

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. The U.S.</i> 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. The Cow–Calf Industry</i>	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
GRADUATE 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