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Estimated energy balance of ewes grazing in rangelands

Eliel González García, Dagiale Tagliatella, Magali Jouven Pouderoux Jouven,
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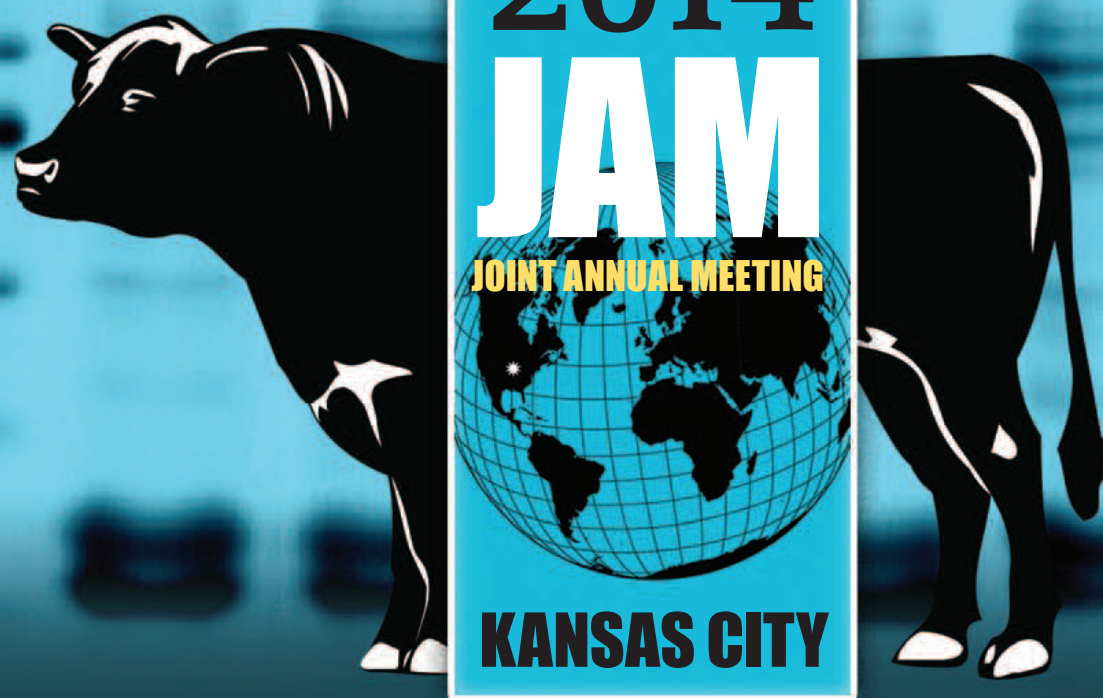
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TABLE OF CONTENTS

ORAL SESSIONS

SECTION & SESSION	ABSTRACT	PAGE
ADSA FOUNDATION SYMPOSIUM		
Meeting the Present and Future Demand For Employees with a PhD in Dairy Science.....	1-5.....	1
ADSA SOUTHERN SECTION SYMPOSIUM		
Strategies for Housing Dairy Animals in the Southeast.....	6-10.....	3
ADSA-ASAS NORTHEAST SECTION SYMPOSIUM		
Opportunities to Meet Changing Consumer Preferences for Animal Products.....	11-13.....	6
ADSA-SAD UNDERGRADUATE STUDENT PAPER COMPETITION		
ADSA-SAD Undergraduate Presentations–Dairy Foods.....	14-17.....	8
ADSA-SAD UNDERGRADUATE STUDENT PAPER COMPETITION		
ADSA-SAD Undergraduate Presentations–Dairy Production.....	18-23.....	10
ADSA-SAD UNDERGRADUATE STUDENT PAPER COMPETITION		
ADSA-SAD Undergraduate Presentations–Original Research.....	24-31.....	13
ANIMAL BEHAVIOR AND WELL-BEING		
Animal Behavior & Well-Being I.....	32-38.....	16
Animal Behavior & Well-Being II.....	39-46.....	20
Animal Behavior & Well-Being III.....	47-51.....	24
Animal Behavior & Well-Being IV.....	52-59.....	27
ANIMAL HEALTH		
Animal Health Symposium I: Animal Health Research From the Perspective of Information Gaps.....	60-63.....	31
Animal Health I: Models of Disease and Stress.....	64-75.....	33
Animal Health Symposium II: Optimizing Disease Response Modeling.....	76-79.....	39
Animal Health II: Host–Microbial Interactions: Detection and Intervention.....	80-90.....	41
Animal Health III: Periparturient and Lactation Health.....	91-101.....	46
ARPAS SYMPOSIUM		
ARPAS Symposium: Customer/Consumer Confidence in the Livestock Industry–Ethics.....	102-105.....	52
ASAS CELL BIOLOGY SYMPOSIUM		
Long-Term Consequences of Maternal and Neonatal Nutrition for Pregnancy and Postnatal Outcomes.....	106-108.....	54
ASAS Graduate Student Symposium		
Research Ethics: What Are They and Why Are They Needed?.....	109-111.....	56
Beef Cattle Reproduction Symposium		
Rebuilding the U.S. Cowherd: Rethinking the Way Industry Selects and Develops Replacements.....	112-116.....	58
BEEF SPECIES		
Making More, But Using Less: The Future of the U.S. Beef Industry with a Reduced Cowherd and the Challenge to Feed the U.S. and the World; <i>Session 1</i> . The U.S. Stocker and Feedlot Industries.....	117-120.....	61
Making More, but Using Less: The Future of the U.S. Beef Industry with a Reduced Cowherd and the Challenge to Feed the U.S. and the World; <i>Session 2</i> . The Cow–Calf Industry.....	121-125.....	63
Cow–calf.....	126-136.....	65
Stocker and Feedlot.....	137-143.....	70
Feed Additives.....	144-151.....	74
BREEDING AND GENETICS		
Applications and Methods in Animal Breeding–Dairy I.....	152-158.....	78
Genetic and Genomic Methods.....	163-169.....	82

Applications and Methods in Animal Breeding–Livestock II	170-173	85
Applications and Methods–Molecular Biology	174-179	87
COMPANION ANIMALS		
Companion Animal Nutrition and Pet Food Processing	180-187	90
Companion Animals and Sustainability: Today’s Impact on the Future	188-192	94
George C. Fahey Companion Animal Nutrition Symposium: Preparing Future Companion Animal Biologists	193-196	97
COMPARATIVE GUT PHYSIOLOGY SYMPOSIUM		
Comparative Physiology of Lower Gut	198-209	99
CSAS GRADUATE STUDENT ORAL COMPETITION		
CSAS Oral Student Presentation Competition	212-228	105
CSAS SYMPOSIUM		
Understanding Feeding Behaviour to Improve Animal Well-being and Productivity	229-232	114
DAIRY FOODS		
Symposium: Advances in Delivery of Dairy Ingredients for Health and Functional Benefits	233-237	116
Technical Oral Session: Cheese / Yogurt / Ice Cream	238-247	118
Symposium: Protein Functionality in Cheese Systems: Natural, Process Cheese and Analogs	248-252	123
Symposium: Milk Protein-Hydrocolloid Interactions: Recent Impacts	253-256	125
Technical Oral Session: Analytical / Processing	257-265	127
Technical Oral Session: Protein / Polysaccharide Interactions	266-275	131
Symposium: Dairy Foods Consumption, Gut Microbiota and Human Health	276-280	136
EAAP EQUINE SYMPOSIUM		
Know-how and Future Challenges for Developing the Horse Sector in Europe: The Activity of the EAAP Horse Commission	281-285	139
EXTENSION EDUCATION		
Extension Education	286-291	142
Decision Support Tools in Extension	292-294	145
FOOD SAFETY		
Global Challenges to a Safe Food Supply	295-296	147
Food Safety: Advances in Food Safety	299-303	148
FORAGES AND PASTURES		
Forages and Pastures I, Silages	304-312	151
Forages and Pastures Symposium: Use of Marginal Lands and Fibrous Byproducts in Efficient Beef and Dairy Production Systems	313-316	155
Forages and Pastures II, Forages for Livestock Systems	317-324	157
GRADUATE STUDENT COMPETITION: ADSA DAIRY FOODS ORAL		
ADSA Dairy Foods Division Oral Competition	325-333	161
GRADUATE STUDENT COMPETITION: ADSA PRODUCTION ORAL, MS		
ADSA Production Oral Competition, MS	334-347	166
GRADUATE STUDENT COMPETITION: ADSA PRODUCTION ORAL, PhD		
ADSA Production Oral Competition, PhD	348-358	173
GRADUATE STUDENT COMPETITION: ADSA SOUTHERN SECTION ORAL		
Graduate Student Competition: ADSA Southern Section Oral	359-360	179
GRADUATE STUDENT COMPETITION: ADSA-ASAS NORTHEAST SECTION ORAL		
ADSA/ASAS Northeast Branch Graduate Student Competition	361-369	180
GROWTH AND DEVELOPMENT		
Growth & Development	370-376	185
Joint Meat Science & Muscle Biology, and Growth & Development Symposium: Applications of Proteomics in Animal Production	377-381	189
HORSE SPECIES		
Advances in Equine Stem Cell Biology	382-384	191

Horse Species	385-392	193
Developmental Programming: Applications in the Horse	393-395	197
INTERNATIONAL ANIMAL AGRICULTURE		
International Animal Production	396-399	199
Global Prospective of Livestock Production Systems to Meet the Growing Need for Animal Protein in Human Diets: Impacts on Production and Human Health	402-403	201
LACTATION BIOLOGY		
Lactation Biology I	404-411	202
Lactation Biology II	412-418	206
MEAT SCIENCE AND MUSCLE BIOLOGY		
Meat Science & Muscle Biology	419-429	210
MULTIDISCIPLINARY AND INTERNATIONAL LEADERSHIP KEYNOTE (MILK) SYMPOSIUM		
Water: Consideration for the Future of Animal and Food Production and Processing	430-434	216
NONRUMINANT NUTRITION		
Nutrient Requirements of Monogastrics and Amino Acid Digestibility of Feedstuffs	435-446	218
Nutrient Digestibility of Ingredients for Monogastric Diets	447-457	224
Functional Amino Acids: New Paradigm Shifts in Understanding Animal Protein Nutrition	458-462	229
Fat, Fiber, Fermentation, and Residual Feed Intake	463-473	231
Feed Additives, Enzymes, and Dietary Supplements	474-485	236
PHYSIOLOGY AND ENDOCRINOLOGY		
Pregnancy, Placentation and Reproductive Health in Ruminants	486-497	242
Interrelationships Between Environmental, Metabolic and Physiological Processes I	498-508	248
Interrelationships Between Environmental, Metabolic and Physiological Processes II	509-520	254
Novel Approaches to Improving Reproductive Success in Domestic Animals	521-530	260
Reproductive Success in Ruminants: A Complex Interaction Between Endocrine, Metabolic and Environmental Factors	531-535	265
Advances in Estrous Synchronization	536-546	268
PRODUCTION, MANAGEMENT, AND THE ENVIRONMENT		
Influence of Diet and Management Practices on Environmental Footprint	547-552	274
Animal Health: A Retrospective Look	553-558	277
Nutrition and Management	559-565	281
Economics of Different Management Practices	566-577	285
Effects of Temperature on Performance	578-588	291
RUMINANT NUTRITION		
Ruminant Nutrition I	589-600	296
Ruminant Nutrition II	601-612	302
Ruminant Nutrition III	613-624	308
Symposium: The Rumen Microbiome and Nutritional Health and Production	625-630	313
Ruminant Nutrition IV	631-642	316
Ruminant Nutrition V	643-654	322
Ruminant Nutrition VI	655-666	328
Ruminant Nutrition VII	667-674	334
Ruminant Nutrition VIII	675-682	338
Ruminant Nutrition IX	683-694	342
The Glen Broderick Symposium – Improving Nitrogen Utilization in Dairy Cows	695-700	348
Ruminant Nutrition X	701-711	351
Ruminant Nutrition XI	712-723	357
SMALL RUMINANT		
Small Ruminant	724-734	363
Sustainable Small Ruminant Production Strategies to Meet Global Demands	735-740	369
SWINE SPECIES		
Mini-Symposium: Opportunities and Challenges with the Use of Carbohydrase and Protease Enzymes in Swine Formulations	741	372
Swine Species Reproduction and Management	742-748	373
Procedures and Methodology for Determining SID Amino Acid Digestibility and Energy of Feedstuffs	749-751	377
Swine Species Nutrition	752-761	379

TEACHING/UNDERGRADUATE AND GRADUATE EDUCATION

Teaching: Undergraduate and Graduate Education.....	762-773.....	384
-----------------------------------------------------	--------------	-----

TRIENNIAL LACTATION SYMPOSIUM

Triennial Lactation Symposium.....	774-780.....	390
------------------------------------	--------------	-----

WORKSHOPS

Crafting USAID’s Livestock Research Agenda – Animal Science Priorities Under Feed the Future.....	781-786.....	393
------------------------------------------------------------------------------------------------------	--------------	-----

POSTER SESSIONS

SECTION & SESSION	ABSTRACT	PAGE
ADSA-SAD UNDERGRADUATE STUDENT PAPER COMPETITION		
ADSA-SAD Undergraduate Original Research Poster Competition.....	787-790 (M001-M004).....	395
ANIMAL BEHAVIOR AND WELL-BEING		
Animal Behavior & Well-Being I.....	791-801 (M005-M015).....	397
Animal Behavior & Well-Being II.....	802-826 (W001-W025).....	402
ANIMAL HEALTH		
Models of Animal Immune Status and Performance.....	827-853 (M016-M042).....	414
Calf Health.....	854-863 (T001-T010).....	427
Cow and Heifer Health.....	864-884 (W026-W046).....	432
ASAS UNDERGRADUATE STUDENT POSTER COMPETITION		
ASAS Undergraduate Student Poster Competition.....	885-904 (T011-T030).....	443
BEEF SPECIES		
Feedlot and Stocker.....	905-914 (T031-T040).....	452
Cow-Calf and Bull.....	915-928 (W047-W060).....	457
BREEDING AND GENETICS		
Applications and Methods in Animal Breeding–Beef.....	929-938 (M043-M052).....	464
Genomic Methodology.....	939-942 (M053-M056).....	469
Applications and Methods in Animal Breeding–Dairy II.....	943-950 (T041-T048).....	471
Applications and Methods in Animal Breeding–Poultry.....	951-956 (T049-T054).....	475
Applications and Methods in Animal Breeding–Livestock I.....	957-961 (W061-W065).....	478
Molecular Biology and Genomics.....	962-968 (W066-W072).....	481
Companion Animal Nutrition.....	969-978 (T055-T064).....	485
CSAS GRADUATE STUDENT POSTER COMPETITION		
CSAS Student Poster Presentation Competition.....	979 -988 (M057-M066).....	490
DAIRY FOODS		
Technical Session I: Cheese / Yogurt.....	989-1006 (M067-M084).....	495
Technical Session II: Analytical / Processing.....	1007-1018 (T065-T076).....	503
Technical Session III: Fluid Milk.....	1019-1036 (W073-W090).....	509
EXTENSION EDUCATION		
Extension Education Posters.....	1037-1052 (T077-T092).....	517
FOOD SAFETY		
Food Safety.....	1053-1067 (T093-T106).....	525
FORAGES AND PASTURES		
Forages and Pastures I: Silages and Forages in Dairy Production Systems.....	1068-1094 (M085-M111).....	532
Forages and Pastures II: Forages in Beef Production Systems.....	1095-1103 (T108-T116).....	544
Forages and Pastures III: General Forages and Forage Systems.....	1104-1128 (W091-W115).....	548
STUDENT POSTER COMPETITIONS		
ADSA Dairy Foods Division.....	1129-1138 (M112-M121).....	560
ADSA Production, MS.....	1139-1148 (M122-M131).....	565
ADSA Production, PhD.....	1149-1160 (M132-M143).....	570

GROWTH AND DEVELOPMENT		
Growth & Development I	1161-1179 (T117-T135).....	576
Growth & Development II	1180-1197 (W116-W133).....	585
HORSE SPECIES		
Horse Species I	1198-1205 (T136-T143).....	594
Horse Species II	1206-1212 (W134-W140).....	598
INTERNATIONAL ANIMAL AGRICULTURE		
International Animal Production.....	1213-1221 (T144-T152).....	601
LACTATION BIOLOGY		
Lactation Biology I	1222-1231 (M144-M153).....	606
Lactation Biology II	1232-1241 (W141-W150).....	611
MEAT SCIENCE AND MUSCLE BIOLOGY		
Meat Science & Muscle Biology I.....	1242-1249 (M154-M161).....	617
Meat Science & Muscle Biology II.....	1250-1263 (T153-T166).....	621
Meat Science & Muscle Biology III	1264-1277 (W151-W164).....	627
MILK PROTEIN AND ENZYMES		
Milk Proteins & Enzymes.....	1278-1287 (T167-T176).....	634
NONRUMINANT NUTRITION		
Amino Acid, Mineral and Energy Nutrition in Monogastrics.....	1288-1313 (M162-M187).....	639
The Impact of Feed Additives on the Health and Performance of Swine and Poultry	1314-1346 (T177-T209).....	651
Evaluation of Feed Ingredients for Monogastric Diets	1347-1364 (W165-W182).....	667
Factors Impacting Feed Intake	1365-1370 (W183-W188).....	675
PHYSIOLOGY AND ENDOCRINOLOGY		
Physiology and Endocrinology I.....	1371-1399 (M188-M216).....	678
Physiology and Endocrinology II	1400-1428 (T210-T238).....	692
Physiology and Endocrinology III.....	1429-1455 (W189-W215).....	705
PRODUCTION, MANAGEMENT, AND THE ENVIRONMENT		
Influence of Diet and Management on Health and Performance.....	1456-1479 (M217-M240).....	718
Management and Heat Stress	1480-1504 (T239-T263).....	728
Reducing the Environmental Footprint Through Nutrition and Management.....	1505-1526 (W216-W237).....	740
RUMINANT NUTRITION		
Ruminant Nutrition I	1527-1650 (M241-M364).....	750
Ruminant Nutrition II.....	1651-1778 (T264-T391).....	809
Ruminant Nutrition III.....	1779-1898 (W238-W357).....	868
SMALL RUMINANT		
Small Ruminant I.....	1899-1916 (M365-M382).....	924
Small Ruminant II.....	1917-1936 (W358-W377).....	932
SWINE SPECIES		
Swine Species Reproduction and Management.....	1937-1947 (M383-M393).....	941
Swine Species Nutrition	1948-1954 (W378-W384).....	946
TEACHING/UNDERGRADUATE AND GRADUATE EDUCATION		
Teaching/Undergraduate and Graduate Education.....	1955-1962 (W385-W392).....	950
Physiology And Endocrinology: Interrelationships Between Environmental, Metabolic And Physiological Processes I.....		954
ASAS Early Career Winner.....		954
Author Index.....		955
Keyword Index.....		987

PHYSIOLOGY AND ENDOCRINOLOGY III

1429 (W189) Estimated energy balance of periparturient ewes grazing in rangelands. E. González-García^{*1}, D. Tagliatella², M. Jouven³, and F. Bocquier³, ¹INRA UMR868 Systèmes d'Élevage Méditerranéennes et Tropicaux (SELMET), Montpellier, France, ²Universidade Estadual de Londrina (UEL), Rodovia Celso Garcia Cid, Campus Universitário, Londrina, Brazil, ³Montpellier Supagro, Sciences Animales, UMR868 Systèmes d'Élevage Méditerranéennes et Tropicaux (SELMET), Montpellier, France.

In a previous work we demonstrated that efficiency in body reserves (BR) mobilization/accretion was affected by parity [multiparous (MULT) ewes being more flexible than primiparous], litter size and physiological stage (peaks of BR mobilization attained around lambing and 1 mo after mating). The objective of this study was to estimate the dynamic individual energy balance of periparturient MULT Romane grazing ewes, from 15 d before until 15 d after lambing. A group of MULT ewes ($n = 20$), allocated according to litter size (lambing and suckling singletons, SING- $n = 10$, or twins, TWIN- $n = 10$) was used. Details on management and feeding were reported by González-García et al. (2014). At late pregnancy, ewes were in rotational grazing of native rangeland and supplemented with 0.7, 2.0 and 0.8 kg/d of hay (*Dactylus glomerata* and alfalfa), silage (*Lolium perenne* and alfalfa) and barley, respectively. After lambing, ewes were fed on fertilized paddocks without supplementation. Individual progression of BW, BCS, plasma NEFA as well as ADG of lambs was considered for energy balance interpretation. Some estimation is established based on NRC (2007) recommendations. Data were analyzed using the PROC MIXED of SAS (2007) with repeated measures. During the last 4 wk of gestation, one 50 kg ewe from this flock is estimated to display a daily consumption of around 1.6 kg of DM (3.2% BW) to support around 180 g of BW gain, requiring 3.4 mcal of ME. During the first 6–8 wk lactation, feed intake is affected by litter size (NRC, 2007; 2.1 or 2.4 kg of DM/d for ewes suckling SING or TWIN; 4.2 or 4.8% BW, respectively) with an increase in energy requirement of 4.9 or 5.6 mcal of ME for SING or TWIN, respectively. At late pregnancy, a positive energy balance of > 1.1 mcal/d was observed (4.7 mcal of ME vs. 3.6 of ME requirements) due to the advantageous supplementation regime established in the farm. Paradoxically, at this stage (late pregnancy) NEFA values showed a peak in BR mobilization. After lambing, ewes suckling SING and TWIN were both required to mobilize their BR to meet energy requirement despite the high quality of the fertilized paddocks and the BW increase. More precise and targeted studies are required to better address the combined anabolic and catabolic

phases experimented under the conditions of this experiment in periparturient ewes. Reference: González-García E. et al. (2014). Domestic Animal Endocrinology 46:37–48.

Key Words: periparturient ewes, rangelands, energy balance, body reserves

1430 (W190) Effects of adsorbent on milk aflatoxin M1 and lactation performance of dairy cows exposed to long-term challenge of aflatoxin B1. J. L. Xiong¹, Y. M. Wang^{*2}, W. M. Huang¹, Y. Zhang¹, H. M. Guo¹, and J. X. Liu³, ¹Institute of Dairy Science, Zhejiang University, Hangzhou, China, ²Novus International Trading Co., Ltd, Shanghai, China, ³Zhejiang University, Hangzhou, China.

The objective of the study was to evaluate the effects of adsorbent on milk aflatoxin (AF) M1 and lactation performance of dairy cows exposed to long-term challenge of AFB1. Forty dairy cows were blocked based on days in milk (33 ± 7 ; mean \pm SD) and milk production (33.9 ± 3.1 kg; mean \pm SD), and were randomly assigned to one of four treatments in a 2×2 factorial arrangements with AFB1 (0 or 20 $\mu\text{g}/\text{kgDM}$) and Solis Mos (Novus International Inc., 0 or 0.25% of DM). The experiment lasted 9 wk, with the first week for adaptation. Milk yield and milk composition were recorded weekly, and serum concentrations of biochemical and antioxidant variables were analyzed in the first and the last week of the experiment. Milk AFM1 was analyzed by HPLC-MS/MS. Variables of data were analyzed using the PROC MIXED of SAS. Dry matter intake, milk yield, contents of milk protein and milk fat, and linear somatic cell count averaged 23.9 kg/d, 35.5 kg/d, 2.9%, 3.6%, and 5.1, respectively and were not affected ($P > 0.05$) by either AFB1 or Solis Mos supplement. Addition of Solis Mos in AFB1-contaminated diet significantly reduced ($P < 0.01$) milk AFM1 concentration (0.19 vs. 0.13 $\mu\text{g}/\text{kg}$) and transfer rates (1.38 vs. 0.89%). Dairy cows fed AFB1-contaminated diet had lower level of superoxide dismutase activity, total antioxidant capacity, glutathione peroxidase, IgG and IgA ($P < 0.05$), and higher level of malondialdehyde in plasma ($P < 0.05$). Inclusion of Solis Mos into diets increased the plasma superoxide dismutase activity, total antioxidant capacity, and IgG, while decreased malondialdehyde ($P < 0.05$). Neither AFB1 nor Solis Mos affected ($P > 0.05$) the plasma levels of alanine transaminase, aspartate aminotransferase, and alkaline phosphatase and IgM. It is concluded that inclusion of Solis Mos did not affect lactation performance, but reduced milk AFM1 concentration and transfer rate, and increased antioxidant capacity and immunity in early-lactating dairy cows exposed to long-term challenge of AFB1.

Key Words: adsorbent, aflatoxin, transfer