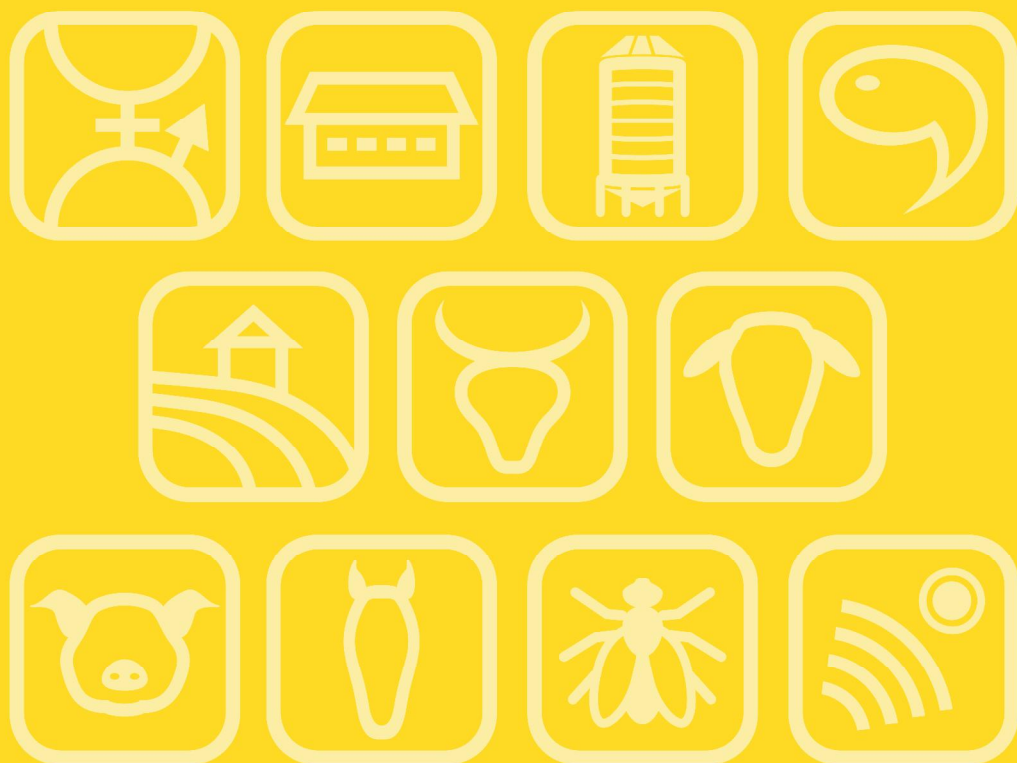


# Book of Abstracts

of the 75<sup>th</sup> Annual Meeting  
of the European Federation of Animal Science



**Book of Abstracts No. 34 (2024)**  
**Florence, Italy**  
**1-5 September, 2024**

Dietary crude protein reduction in poultry diets allows to decarbonize poultry meat and egg production with different levels of expected benefits across segments <i>M. Durand, A. Mathiaud, C. Raybaud, P. Moquet, W. Lambert</i>	448
Effect of fresh hemp and savory leaves on feed intake and rumen fermentation: in vitro and in vivo trials <i>S. Massaro, N. Amalfitano, D. Giannuzzi, F. Tagliapietra</i>	449
Effect of $\beta$ -mannanase on growing-finishing pig performance, economics, and carbon footprint <i>A. Huting, M. L. Augé, Q. Bringas, F. Molist</i>	449
Exploring Kaempferol 3-O-Glucoside as a Potential Feed Additive: In vitro Assessment for Mitigating Methane Emissions in Livestock Nutrition <i>A. Vastolo, M. Formato, S. Piccolella, S. Calabrò, S. Pacifico, M. I. Cutrignelli</i>	450
Quantifying methane emissions and animal performance from zero-grazed beef steers supplemented with <i>Ascophyllum nodosum</i> via a water-based delivery system <i>A. Casey, S. Vigers, T. Boland, F. Godwin, J. O'Sullivan, M. O'Donnell</i>	450
Effect of rape seed fat and saturated fat on milk production and enteric methane, when added to diets with different ratios between grass-clover and maize silage <i>C. F. Børsting, S. Lashkari, M. H. Kjeldsen</i>	451
Mango and Avocado Byproducts as Feed Ingredients and Additives in Ruminant diet <i>H. Jalal, E. Sucu, M. Giammarco, G. Vignola, M. Z. Akram, I. Fusaro</i>	451
Effect of <i>Cymbopogon citratus</i> on Enteric Methane Emission and Energy Partitioning in Growing Beef Cattle <i>M. F. Vázquez-Carrillo, M. González-Ronquillo, R. Zaragoza-Guerrero</i>	452
Including dried algae in dairy cow diets decreases emissions, yield and intensity of enteric methane <i>C. Benchaar</i>	452
<b>Poster Session 34</b>	
Phenotypic traits related to methane yield in dairy cows <i>M. H. Kjeldsen, T. De Evan Rozada, S. J. Noel, A. A. Schönherz, A. L. F. Hellwing, P. Lund, M. R. Weisbjerg</i>	453
Effects of high-fat oats, rapeseed cake, and 3-NOP on milk production and methane emissions of dairy cows <i>P. Fant, G. Mantovani, M. Vadroňová, M. Ramin</i>	453
Repeatability of enteric methane measurements using GreenFeed systems on upland pastures <i>M. Bouchon, M. Coppa, Y. Rochette, C. Pichon, R. Chadaigne, B. Martin, C. Martin</i>	454
Quebracho condensed tannins fed to dairy goats: effect on milk fatty acids and their use for CH <sub>4</sub> prediction <i>M. Battelli, F. Scicutella, G. M. Crovetto, A. Buccioni, L. Rapetti</i>	454
Dietary incorporation of Zinc-Beta glucan improves immune status, gut microbial composition, and mitigates gas emissions in weaning pigs <i>S. T. Wahid, S. Cho, M. H. Oh, K. Han, D. K. Kang, I. H. Kim</i>	455
<i>Enterococcus gallinarum</i> Reduce Methane Production in Rumen Fermentation In Vitro <i>M. A. Park, D. J. Lim, S. Park, S. Son, S. Choe, D. H. Kim, Y. Kim</i>	455
Insights into Effects of Combined Capric and Lauric Acid on Rumen Microbial Composition <i>M. Vadroňová, A. Šťovíček, K. Jochová, A. Výborná, Y. Tyrolová, D. Tichá, M. Joch</i>	456

### Repeatability of enteric methane measurements using GreenFeed systems on upland pastures

M. Bouchon<sup>1</sup>, M. Coppa<sup>3</sup>, Y. Rochette<sup>2</sup>, C. Pichon<sup>1</sup>, R. Chadaigne<sup>1</sup>, B. Martin<sup>2</sup>, C. Martin<sup>2</sup>

<sup>1</sup> INRAE, Herbipôle, Theix, 63122 Saint-Genes-Champanelle, France, <sup>2</sup> UCA, INRAE, VetAgro Sup, UMR Herbivores, Theix, 63122 Saint-Genes-Champanelle, France, <sup>3</sup> University of Turin, Dept. Agricultural, Forest and Food Sciences, Via Verdi 8, 10100 Turin, Italy

Plant diversity of mountain pasture has been shown to reduce enteric methane (CH<sub>4</sub>) production in vitro. In 2023, we set up an in vivo experiment to measure enteric CH<sub>4</sub> emission using GreenFeed (GF) systems and dairy performances of 28 grazing dairy cows on mountain pasture. After 3 weeks of being fed fresh grass indoor, they were taken out to extensively managed pasture for 9 weeks. Cows were allowed to graze large areas (from 1 to 3.5 ha), and 2 GF equipped with solar panels were accessible near the water trough. As lower frequency of animal visits to the GF at pasture than indoor was expected, our aim was to determine the minimum number of consecutive CH<sub>4</sub> spot measurements (CSM) to achieve a good repeatability of CH<sub>4</sub> data. As expected, the average number of visits per animal and per day (d) was  $2.6 \pm 0.42$  vs  $0.7 \pm 0.24$  during indoor vs grazing periods. Five to 20 CSM were randomly chosen within the set of available data per animal per period (indoor vs outdoor) and the draws were repeated 10 times. The analysis was repeated 5 times to evaluate the consistency of the results across draws. Results showed that a minimum of 15 CSM acquired in 12 and 29 d was necessary to achieve a similar repeatability of 0.53 and 0.50 indoor vs at pasture, respectively, with a low variability across repetitions and no effect of the interval between first and last CSM. If performances of GF measurement indoor or in small plots of intensive pasture are documented, it is the first time at our knowledge that their performances were studied under extensive grazing conditions on natural grasslands in Europe.

### Quebracho condensed tannins fed to dairy goats: effect on milk fatty acids and their use for CH<sub>4</sub> prediction

M. Battelli<sup>1</sup>, F. Scicutella<sup>2</sup>, G. M. Crovetto<sup>1</sup>, A. Buccioni<sup>2</sup>, L. Rapetti<sup>1</sup>

<sup>1</sup> University of Milan, Department of Agricultural and Environmental Sciences, via Celoria 2, 20133 Milan, Italy, <sup>2</sup> University of Florence, Dipartimento di Biotecnologie Agrarie sez. Scienze Animali, via delle Cascine 23, 50144 Florence, Italy

The aims of this study were: I) to test the effect of different levels of dietary inclusion (0, 2, 4, 6%) of condensed tannins (CT) extract from quebracho (QE, 71% CT) on goat milk fatty acids (FA), II) develop prediction equations for CH<sub>4</sub> emission of goats using milk FA. A repeated 4×4 Latin square design was applied using 8 goats housed in respiration chambers where CH<sub>4</sub> emission was measured. The diets were composed by a dry basal ration plus a cereal meal supplement containing the different levels of QE. Milk was analysed for FA by gas chromatography. The effect of QE on FA composition was statistically tested with a mixed procedure, considering as fixed effects the experimental square, period, and treatment, with the animal selected as random effect. Multivariate analysis was performed using the stepwise procedure. Only variables with P<0.1 entered the model, and variables with P<0.05 were retained in the final model. The inclusion of QE increased polyunsaturated FA and the ratio cis-9 14:1/(14:0 + cis-9 14:1), considered the best proxy of the desaturation activity of mammary Stearoyl Co-A desaturase enzyme. Multivariate analysis resulted in equations: CH<sub>4</sub> (g/kg DMI) =  $37.7 (\pm 2.97) - 2.87 (\pm 1.15) \times C6:0 - 129 (\pm 19.3) \times \text{trans-6,8 18:1} + 40.6 (\pm 10.1) \times \text{trans-12 18:1} + 11.9 (\pm 4.26) \times \text{cis-11 18:1} - 7.76 (\pm 1.96) \times \text{cis-9, cis-12, cis-15 18:3} - 85.4 (\pm 27.0) \times \text{cis-5, cis-8, cis-11, cis-14, cis-17 20:5}$  (adjR<sup>2</sup> = 0.88), and CH<sub>4</sub> (g/kg FPCM) =  $19.3 (\pm 2.38) - 5.21 (\pm 1.21) \times \text{trans-11 18:1} + 19.3 (\pm 6.47) \times \text{cis-9 10:1} - 9.54 (\pm 3.76) \times \text{cis-11 18:1}$  (adjR<sup>2</sup> = 0.83). Milk FA showed a good potential to predict CH<sub>4</sub> emissions in goats.