hlel, D. Alexander Mendez, X. Díaz De Otálora, F. Estellés, S. Calvet, D. Liu, T. Norton</i>	44
Digital approach for sheep reproductive management: electronic monitoring of sexual activity to improve the male effect as an alternative to hormonal treatments <i>H. Chalouati, S. Khnissi, S. Fabre, N. Debus</i>	44
European Network on Livestock Phenomics (EU-LI-PHE): boosting high-throughput phenotyping for precision livestock farming and animal breeding <i>M. L. Calabri, L. Fontanesi, T. Norton</i>	45
Monitoring of dairy goat behaviour: experiences on tri-axial accelerometers and computer vision approaches <i>A. Costantino, D. A. Méndez, B. Fajardo, E. Gil, S. Sanjuan, R. Arnau, J. M. Calabuig, S. Calvet, A. Villagrà, F. Estellés</i>	45
Integrated UAV and IoT Ecosystem for Livestock Monitoring: The SPADE Livestock Pilot Case Study <i>A. Frantzis, M. Karatzia, E. Gkimousi, G. Manessis, C. Davarakis, I. Bossis, Z. Basdagianni</i>	46
Monitoring grazing horses in a Mediterranean inner area by GPS collars <i>A. Fatica, F. Fantuz, D. Tedesco, L. Todini, G. Pastorelli, E. Salimei</i>	46
Meta-analysis of validation evidence for wearable sensors compared with visual observation of feeding behaviors in dairy cattle <i>B. Darabighane, A. S. Atzori</i>	47

Video anotation system for lambing detection.	47
<i>M. Garcia-Herreros, M. R. Marques, A. T. Belo, M. Antunes, P. Gonçalves</i>	
First application of virtual fencing in an intensive rotational grazing system in Central Italy: cattle responses during training and early transitions	48
<i>G. Bernabucci, L. Basiricò, B. Ronchi, N. Lacetera, R. Primi</i>	
Application of Augmented reality technologies for precision livestock management	48
<i>G. Sara, D. Pinna, G. Todde, M. Caria</i>	
Poster Session 2	
Calibration of the ModVege grassland model for Mediterranean conditions: application to the Abruzzo region (Central Italy)	49
<i>A. Canon, T. Norton, M. Odintsov Vaintrub</i>	
LIVECoVET: Advancing skills for sustainable and innovative livestock farming in Europe	49
<i>A. Canon, T. Norton</i>	
SENSTARA: Advancing sensor-based indicators of animal resilience, health, and welfare in precision livestock farming	50
<i>D. Foy, J. M. Gautier, B. Foris, C. Morgan-Davis, L. Dale, P. P. Nielsen, G. A. Franchi, X. Díaz De Otálora</i>	
Integrating Precision Livestock Farming to Enhance Sustainability and Performance of Pasture-Based Beef Fattening Systems	50
<i>F. Sirtori, A. Confessore, R. Derudas, A. Monagheddu, S. Khater, P. Arca, A. Franca, E. Vagnoni, C. Aquilani, S. Parrini, L. De Guttry, C. Dibari, G. Argenti, D. Nieddu, D. Dettori, C. Pugliese</i>	
Optimizing Dairy Farm Efficiency: A case study in Process Mapping and Business Process Management for feeding operations	51
<i>M. G. Podda, G. S. Sechi, A. S. Atzori</i>	
Plenary Session	
Date: Thursday 21 May 2026; 9:00 - 11:30	
From sensing to understanding: artificial intelligence and the future of pig welfare assessment	51
<i>G. Pulina, M. G. Cappai, M. F. Lunesu, G. Battacone</i>	
Artificial Intelligence in Animal Science: a perspective	52
<i>D. Gianola</i>	
Beyond nutrients: microalgae and yeast as functional tools in sustainable small ruminant production	52
<i>A. Mavrommatis, C. Christodoulou, P. Kyriakaki, R. Andreaki, E. Tsiplakou</i>	
Pastoralim and agro-pastoralism in tension: a year (and furthermore?) to empower the strengths of these livestock farming systems, the opportunities addressed to them and minimize their weakness and the threats they face, toward sustainability	53
<i>M. O. Nozières-Petit, B. Hubert, B. Dedieu</i>	

Session 3. Breeding for resilience by improving mitigation, adaptation, and disease resistance traits

Date: Thursday 21 May 2026; 14:00 - 17:00

Chair: Spehar

Theatre Session 3

Simple genomic analysis of environmental adaptation	53
<i>A. Cesarani, M. Congiu, S. Mastrangelo, G. Senczuk, S. Ben Jemaa, C. Dimauro, N. P. P. Macciotta</i>	
Identification of genetic variants associated with milk production, milk composition and methane emission traits in dairy sheep	54
<i>G. Conte, E. Senatore, G. Foggi, A. Silvi, L. Turini, A. Cesarani, A. Negro, S. Grande, N. P. P. Macciotta, M. Mele</i>	
Heat stress sensitivity across lactations: The case of two Spanish dairy sheep breeds	54
<i>C. Pineda-Quiroga, I. Granado-Tajada, E. Ugarte, M. J. Carabaño, M. Ramón</i>	
Establishing a unified framework for conformation traits in dairy sheep: identification of core indicators for genetic evaluation	55
<i>M. Spehar, G. Hadjipavlou, C. Ligda, A. Carta, M. Fernández, E. Ugarte, M. Simčič, A. Kasap, G. De Jong, J. Astruc</i>	
Genome-wide linkage disequilibrium in Pag sheep	55
<i>A. Kasap, R. Jelena, D. Ceranac, G. Gorjanc, I. Pocrnić, Z. Barać, V. Držaić, B. Mioc, D. Jurković, D. Barać, Z. Ivkić, M. Špehar</i>	
Using daily data from automated milking systems provides larger estimates of heat stress effects than data from traditional monthly milk recording	56
<i>E. Reinoso, M. J. Carabaño, C. Díaz, M. Ramón</i>	
Toward an objective typology of Sardinian dairy-sheep farms: a reproducible multivariate pipeline with clustering model selection	56
<i>M. G. Serra, M. Acciaro, M. Decandia, V. Giovanetti, R. Fadda, S. Throude</i>	
The influence of breeding values obtained through morphofunctional assessment on lifetime production and productive longevity in Murciano-Granadina goats	57
<i>J. V. Delgado Bermejo, J. M. León Jurado, J. I. Salgado Pardo, J. Fernández Álvarez, A. González Ariza</i>	
Sperm and blood epigenetic diversity in local and cosmopolitan Italian cattle breeds	57
<i>E. Capra, R. Negrini, B. Lazzari, P. Cozzi, A. Tafuri, P. Ajmone Marsan, A. Stella, F. Turri</i>	
Runs of homozygosity for the detection of putative selection signatures in the Lesvos dairy sheep breed	58
<i>A. L. Hager-Theodorides, A. Kominakis, I. Mastranestasis, G. Mészáros</i>	

Poster Session 3

Genomic assessment of scrapie resistance, genetic diversity, and inbreeding in three indigenous sheep breeds of Epirus (Greece)	58
<i>A. Kominakis, M. Goliomytis, D. Gelia, D. Pappas, A. L. Hager-Theodorides</i>	

Phenotypic data to asses resilience of Sicilian horse breeds in the context of climate change	59
<i>M. Carlentini, S. Tumino, A. Antoci, G. Chessari, A. Criscione, S. Bordonaro, D. Marletta</i>	
Metabolic indicators of heat-tolerant phenotypes in cattle: insights from blood metabolomics of Angus and Nellore under natural heat stress	59
<i>G. Rocchetti, E. Capra, M. Errico, L. Lucini, J. F. Garcia, G. De Paula Nogueira, Y. T. Utsunomyia, A. M. Perez O'Brian, M. Milanese, P. Ajmone Marsan</i>	

Session 4. Animal health and welfare: Implications for livestock sector sustainability and farmer well-being

Date: Thursday 21 May 2026; 14:00 - 17:00

Chair: MHAMDI

Theatre Session 4

Characterization of enteric methane emissions in autochthonous Spanish dairy sheep breeds	60
<i>I. Granado-Tajada, C. Pineda-Quiroga, J. Valdés-Hernández, I. Goiri, H. Benhissi1, M. Medjadbi, E. Ugarte, A. García-Rodríguez, A. Rubio-Juan, G. Cañadas, M. Ramón</i>	
Precision reproductive management as an alternative to synchronisation protocols in dairy farms	60
<i>L. Zambianchi, B. Merlo, E. Giaretta, I. Fusaro, R. Colleluori, A. Formigoni, L. Mammi</i>	
Can mid-infrared (MIR) spectral data from milk be used to select more fertile sheep prior to artificial insemination?	61
<i>I. Beltrán De Heredia, J. Valdes Hernandez</i>	
Effects of intramammary infections and dry-off treatment on circulating leukocytes populations of Alpine dairy goats around dry-off	61
<i>M. Mezzetti, A. Grassi, H. T. Bosi, S. Scemama De Gialluly, M. Sfulcini, M. M. Vignati, A. Vercesi, F. Amadeo, R. Cantarini, M. F. Addis, A. Minuti, F. Piccioli Cappelli, S. Fasana, P. Moroni, E. Trevisi</i>	
Impact of low concentrations of DDT and HCB on survival and apoptosis of bovine mammary epithelial cells	62
<i>J. Para, M. Gajewska, K. Meade, A. Zachwieja, A. E. Zielak-Steciwo</i>	
Time trends and diagnostic markers reflecting the prevalence of intramammary infections at dry-off in Alpine dairy goats	62
<i>M. Mezzetti, A. Grassi, H. T. Bosi, S. Scemama De Gialluly, M. Sfulcini, M. M. Vignati, A. Vercesi, F. Amadeo, R. Cantarini, M. F. Addis, A. Minuti, F. Piccioli Cappelli, S. Fasana, P. Moroni, E. Trevisi</i>	
Restricted social contact during gestation affects reproductive performance of sows	63
<i>P. Seddaiu, K. Barłowska, I. Camerlink</i>	
Impact of continuous indoor housing on welfare in sheep and goats: scientific basis for grazing requirements in EU legislation	63
<i>D. Dimov, I. Nedeva</i>	
Metabolomic profiling of the heat stress response in Iberian piglets	64
<i>P. Aranguren-Rivas, A. Heras-Molina, E. Gómez-Izquierdo, J. Gómez-Fernández, F. García, S. Bovo, M. Bolner, L. Fontanesi, C. Óvilo, J. M. García-Casco, M. Muñoz</i>	

Early detection of disease and monitoring of welfare status using precision technologies in calves	64
<i>J. Kaler, F. Occhuito, M. Thomas, J. V. Diosdado</i>	
Poster Session 4	
Mass mortality of adult dairy cows associated with <i>Clostridium perfringens</i> alpha toxin.	65
<i>K. Rypuła, K. Płoneczka-Janeczko, A. Zielak-Steciwko, M. Siedlecka</i>	
Overcoming thermosensitivity in mare's milk: A synergistic sterilization protocol validated by impedance monitoring	65
<i>M. S. Lara, M. I. Berruga, A. M. Molina</i>	
Impact of fattening season on the gut microbiome of free-range Iberian pigs	66
<i>J. M. García Casco, M. Muñoz, A. López García, Á. González Berdasco, R. Peiró, P. Palma Granados</i>	
Effects of housing types and seasonal variations on the performance and welfare of Uda rams	66
<i>K. M. Aljameel, S. A. Maigandi</i>	
The impact of age at first mating on lifetime productivity in Alpine goats	67
<i>A. Kasap, D. Mulc, B. Mioč, V. Držaić, Z. Prpić, D. Jurković, Z. Barać, M. Špehar</i>	
Practical aspects of extensive sheep grazing in Poland, with particular emphasis on mountainous areas	67
<i>M. Puchala, R. Garstka, A. Kawecka, M. Pasternak-Choroszy, I. Peist</i>	
Effect of heat stress in lactating Sarda ewes kept in a barn with a roof ventilator	68
<i>M. A. Porcu, F. Castangia, A. Ledda, A. Cannas</i>	
Colostrum quality in different goat's breed	68
<i>N. M. Palladini, L. Bava, A. Sandrucci, A. Tamburini, G. Gislón, P. Baronchelli, S. Bonizzi, M. Pavolini, S. Sari, M. Zucali</i>	
Drinking water microbiology and mortality in beef calves under extensive conditions	69
<i>A. Benito Díaz, M. Montañés Foz, R. Bodas Rodríguez, A. Sarmiento García, J. J. García García</i>	
Grape stem inclusion in the diet of fattening young bulls affected erythropoiesis in the short-term	69
<i>I. Casasús, D. Villalba, S. Lobón, M. Joy, C. Conesa, M. Blanco</i>	
Assessment of Seasonal Variability in Milk Production and Hygienic Quality in a Farm Applying a Pasture-Indoor System	70
<i>I. Radkowska, A. Radkowski</i>	
Research Projects and International Cooperation of the National Research Institute of Animal Production in the Field of Animal Health and Welfare under Climate Change Conditions	70
<i>A. Orchel-Szeląg</i>	
Welfare of Farm Animals Used in Scientific Research in Research Institutes in Poland	71
<i>A. Orchel-Szeląg</i>	
Effect of Lemon Balm (<i>Melissa officinalis</i>) Supplementation on Stress-Related Behavior and Welfare in Weaned Pigs	71
<i>S. Ivanova, M. Petrova</i>	

Hoof surface temperature assessed by infrared thermography in dairy cattle in relation to breed and lactation	72
<i>W. Zajac, M. Soroko-Dubrovina, E. Pecka-Kielb, A. Zachwieja, M. Wnętrzak, A. Zielak-Steciwo</i>	
Effects of a low crude protein diet with reduced amylose-to-amylopectin ratio on performance, welfare, gut microbiota and meat quality in heavy pigs	72
<i>P. Trevisi, M. V. Graziosi, F. Soglia, M. Petracci, F. Correa, D. Luise</i>	
Identification of mutations in selected exons of the CLPTM1 gene responsible for cleft palate in the domestic dog (Canis lupus familiaris) in the French Bulldog breed	73
<i>W. Jabłońska, K. Węglińska, A. Sójka, B. Grzegorzółka, J. Gruszczyńska</i>	
Congenital bone fragility in the domestic dog is determined by mutations within the genes: COL1A1, COL1A2, SERPINH1	73
<i>D. Goworek, J. Owczarek, B. Grzegorzółka, J. Gruszczyńska</i>	
Search for mutations in selected exons of the SLC3A1 gene sequence associated with cystinuria in Irish Terrier dogs	74
<i>J. Owczarek, D. Goworek, B. Kominek, B. Grzegorzółka, J. Gruszczyńska</i>	

Session 5. Agropastoralism, environmental aspects and product quality in Mediterranean and less favoured areas

Date: Thursday 21 May 2026; 14:00 - 17:45

Chair: Casasús / Nozieres-Petit

Theatre Session 5

Livestock grazing : A sustainable landscape designer	74
<i>T. Glasser, L. Hadar, G. Rosenberg</i>	
How cultivation intensity shapes the net carbon footprint of Mediterranean cow-calf systems	75
<i>M. F. Lunesu, S. Sechi, G. Pulina, G. Battacone, A. Nudda</i>	
Tree carbon sequestration offsets emissions from hamburger production in agrosilvopastoral farming systems	75
<i>M. Finocchi, F. G. Cella, A. Cappucci, R. Villani, A. Mantino, M. Mele</i>	
Innovative Gastronomic Valorization as a Driver of Long-Term Sustainability in Istrian Cattle	76
<i>E. Šuran, A. Ivanković, G. Šubara, M. Pečina</i>	
Does the extended quality negotiation of Corsican cured pork products help achieve functional integrity?	76
<i>D. Drevon, P. Cornu, M. O. Nozières-Petit</i>	
Meat quality of Maremmana young bulls reared under grass-fed and intensive systems	77
<i>S. Tavaniello, M. Peng, D. B. Teshale, M. Palazzo, R. Salvati, G. Senczuk, F. Pilla, G. Maiorano</i>	
Natural salt land pasture represents an interesting agroecological feeding alternative for sheep in saline regions	77
<i>L. Majdoub-Mathlouthi, M. Friha, R. Aloulou, S. Massaoudi, M. Rouatbi</i>	

Grape stem inclusion in the diet of fattening young bulls increased α-tocopherol deposition in meat	78
<i>M. Blanco, A. Civera, C. Conesa, J. Pérez-Jiménez, R. Mateos, S. Lobón, I. Casasús, M. Joy</i>	
From Indigenous Microbiota to Safe Starter Cultures: Safety Assessment of <i>Lactiplantibacillus plantarum</i> Isolated from Traditional Fermented Meat Products	78
<i>G. Carboni, M. Chessa, N. P. Mangia</i>	
Extruded linseed for improving milk quality and environmental sustainability in local Sardo-Bruna cows	79
<i>F. Correddu, S. Carta, A. Nudda</i>	
Effects of bulk milk quality on Pecorino Romano cheese yield	79
<i>M. Farina, F. Correddu, G. Pulina, A. Nudda</i>	
Milk Fatty acid components in Baladi goats reared under various conditions*	80
<i>M. Saad, L. Diab, P. Zgheib, R. El Hindi, S. El Murr, K. Houchaymi, K. Jawasreh, S. Sawan, P. Aad</i>	
Artisanal fermented Tunisian goat's milk : physico-chemical, microbiological, organic acid composition and volatile compounds	80
<i>Z. Jrad, A. Chahbani, M. Hammadi, H. El Hatmi</i>	
Poster Session 5	
Camel milk yogurt fortified with Tunisian Pomegranate (<i>Punica granatum</i> L.) syrup and powder	81
<i>Z. Jrad, O. Oussaeif, M. Hammadi, T. Khorchani, H. El Hatmi</i>	
Functioning Principles and Resilience of Agro-pastoral Livestock Systems in Slovenia	81
<i>D. Bojkovski, T. Flisar, M. Simčič</i>	
Rational Grazing Systems in Italy: Toward a Model for Sustainable Development	82
<i>D. Bochicchio, T. Amoriello, M. Ferrari, S. Santini, M. Scotti, D. Valcavi, E. Zanelli</i>	
Performance of lambs obtained crossbreeding Sardinian ewes with four meat-type breed rams	82
<i>F. Satta, F. Castangia, A. Spezzigu, A. Cannas</i>	
Enhancing meat production and quality of culled Sarda ewes	83
<i>F. Satta, F. Castangia, A. L. Pinna, C. Caria, A. Ledda, A. Spezzigu, A. Cannas</i>	
Secondary compounds in beef due to the inclusion of preserved sainfoin during fattening	83
<i>A. Civera, C. Conesa, J. Pérez-Jiménez, R. Mateos, S. Lobón, M. Joy, D. Villalba, I. Casasús, M. Blanco</i>	
The quality of traditional sheep, goat and cow cheeses from the mountain regions of the Polish part of the Carpathians	84
<i>A. Kawęcka, M. Pasternak-Choroszy, I. Peist, R. Garstka, M. Puchała</i>	
Metabolic properties and functional diversity of the microbial community in Fruhe/Casu axedu during cold storage	84
<i>M. Chessa, G. Carboni, N. P. Mangia</i>	
Association between milk quality and Somatic Cell Count with Pecorino cheese yield: a retrospective analysis.	85
<i>M. Farina, F. Correddu, G. Pulina, A. Nudda</i>	
Characterization of milk from Pura Raza Española mare's breed, first trial to valorise the Spanish equine sector	85
<i>M. S. Lara, A. Ponzio, M. I. Berruga, A. M. Molina</i>	

Session 6. Nutritional challenges, feed and forage resources for Mediterranean animal production

Date: Friday 22 May 2026; 9:00 - 12:00

Chair: Foggi / Cannas

Theatre Session 6

- Unveiling the potential of enzymatically pre-treated, vacuum paddle-dehydrated tomato pomace as a sustainable food resource for dogs** 86
M. M. Soares, C. Barroso, T. Aires, A. J. Fonseca, A. R. Cabrita
- Replacing cereals with former food products shifts nitrogen excretion and lowers apparent total tract digestibility in growing–finishing Pigs** 86
G. Bee, R. E. Amarie, M. Čandek-Potokar
- Post-absorptive nitrogen utilisation in pigs drives lower ammonia potential with low-protein diets** 87
A. Antonacci, P. Silacci, G. Bee
- Carcass traits and meat quality of Piedmontese bulls fed with a dietary inclusion of hazelnut skins** 87
E. Diaz Vicuna, A. Brugliapaglia, J. Mota-Gutierrez, K. Srikanthithasan, C. Bianchi, V. Zambotto, E. Fiorilla, B. Quaglino, C. Forte
- Agro-industrial by-products as sustainable feed ingredients: effects of pomegranate and hazelnut supplementation on dairy sheep milk quality** 88
A. Vastolo, A. Bosco, L. Rinaldi, G. Policastro, M. Fabbicino, M. I. Cutrignelli
- Effect of dietary winemaking by-product on milk fatty acid profile and methane emissions in Sarda dairy sheep** 88
A. Nudda, S. Carta, R. Steri, D. Meo Zilio, F. Correddu, G. Pulina
- Effects of feeding time on milk production and composition in Sarda ewes** 89
F. Castangia, M. A. Porcu, A. Ledda, A. S. Atzori, A. Cannas
- Ruminal fermentation of pasture-based diets from agroforestry and conventional systems: a Rusitec study** 89
G. Foggi, T. Malizzi, M. Finocchi, F. Cella, A. Silvi, A. Ripamonti, L. Turini, A. Mantino, M. Mele
- Comparison of enzymatic methods for estimating organic matter digestibility in forages** 90
E. Carboni, E. Manzocchi, P. Silacci, V. Novara, V. Z. Grilli, C. Mastroeni, A. Gallo
- The role of rumen fluid adaptation: an in vitro comparison of diet-adapted and non-diet-adapted rumen fluid for continuous CO₂ and CH₄ monitoring with Gas Endeavour** 90
R. Gannuscio, G. Maniaci, D. Gambino, M. Todaro

Poster Session 6

- Grape pomace as ingredient for extensively reared Churra lambs: effect on animal performance and fatty acid content** 91
S. E. Charef, C. Vieira, B. Martínez, J. J. García-García, A. Benito, S. Olmedo, R. Bodas
- Effects of partially replacing dehydrated lucerne with almond hulls on lamb growth performance and carcass traits** 91
K. Paulos, C. Mestre, A. P. V. Portugal, J. Costa, M. T. P. Dentinho, O. Gerreiro, A. Belo, E. Jerónimo
- Nutritional composition of almond hulls produced in southern Portugal** 92
E. Jerónimo, L. Cachucho, K. Paulos, O. Guerreiro, M. T. Dentinho

Replacement of soybean oil with black soldier fly larvae (<i>Hermetia illucens</i>) oil in post-weaning piglet diets: effects on performance and blood parameters	92
<i>M. Parreiras, D. Monteiro, V. Pinheiro, O. Moreira</i>	
Effect of the application of a phytogenic complex and a probiotic on the kinetic indicators of the semen of rams (Mutton Charollais) outside the breeding season	93
<i>N. Miteva</i>	
Characteristics of yogurt made from milk from goats fed with white grape pomace silage	93
<i>T. Romero, M. C. Beltrán, J. Carpintero, M. Gálvez-López, R. Montes, M. P. Molina</i>	
Effect of the inclusion of white grape pomace into the diet of dairy goats on the antioxidant capacity and lipid profile of ripened Tronchón type cheese	94
<i>T. Romero, M. C. Beltrán, A. Martínez, M. P. Molina, M. Rodríguez, C. Peris</i>	
effects of graded levels of <i>Mormodica balsamina</i> L. (Balsam apple) inclusion in complete diets on pre-weaning performance and nutrient utilization of Uda ewes and their lambs	94
<i>K. M. Aljameel, B. M. Musa</i>	
Mitigating Aflatoxin B1 Hepatotoxicity: The Role of Herbal-Mediated miRNA Regulation in Pigs	95
<i>G. Kalra, S. Sultana, N. Purohit, V. K. Asediya, C. S. Pareek, P. Sharma, K. Kibitlewska, A. A. Nalpadan, K. Wimmers</i>	
Effect of supplying individual doses of concentrates according to milk yield in mid-lactation dairy sheep	95
<i>M. A. Porcu, F. Castangia, A. Ledda, A. Cannas</i>	
Optimisation of rabbit feeding: effects of rapeseed-free diet on lipid profile, oxidative stability and sensory quality of meat	96
<i>C. Vieira Aller, A. Benito Díaz, B. Martínez Domínguez, R. Bodas Rodríguez, A. Sarmiento García, J. J. García García</i>	
Dietary Olive Pomace and Reproductive Performance of Majorcan Black Pigs	96
<i>J. Cladera, M. Llompарт, I. Sastre-Conde, P. A. Company, J. Jaume</i>	
Ensiled and dehydrated grape pomace in the production of lamb meat	97
<i>M. Ponte, S. Faryadi, R. Badalamenti, A. Bonanno, A. Di Grigoli</i>	
Effects of additives supplementation on milk production and health parameters in Sarda dairy ewes under heat stress	97
<i>A. S. Atzori, M. Contena, F. Castangia, L. Nieddu, A. Ledda</i>	
Long-term storage effects on physico-chemical characteristics, fermentation profile, microbiological quality and pathogen presence in baled silage	98
<i>L. Nieddu, M. Fresu, C. Mastroeni, A. Gallo, S. Zara, F. Fancello, A. S. Atzori</i>	
Almond hulls in lamb diets: effects on the physical and sensory quality of meat	98
<i>J. M. Almeida, C. Romão, M. R. Marques, K. Paulos, C. Mestre, O. Guerreiro, A. T. Belo, E. Jerónimo</i>	
Valorisation of <i>Posidonia oceanica</i> banquettes as a feed ingredient for cattle: an in vitro evaluation of rumen degradability, gas production and methane emission	99
<i>G. Attard, V. Lopreiato, L. Liotta, A. Minuti, A. Amato, M. Sfulcini, M. Lunetta, T. Meli, E. D'Alessandro</i>	

Inclusion of sainfoin in intensive beef cattle diets: implications for growth performance and nitrogen use efficiency	99
<i>D. Villalba, E. Molina, I. Casasús, M. Joy, M. Blanco</i>	
Influence of rearing system and geographic origin on gut microbiota diversity in <i>Tenebrio molitor</i>	100
<i>Á. Ramos-Martínez, J. Galián</i>	
Effects of sorghum and extruded sorghum as complete maize substitutes on growth performance and intestinal health of post-weaning piglets	100
<i>P. Trevisi, F. Palumbo, L. Laghi, A. Zurru, F. Correa, D. Luise</i>	
Effect of calving season on feeding behavior and body weight dynamics of native suckler cows in Mediterranean natural pastures	101
<i>S. Khater, G. Battacone, M. Decandia, V. Giovanetti, M. Acciaro</i>	
The dampwood termite <i>Hodotermopsis sjostedti</i> as a dietary source for broiler chickens	101
<i>Y. Tsukahara, N. Tomonaga, E. Tasaki, Y. Mitaka, S. Tomonaga, H. Kumagai, H. Hirooka, K. Matsuura</i>	

Session 7. Building resilience in Mediterranean Livestock farming systems

Date: Friday 22 May 2026; 9:00 - 11:00

Chair: Pouloupoulou

Theatre Session 7

Breeding for Resilience–GWAS insights from Baladi goats for sustainable parasite control*	102
<i>J. Shamaii, S. El Murr, M. Saad, R. Hindi, E. El Hajj, K. Houchaymi, B. Murdoch, J. Burke, K. Jawasreh, P. Aad</i>	
Physiological traits shaped by family structure and altitude in Lojeña sheep: insights into genetic selection for climate resilience	102
<i>C. Iglesias Pastrana, E. Díaz Ruiz, L. Marín Marín, M. Aguilera Ropero, M. E. Camacho Vallejo, J. V. Delgado Bermejo</i>	
Smart Family Livestock: Integrating AI and Structured Breeding to Enhance Resilience and Productivity of Mediterranean Native Breeds	103
<i>M. Djemali, A. Hamrouni, F. Ben Khalifa</i>	
Identifying “who and what” to mitigate: clustering-based carbon footprint profiles in European dairy sheep farms	103
<i>M. D. G. Azzena, C. Mussolino, B. Darabighane, O. Del Hierro, C. Buckley, S. Throude, G. Serra, C. Dragomir, A. S. Atzori</i>	
Greenhouse gas emissions from ruminant manure stockpiles in arid regions: mitigation strategies and microbial drivers	104
<i>M. Omirou, K. Philippou, A. Phokas, P. Pissaridou, J. Rodosthenous, C. Hadjimichael, K. Kaikiti, G. Hadjipavlou, D. Sparaggis</i>	
From management practices to technical performance in Italian dairy cattle farms	104
<i>G. S. Sechi, P. Bulgarelli, F. Salati, A. S. Atzori</i>	
Maternal Heat Stress and Antioxidant Nutrition: Consequences for Early Gut Microbiome Maturation in Iberian Piglets	105
<i>P. Vázquez-Ortego, P. Aranguren-Rivas, F. García, A. García-Cabrero, J. Segura, Á. Olivares, F. Sánchez-Esquiliche, G. Gómez-Mateos, C. Óvilo, J. M. García-Casco, A. Heras-Molina, M. Muñoz</i>	

Poster Session 7

- Reuse of Treated Swine Wastewater in a Hydroponic Forage Production System** 105
I. Rehan, O. Moreira, D. Murta, F. Rebelo, J. Costa, K. Paulos, F. Lidon, A. Almeida, M. D. F. Carvalho, K. Silvério, T. Santos, I. Lopes
- Method Development for Monitoring Heat Stress in Small Ruminants Using Multiplex Digital PCR** 106
J. Rodosthenous, T. Christofi, G. Hadjipavlou, M. Omirou
- The Andalusian turkey's rearing systems as an example of backyard poultry in Western Europe** 106
J. I. Salgado Pardo, A. González Ariza, J. V. Delgado Bermejo, I. Castro Castillo, C. Barba Capote, M. E. Camacho Vallejo
- Lambing Performance of Sarda Ewes Inseminated with Liquid-Stored Semen at 4 °C for up to 72 Hours.** 107
C. Nassif, F. Chessa, I. Cossu, G. Epifani, O. Todde, L. Mara
- Influence of maternal backfat thickness on Sarda piglet performance** 107
C. Mussolino, M. F. Lunesu, M. Cocco, A. Fenu, G. Battacone

The impact of age at first mating on lifetime productivity in Alpine goats

A. Kasap¹, D. Mulc², B. Mioč¹, V. Držaić¹, Z. Prpić¹, D. Jurković³, Z. Barać⁴, M. Špehar³

¹ University of Zagreb Faculty of Agriculture, Svetošimunska 25, 1000 Zagreb, Croatia, ² Ministry of Agriculture, Ulica grada Vukovara 78, 1000 Zagreb, Croatia, ³ Croatian Agency for Agriculture and Food, Svetošimunska 25, 10000 Zagreb, Croatia, ⁴ Croatian Association of sheep and goat breeders, Jarnovičeva 17c, 10000 Zagreb, Croatia

Summary This study investigated the relationship between age at first mating (AFM) and milk yield across the productive lifespan of Alpine goats in Croatia, utilizing data collected in accordance with ICAR standards provided by the Croatian Agency for Food and Agriculture. The analysis was based on a dataset comprising 3,200 lactation records from 720 individual goats across three commercial herds. To determine the effect of AFM on milk yield, a linear mixed-effects model was employed, accounting for the fixed effects of AFM and its interaction with parity, as well as litter size, goat's age, suckling and milking durations, season, and herd, while incorporating the individual goat as a random effect to control for repeated measures. Additionally, the impact of AFM on lifetime production (defined by the total number of lactations and cumulative milk yield) was analysed using a regression model restricted to culled animals. The results reveal a significant trade-off between early-life productivity and long-term biological efficiency. While initial regression analysis showed that goats with a lower AFM produce less milk in their first and second lactations (15.20 kg and 6.47 kg less per month of age, respectively), this deficit is effectively offset by an extended productive lifespan. Specifically, for every month of delay in first mating, goats lose 0.1027 of a lactation, leading to a significant reduction of 34.11 kg in total lifetime milk yield per one month of delay of first mating. These findings confirm that the higher initial yields observed in goats mated at an older age are insufficient to compensate for the cumulative loss caused by their shortened productive life. Ultimately, mating goats at an earlier age (while not below 7 months) leads to superior lifetime milk yield and improved economic sustainability for Alpine goat breeders. **Key words:** Alpine goat, age, first mating, parity, milk yield

Session 4

Poster 17

Practical aspects of extensive sheep grazing in Poland, with particular emphasis on mountainous areas

M. Puchala¹, R. Garstka¹, A. Kawecka¹, M. Pasternak-Choroszy¹, I. Peist¹

¹ National Research Institute of Animal Production, Department of Sheep and Goat Breeding, 2 Sarego, 31-047 Krakow, Poland

The main method of sheep management in Poland is the pasture-and-shed system. In mountainous areas, a purely grazing system is common. Mountainous areas under various forms of nature conservation are predisposed to extensive animal production. In addition to providing conditions for the development of the market for regional and traditional foods closely related to native sheep breeds, they also constitute an effective tool for landscape conservation. A project commissioned by Ministry of Agriculture and Rural Development analysed the use of sheep grazing in various regions of the country. The analysis took into account many aspects of breeding as a: the selection of grazing technology to meet the contemporary requirements of nature conservation and animal welfare, the assessment of grazing as an element of environmental programmes. Breeders indicated that, given low profitability of sheep farming, utilizing grazing is crucial as the cheapest and most effective source of feed. This approach reduces costs, labour input and time, and promotes the preservation of grassland biodiversity. Farmers also emphasized possibility of utilizing land unsuitable for any other purpose. In most regions of Poland, sheep farming focuses on the production of slaughter lambs, which is one of the main sources of income for farms derived from livestock. Lambs, once they reach a weight of 40-45 kg, are mainly sold for export, due to unstable domestic demand. However, the use of sheep for dairy purposes in Poland is limited primarily in mountainous regions, where milk processing plays a significant role. Other products derived from sheep farming, particularly wool and hides, are perceived by many farmers as unprofitable. Most respondents reported difficulties in managing and selling them, citing low purchase prices, often below the break-even point, despite growing consumer interest in regional and traditional products. Other problems among the surveyed farms included rising labour costs, a decreasing number of young people interested in taking over the farm, losses caused by predators attacking grazing flocks, and the high prices of medications, veterinary services, shearing, and fertilizers.