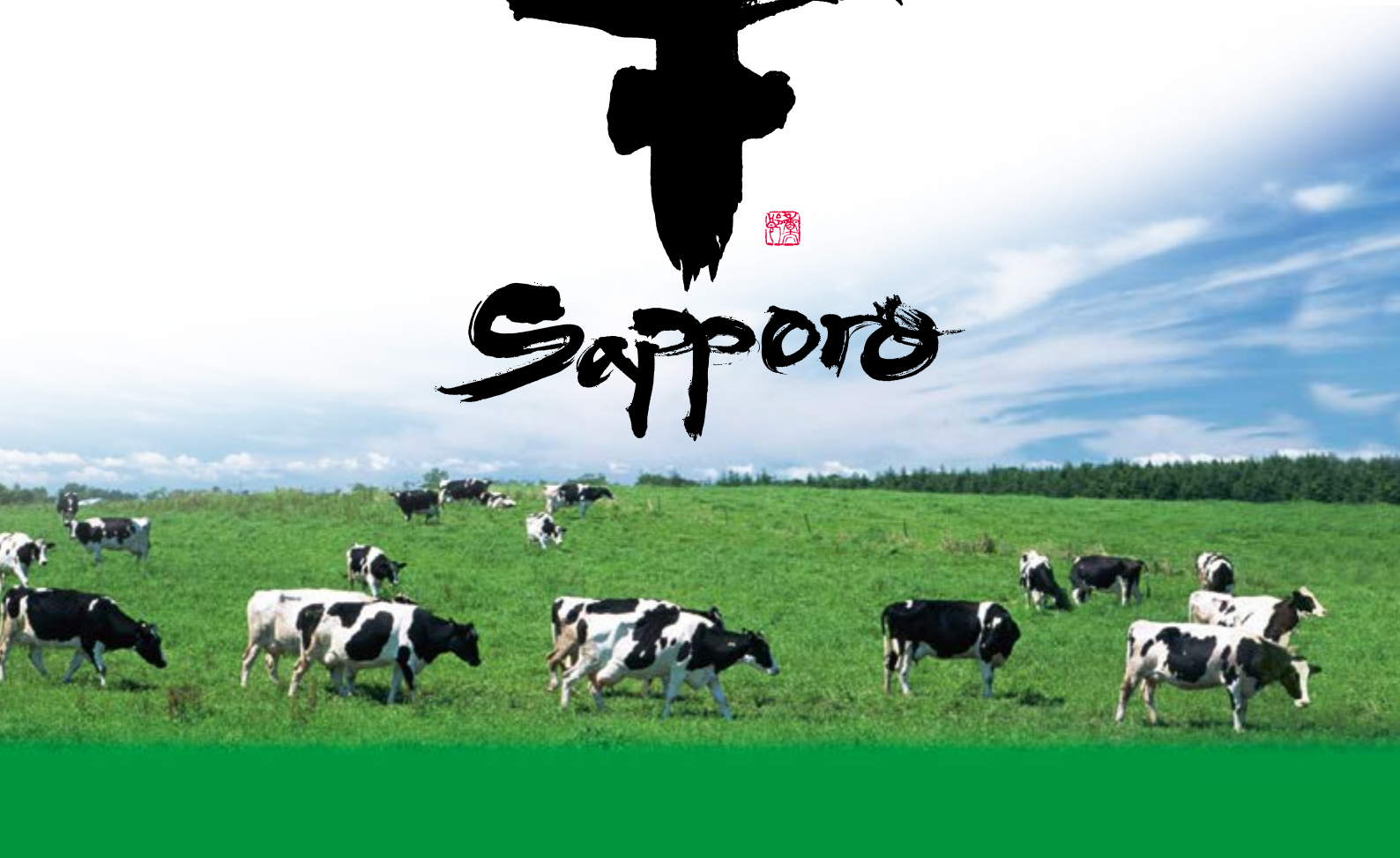
Abstract Book

Keynote Lectures, Oral and Poster Presentations

The 30th World Buiatrics Congress
August 28 to September 1, 2018
Sapporo, Japan



WBC 2018 SPONSORS

The WBC 2018 organizing Committee wishes to thank our sponsors for the support.

Platinum Sponsor

Boehringer Ingelheim

miyarisan

zoetis

Major Sponsor

BAYER

Elanco

FUJITA PHARM

KYOTOBIKEN

Kyoritsu Seiyaku

ZENOAQ ゼノアック

MSD Animal Health

Standard Sponsors

meiji

東亜薬品工業株式会社 Toa Pharmaceutical Co.,LTD.

Media Sponsors

Midori Shobo Co.,Ltd

International Dairy Topics

ABSTRACT BOOK

The 30th World Buiatrics Congress

August 28 to September 1, 2018

Sapporo, Japan

Hosts:

Organizing Committee for WBC 2018 Sapporo

The Japanese Society of Farm Animal Veterinary Medicine, Japan Veterinary Medical Association

Co-Host:

Hokkaido Veterinary Medical Association

Supporting Organizations:

Ministry of Agriculture, Forestry and Fisheries / Japan Tourism Agency / Hokkaido Government / City of Sapporo / Rakuno Gakuen University / Obihiro University of Agriculture and Veterinary Medicine / Graduate School of Veterinary Medicine, Hokkaido University / National Agriculture and Food Research Organization / Federation of the Hokkaido Agricultural Mutual Aid Association / Hokkaido Prefectural Union of Agricultural Co-operatives / Hokuren Federation of Agricultural Cooperatives / Japanese Society of Veterinary Clinics / Large Animal Clinic Research Association / Large Animal Image Diagnostic Study Association / Society for Veterinary Researches on Fluid Therapy in Large Animal Practice / Society of Farm Animal in Infectious Diseases / Japanese Society of Bovine Mastitis / Japan Farriery Association / The Hokkaido Association for Guidance on Disease Prevention and Control / Kyushu-Okinawa Society for Large Animal Medicine / Japanese Society of Clinicport Bovine Parasitology / Japanese Society of Veterinary Anesthesia and Surgery

Secretariat:

WBC 2018 Congress Secretariat

c/o Convention Linkage, Inc.

Hokkaido Bldg., 4-1 Kita2-Jo-Nishi, Chuo-ku, Sapporo 060-0002, Japan

E-mail: wbc2018@c-linkage.co.jp

LIST OF THE BIENNIAL "WORLD BUIATRICS CONGRESSES"

	Year	Venue		Year	Venue
1	1960	Hannover (Germany)	16	1990	San Salvador da Bahia (Brazil)
2	1962	Vienna (Austria)	17	1992	St Paul (USA)
3	1964	Copenhagen (Denmark)	18	1994	Bologna (Italy)
4	1966	Zurich (Switzerland)	19	1996	Edinburgh (Scotland)
5	1968	Opatija (Yugoslavia)	20	1998	Sydney (Australia)
6	1970	London (UK)	21	2000	Punta del Este (Uruguay)
7	1972	Philadelphia (USA)	22	2002	Hannover (Germany)
8	1974	Milan (Italy)	23	2004	Quebec (Canada)
9	1976	Nice (France)	24	2006	Nice (France)
10	1978	Mexico City (Mexico)	25	2008	Budapest (Hungary)
11	1980	Tel Aviv (Israel)	26	2010	Santiago (Chile)
12	1982	Amsterdam (The Netherlands)	27	2012	Lisbon (Portugal)
13	1984	Durban (South Africa)	28	2014	Cairns (Australia)
14	1986	Dublin (Ireland)	29	2016	Dublin (Ireland)
15	1988	Palma de Mallorca (Spain)	**30**	**2018**	**Sapporo (Japan)**

WORLD ASSOCIATION FOR BUIATRICS

President

Emile Bouchard, Canada

Past President

Walter Baumgartner, Austria

Vice-presidents

Luis Poo, Chile

Motoshi Tajima, Japan

Secretary General

Arcangelo Gentile, Italy

Treasurer

David H. Black, UK

Committee Members

Saïd Alali, Morocco

Ricardo Spacagna Jordao, Brazil

M. Gatz Riddell, JR., USA

Francois Schelcher, France

Octavio Campuzano, Mexico

Juan V. Gonzalez-Martin, Spain

Przemyslaw Sobiech, Poland

Bo Han, China

Peter Heimberg, Germany

Norman Bruce Williamson, New Zealand

Honorary Presidents

H.J. Breukink, The Netherlands

Honorary Secretary General

M. Stöber, Germany

P. Lekeux, Belgium

Honorary ExCo Members

R.G. Eddy, UK

K. Hamana, Japan

H.R. Han, Korea

W. Hofmann, Germany

A.D. Weaver, UK

WBC 2018 ORGANIZING COMMITTEE

President: Motoshi Tajima
Shigeru Sato
Toru Takahashi
Hideo Iso
Hisashi Inokuma
Shinpei Okamoto
Toshihiko Nakao
Masashi Nagano
Kazuhiro Nakamura
Tomohito Hayashi
Kiyokazu Mori
Norio Yamagishi
Takeo Sakai
Masato Sakai
Katsumi Hamana

WBC 2018 SCIENTIFIC COMMITTEE

President: Toshihiko Nakao
Masato Akiba
Takaaki Ando
Tomohito Hayashi
Hidetoshi Higuchi
Hisashi Inokuma
Hideo Iso
Mutsuyo Kadohira
Seiji Katagiri
Kazuhiro Kawai
Katsuya Kida
Satoru Konnai
Naoaki Misawa
Masashi Nagano
Shin Oikawa
Takeshi Osawa
Hiromichi Otsuka
Hiroshi Sato
Yasunobu Suzuki
Kiyoshi Taguchi
Motoshi Tajima
Mitsuhiro Takagi
Takeshi Tsuka
Yutaka Tamura
Norio Yamagishi

WBC 2018 INTERNATIONAL SCIENTIFIC COMMITTEE

Christer Bergsten, Sweden
Parkash Singh Brar, India
Joe Brownlie, UK
Sébastien Buczinski, Canada
Dörte Döpfer, USA
Jan P. Ehlers, Germany
Massimo Giangaspero, Italy
Jesse P. Goff, USA
Ikuo Igarashi, Japan
Doo Kim, Korea
Theo J.G.M Lam, Netherlands
Inhyung Lee, Korea
Bonnie Mallard, Canada
John Frederick Mee, Ireland
Claro N. Mingala, Philippine
Jos P.T.M. Noordhuizen, France
Pamela Ruegg, USA
Tetsuya Seo, Japan
Martin Sheldon, UK
Mark Stevenson, Australia
Richard Whittington, Australia

PREFACE

The World Buiatrics Congress (WBC) has been held biennially in different countries in the world since the first congress was held in Hannover in 1960.

It is a great honor and pleasure for Japan to organize the 30th WBC in Sapporo in 2018. This is the first WBC to be held in Asia, the world economic growth center and a promising region for further development of the animal industry.

Approximately 1.5 billion cattle and buffaloes and 2.2 billion goats and sheep are being raised in the world, and their products, particularly milk and meat, are imperative sources of protein for human beings. The development of the animal industry has been supported by advances in bovine medicine and bovine and other ruminant health management.

The WBC provides a unique opportunity for practitioners, researchers, consultants, students, and other specialists to share their knowledge and experiences in relevant fields.

We are very pleased to have received 756 abstracts from all over the world for presentation at WBC2018. We are also proud that a far greater number of abstracts than ever before have been submitted from colleagues in Asia. After careful review by the National and International Scientific Committee, 333 papers have been selected for oral presentation and another 322 abstracts have been chosen for poster presentation.

The abstracts have been published in the form in which they were submitted by the authors. The authors are responsible for the contents of the abstracts.

We wish to extend our sincere thanks to all the authors who submitted their abstracts as well as to the members of the National and International Scientific Committee for their reviews.

We hope that this abstract book will be utilized as a reference source.

Motoshi Tajima

President of the Organizing Committee

Toshihiko Nakao

President of the Scientific Committee

CONTENTS

ORAL PRESENTATIONS

POSTER PRESENTATIONS

KEYNOTE LECTURES

Control of Infectious Diseases

K01 BVD

K02 Infectious Diseases: Virology

K03 Infectious Diseases: Bacteriology

K04 Immunology and Vaccines

K05 Infectious Diseases: Parasitology

K06 Tropical Animal Diseases

K07 Epidemiology

Antimicrobial Resistance

K08-09 Anti-Microbial Resistance

Production Medicine

K10 Bovine Welfare and Cattle Comfort

K11 Herd Health Management

K12 Hoof Health and Lameness

K13 Nutrition and Metabolic Diseases

K14-15 Udder Health

K16 Young Stock

K17 Reproduction

Technological Development

K18 Diagnostic Imaging

K19 Surgery

Water Buffalo

K20 Buffaloes, Camelids and Wild Ruminants

Insight into Veterinary Science in the Near Future

K21 Internal Medicine

K22 Public Health and Food Safety

K23 E-learning and Continuing Education

The analysis of haematological parameters allows to monitor and evaluate the health and nutritional status of animals. In this study, the experiment was conducted to determine impact of different dietary protein levels on goat's blood minerals, and other blood parameters of Tswana goats reared in extensive production systems. Twenty-five female Tswana weaner goats' with similar body weight and age were used for this experiment. Animals were grouped into three treatment of eight goats each in a randomized block design according to live weight. Animals were fed as follow: protein 23.51g and energy 8.55g per kg DM and then they were given Lucerne ad libitum. Blood samples were collected on the first day of the experiment and then weekly until the end of the experiment. Collected samples were analysed for blood biochemistry and haematological parameters using the IDEXX haematology Analyser.

The results obtained revealed that different levels of protein supplementation in Tswana goats significantly affected blood glucose, albumin, albuglobulin and urea (P<0.05) respectively. However, no statistical significant difference were observed on serum total protein, globulin, lipase, triglycerides and cholesterol and they fell within the reference value of the goats. In addition, it was also noted that haematological parameters were influenced significantly (P<0.05) by physiological stages of animals.

Haematology analysis remain a tool to evaluate the well-being of animals

Keywords: Supplementation, Haematology, protein, Albumin, protein, energy, growth performance, production

SR-16

Gestational toxemia in lactating sheep is associated with alterations in circulating inflammatory biomarkers

Maria Victoria Sanz-Fernandez[1] Jose-Luis Pesantez-Pacheco[12] Laura Torres-Rovira[1] Marta Vazquez-Gomez[3] Consolación Garcia-Contreras[1] Ana Heras-Molina[3] Natividad Perez Villalobos[4] Fernando Hernandez[5] *Juan-Vicente Gonzalez-Martin[43] Antonio Gonzalez-Bulnes[1] Susana Astiz[1]

[1]Dept. Animal Repro., INIA, Spain, [2]School Vet. Med. and Zootech., University of Cuenca, Ecuador, [3]Fac. Vet. Med., Complutense University of Madrid, Spain, [4]TRIALVET SL, Spain, [5]Cerromonte farm, Spain

Objectives: Gestational toxemia (GT) is a late pregnancy metabolic disease characterized by the disruption of glucose and lipid homeostasis. Metabolic dysregulation leads to hepatic failure and neurological disorders, which frequently result in the death of both the ewe and its lamb/s. The etiopathology of GT is poorly understood. Several risk factors have been identified (e.g. age, number of fetuses, nutritional status, etc.); however, the large individual variability in GT susceptibility suggests that other factors are likely involved. Recently, inflammation has been associated with metabolic diseases both in cows and sheep. Thus, the study objective was to evaluate changes in inflammatory biomarkers between toxemic and healthy sheep.

Materials and methods: The current dataset was retrospectively obtained as a subset from a larger experiment (n=334) conducted at a Lacaune sheep high-yield dairy farm ("Granja Cerromonte", Spain). Within individuals treated for GT (clinically diagnosed based on neurological symptoms), sheep with the highest β-hydroxybutyrate (BHB) blood concentrations were selected (n=9; TOX). Matching healthy controls (n=9; CON) were chosen based on lambing date, lactation number (4±3lactations), and number of carried lambs (2±1born lambs). Body condition parameters were recorded and a fasting blood sample (prior to morning feeding) was collected in late gestation (6±2 days before parturition).

Results: There were no differences in body weight or body condition score between groups. As expected, TOX sheep had decreased glucose (58.8 *vs.* 69.4 mg/dl; $P < 0.02$), and increased non-esterified fatty acids (1.57 *vs.* 0.72 mM; $P < 0.0004$; NEFA) and BHB (2.00 *vs.* 0.84 mM; $P < 0.0004$) blood concentrations, compared to CON sheep. Circulating cholesterol was decreased in TOX sheep (83.8 *vs.* 98.4 mg/dl; $P < 0.03$); but fructosamine, lactate, triglycerides and urea concentrations did not differ between groups. Gestational toxemia increased circulating tumor necrosis factor α (8.4 *vs.* 5.9 pg/ml; $P < 0.002$) and decreased haptoglobin (2.4 *vs.* 7.1 mg/dl; $P < 0.03$), but did not change interleukin-6 concentrations. Haptoglobin concentrations were negatively correlated with both BHB ($r = -0.62$; $P < 0.006$) and NEFA ($r = -0.60$; $P < 0.009$) levels. Tumor necrosis factor α concentrations tended to be and were positively correlated with BHB ($r = 0.42$; $P < 0.09$) and NEFA ($r = 0.82$; $P < 0.0001$) levels.

Conclusions: In summary, GT in sheep appears to be associated with alterations in biomarkers of inflammation.

productive parameters were analysed by mixed effects models. Data were managed in Microsoft Excel 2013 (Microsoft Corporation, Redmond, WA, USA). Statistical analyses were performed in R version 3.4.0. (R Core Team, 2017).

Results: We found that heat abatement with ventilation and sprinklers was associated with the shortest breeding interval, the shortest calving to conception interval ($p < 0.001$), and the highest odds of being pregnant by 200 days in milk ($p < 0.01$), whereas solely ventilation showed similar results to lack of heat stress protection. Lack of a well-established voluntary waiting period (VWP) or a VWP shorter than 50 days was associated with reduced days to first service after calving ($p < 0.01$), shorter breeding interval ($p < 0.001$) and calving to conception interval ($p < 0.05$), as well as higher odds of carrying a calf by 200 days in milk ($p < 0.01$) compared to those using a VWP of at least 50 days. Applying estrus synchronization protocols was associated with reduced days to first service ($p < 0.01$) and higher odds of pregnancy by 200 days in milk ($p < 0.05$). Performing early pregnancy diagnosis (by transrectal ultrasonography or pregnancy-associated glycoprotein tests) was linked to shorter breeding interval ($p < 0.05$), reduced calving to conception interval ($p < 0.05$) and higher odds of pregnancy by 200 days in milk ($p < 0.01$) compared to rectal palpation.

Conclusions: Our study highlights the management practices most closely related to improved reproductive performance, which are, therefore, suggested to be applied on dairy farms, considering the local circumstances of the individual farms.

The research was supported by the Hungarian Ministry of Human Capacities [grant number 12190/2017/FEKUTSTRAT]. The project was also supported by the European Union and co-financed by the European Social Fund (grant agreement no. EFOP-3.6.1-16-2016-00024, project title: Innovations for Intelligent Specialisation on the University of Veterinary Science and the Faculty of Agricultural and Food Sciences of the Széchenyi István University Cooperation).

RE-P30

Reproductive management and performance of replacement dairy heifers in Hungary

Istvan Fodor[1] Walter Baumgartner[2] *Laszlo Ozsvari[1]

[1]Dep. of Veterinary Forensics, Law and Economics, Univ. of Veterinary Medicine Budapest, 1078 Budapest Istvan u. 2. Hungary, [2]Clinic for Ruminants, University of Veterinary Medicine, Veterinärplatz 1, 1210 Vienna, Austria

Objectives: Heifer raising represents 15-20% of the total milk production costs, but the management of replacement heifers is often neglected. The goal of replacement heifer programmes is to reduce raising costs, while maximizing future profitability. The aim of our study was to survey the reproductive management practices and the reproductive performance of replacement heifers in large commercial dairy herds in Hungary.

Materials and methods: Reproductive management practices were surveyed using a questionnaire between 22 May and 6 November 2015, and altogether 34 large-scale Hungarian dairy herds were involved. Questions regarding estrus detection, insemination, culling policy, pregnancy diagnosis, housing and feeding were raised to the farm manager or the veterinarian in each herd. Individual heifer data from the farms participating were gathered for 50,396 heifers first inseminated between 1 January 2011 and 31 December 2014, and these were used for the calculation of the major reproductive parameters. Data were managed in Microsoft Excel 2013 (Microsoft Corporation, Redmond, WA, USA).

Results: Mean (± standard deviation) age at first service, age at first calving and mean first-service conception risk were 15.53 ± 1.59 months, 25.61 ± 2.22 months and 47.10%, respectively. 8.6% of the inseminated heifers was culled prior to first calving, 246.25 ± 107.10 days after first insemination, at 23.94 ± 3.95 months of age, on average. Heifers were grazed on 35.3% of the surveyed farms. Body weight was regularly measured on 47.1%, body condition was regularly scored on 8.8% and estrus detection aids (e.g. pedometers, tail chalking) were used on 14.7% of the farms. Sexed semen was applied in 94.1% of the herds, mainly for the first and second inseminations (43.8%). Early pregnancy diagnosis (by transrectal ultrasonography or pregnancy-associated glycoprotein tests) was performed in 38.2% of the herds. Most commonly, pregnancy diagnosis was performed weekly (34.4%) or monthly (25.0%).

Conclusions: The use of labour-intensive and costly management measures was infrequent, therefore, there is room for the uptake of intensive management practices in the reproductive management of heifers. In order to minimize losses stemming from the prolonged non-productive period, farm managers and veterinarians should dig deeper than monitoring average AFC and conception risk only.

The research was supported by the Hungarian Ministry of Human Capacities [grant number 12190/2017/FEKUTSTRAT]. The project was also supported by the European Union and co-financed by the European Social Fund (grant agreement no. EFOP-3.6.1-16-2016-00024, project title: Innovations for Intelligent Specialisation on the University of Veterinary Science and the Faculty of Agricultural and Food Sciences of the Széchenyi István University Cooperation).

RE-P31

Factors affecting pregnancy loss in dairy cows

Susana Astiz Blanco[1] Octavi Fargas Busquet[2] Francisco Sebastian[3] Juan Manuel Loste[4] Raquel Patron[5] Jose Luis Pesantez Pacheco[16] Natividad Perez Villalobos[7] Irene Lopez Helguera[8] *Juan Vicente Gonzalez Martin[59]

[1]Department of Animal Reproduction, INIA, Avda Pta. de Hierro s/n, 28040 Madrid, Spain, [2]VAPL S.L., C/ Antoni Figueras 20, Tona, 08551 Barcelona, Spain, [3]Cowvet SL, Avda. País Valenciano 6, 5. 46117 Betera, Valencia, Spain cowvetsl@gmail.com, [4]Albaikide, S.A. Pol. Akaborro s/n. 31.860. Navarra. Spain, [5]TRIALVET SL, C/ Encina 22, Cabanillas de la Sierra 28721 Madrid, [6]School of Veterinary Medicine and Zootechnics, Faculty of Agricultural Sciences, University of Cuenca, Avda. Doce de Octubre, 010220 Cuenca, Ecuador, [7]Facultad de Ciencias Biomédicas, Universidad Europea de Madrid, C/Tajo s/n, 28670 Villaviciosa de Odón, Madrid, Spain, [8]Dpto. Ciencia Animal, Universitat de Lleida and Agrotecnio Center, Av. Rovira Roure 191, 25006 Lleida, Spain, [9]Faculty of Veterinary Medicine, Complutense University of Madrid (UCM), Avda. Pta. de Hierro s/n, 28040 Madrid, Spain

Objectives: The objectives of this study were to examine possible relationships between pregnancy loss (described as the loss of pregnancy occurred after a positively diagnosed pregnancy -days 28-40- and before day 110 of pregnancy) and different factors such as synchronization protocol used, parity, number of Artificial Insemination (AI), days in milk at AI, age at AI (in the case of heifers) and the fact of having had a previous pregnancy, in dairy cows managed under intensive milk production systems

Material and methods: A total of 12978 AIs from seven different farms were included in the study. The number of AIs from each farm were 812/12978 from farm 1 (6.3%), 710/12978 from farm 2 (5.5%), 1865/12978 from farm 3 (14.4%), 4104/12978 from farm 4 (31.6%), 1530/12978 from farm 5 (11.8%), 589/12978 from farm 6 (4.5%) and 3368/12978 from farm 7 (26.0%). A total of 5119 were first AIs and 7859 were second or more AIs (from them 1729 were 5th or more AIs). The AIs were performed in animals with different lactation orders, with 1586 AIs having been in heifers (only from farms 4 and 7), 3983 in primiparous cows, and the rest in multiparous cows (with lactation order up to 9th). Synchronization protocols recorded were observed estrus, G6G, Double Ovsynch, Presynch, Ovsynch (with or without intravaginal dispositive), 5dCosynch (with or without intravaginal dispositive). A total of 10186 AIs was performed during the cool season (September to May) and 2792 during the hot season (June, July and August). Straightforward stepwise Wald logistic regression analysis was used to study the influence of the different factors, including the factor farm as covariable in the model.

Results: Average conception rate for all AIs was 36.7%, and average pregnancy loss was 13.9% (664/4764). The range among farms oscillated from 9.5% (28/294) to 16% (194/1209), with the factor "farm" being a significant one affecting pregnancy loss (P<0.0001). When all AIs were included into the model (controlled including the factor "farm" in the model), significant factors affecting pregnancy loss were season with the hot season increasing the risk of pregnancy loss (11.6 *vs.* 14.5%; OR, 1.539; 95% CI, 1.215–1.949; P<0.0001); the number of AIs, with second or more inseminations showing an increased risk (14.2 *vs.* 10.5% for first and second or more AIs, respectively; OR, 0.696, 95% CI, 0.581–0.834; P<0.0001), the parity using the stage of heifer (nulliparous) as reference value, and both primiparous and multiparous increasing the loss risk when compared to the heifers (7.8 *vs.* 9.9 *vs.* 14.7% for heifers, primiparous and multiparous, respectively; OR, 1.854, 95% CI, 1.330–2.585; P<0.0001 for primiparous cows, and OR, 3.057, 95% CI, 2.248–4.157; P<0.0001 for multiparous cows). The fact of having had a pervious pregnancy loss was demonstrated as a "protective factor (OR, 0.445, 95% CI 0.278–0.713; P<0.0001). Synchronization protocol did not affect significantly pregnancy loss. When heifers were separately studied (n=1586 AIs), in order to explore the effect of age at insemination a significant effect of this factor was (OR, 1.026, 95% CI, 1.016–1.035; P<0.0001), besides the significant effect of number of AI observed with second or more inseminations showing less rates of pregnancy loss (OR, 0.305, 95% CI, 0.120–0.774; P=0.012). In the case of primiparous cows separately analyzed (n=3982 AIs), besides farm (P<0.0001) and season (OR, 1.855, 95% CI, 1.252–2.747; P=0.002) no other factor was kept in the model as significant factor; and in the case of multiparous cows (n=7409AIs) season (OR, 1.647, 95% CI, 1.221–2.221; P=0.001), second or more insemination (OR, 0.640, 95% CI 0.513–0.799; P<0.0001) and having had a pervious pregnancy loss (OR, 0.340, 95% CI 0.189–0.610; P<0.0001) influenced significantly pregnancy loss. Synchronization protocol and days in milk at insemination did not significantly affect the risk of having pregnancy loss in adult cows (P>0.05).

Conclusions: Our study suggests that the cool season, a higher number of insemination, a younger age of the dam in the case of heifers and having previously suffered pregnancy loss are protective factors for pregnancy loss. However, these factors seem to affect in a different way depending if the inseminations are performed on heifers, primiparous or multiparous cows, which highlights the different reproductive characteristics of the dairy cattle.

RE-P32

Risk factors for late embryo loss in grazing dairy cows

Luis Ernesto Quintero Rodriguez[1] Ramiro Rearte[23] German Ariel Dominguez[4] Eduardo Ravera[4] *Rodolfo Luzbel de la Sota[13] Laura Vanina Madoz[13] Mauricio Javier Giuliodori[5]

[1]Cátedra y Servicio de Reproducción Animal, Facultad de Ciencias Veterinarias, Universidad Nacional de La Plata (FCV-UNLP), La Plata, Argentina, [2]Cátedra de Epidemiología y Salud Publica, Facultad de Ciencias Veterinarias, Universidad Nacional de La Plata (FCV-UNLP), La Plata, Argentina, [3]Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), CABA, Argentina, [4]Private Practice, Venado Tuerto, Santa Fe, Argentina, [5]Cátedra de Fisiología, Facultad de Ciencias Veterinarias, Universidad Nacional de La Plata (FCV-UNLP), La Plata, Argentina

Introduction: The fertility of high-producing dairy cows has decreased during the last decades, concomitantly with an increase in milk yield. This lower fertility has partly been associated with pregnancy losses. Late embryonic losses (LEL), diagnosed by ultrasonography 30–44 days post-AI, represent a big component of these losses. Therefore, defining the risk factors for LEL would be very important to later develop strategies to control this problem.

Objective: The objective of the present study was to assess the risk factors for LEL in grazing dairy cows.

Material and methods: A data set of a commercial dairy farm having productive, reproductive and health records of dairy cows calving between Jan 1, 2011 and Dec 31, 2015 (n=13,551) was used in this study. Pregnancy was diagnosed by ultrasonography at 30–44 days post-AI. At this time, cows showing lack of a heart beats, membrane detachment, disorganization and echoic floating structures including embryo remnants were defined as having LEL (CASE). Standard disease definitions were used for diagnosis. Cows having retained fetal membranes, metritis, clinical endometritis and/or pyometra were classified as uterine disease (UD). Cows having clinical mastitis and/or clinical lameness were classified as non-uterine disease (NUD).

A case-control study was carried out with a temporal matching design to assess the risk factors for LEL. Four cows were randomly selected from non-case records (CONTROL, positive pregnancy diagnosis on the same date of each case) per every CASE of LEL included. The logistic model (Proc GLIMMIX, SAS) included the fixed effect of year of LEL (2011 through 2015), season of LEL (summer, fall, winter, spring), parity (1, 2,

SR-P05

Observational study on a novel management system involving 10 lambings per year in one high-yield dairy ewe farm

Jose-Luis Pesantez-Pacheco[12] Ana Heras-Molina[3] Laura Torres-Rovira[1] Fernando Hernandez[4] M. Victoria Sanz-Fernandez[1] Natividad Perez-Villalobos[5] Consolación Garcia-Contreras[1] Marta Vazquez-Gomez[3] Paula Martinez-Ros[6] *Juan-Vicente Gonzalez-Martin[35] Antonio Gonzalez-Bulnes[1] Susana Astiz[1]

[1]Dpt. of Animal Repro, INIA, Madrid Spain, [2]Fac of Vet Med Univ. of Cuenca, Ecuador, [3]Fac of Vet Med UCM, Madrid Spain, [4]Cerromonte Farm SL 05358 San Juan de la Encinilla, Ávila, Spain, [5]Trialvet SL C/ Encina 22, Cabanillas de la Sierra 28721 Madrid, Spain, [6]Exptl Livestock Farm Univ. CEU Cardenal Herrera, Valencia Spain

Objectives: In order to reduce non-productive days in dairy ewe production, the "accelerated sheep mating systems" can be used. One example is the STAR system, which involves up to 5 lambings/ewe in 3 years (1.2 to 1.4 lambing/ewe/year) through 5 successive annual breeding and lambing seasons (5LY). Despite its feasibility, a major disadvantage to this system is an irregular distribution of the workload throughout the year. For instance, the farm staff capacity is easily overwhelmed during the lambings periods, resulting in a deficient care of the newborns. In an attempt to distribute the workload more evenly, a high-yielding Lacaune farm transitioned from the 5LY system to a novel one consisting on 10 lambing periods per year (10LY). The present study examines the efficiency, productivity and workload concentration in this farm under both systems. Its goal was to determine the effects of a more intensive management system on the farm's productivity, animal welfare and workload distribution.

Material and methods: This observational study was performed in a high-yielding Lacaune dairy ewe farm ("Granja Cerromonte", Spain). The 5LY system was performed from 2010 to 2012, and the 10LY system from 2014 to 2015. Years 2009 and 2013 were considered transition years. During this period, 27,415 lactations were recorded from an average of 3,746 ewes/year.

Results: Daily production (1.70 ± 0.62 l/d *vs* 1.73 ± 1.66; P = 0.038), interlambing period (302 ± 44 *vs* 283 ± 50 d; $P <$ 0.0001) and lambings/ewe/year (1.30 ± 0.01 *vs*1.42 ± 0.01; $P <$ 0.05) slightly worsened in the 10LY system compared to the 5LY one. In contrast, milk yield/lactation (370 ± 156 *vs.* 349 ± 185 L), lactation length (218±75 *vs* 192 ± 75 d) and dry period length (53.5 ± 38.3 *vs* 69.1 ± 34.8 d) (all $P <$ 0.0001) were better in the 10LY system. Most importantly, the workload distribution improved by the 10LY system implementation. During 2010–2012, an average of 889.19 ± 158.47 lambings/lambing period (range, 664 to 1 291) was recorded, resulting in an average of 1,502.73 ± 267.82 live newborn lambs/lambing period and 20.80±18.73 lambings/day (range, 1 to 110). There were 500.6 lambs and 296.6 lambings per worker during lambings periods. Extra work hours were necessary at peak lambings/day. However, during 2014–2015, an average of 443.66 ± 253.18 lambings/lambing period (range, 85 to 937) was recorded, resulting in 709.85 ± 405.10 live newborn lambs/lambing period and 15.16±7.83 lambings/day (range, 1 to 51). There were 354.5 lambs and 221.5 lambings per worker during lambing periods. Since the lambing and lamb related workload was better distributed in the 10LY-period, the workload/worker fell by 50%, needing only two workers/lambing season to take care of the lambings and lamb pens in the 10LY system (354.5 lambs and 221.5 lambing per worker), compared to the three necessary in the 5LY one (500.6 lambs and 296.6 lambing per worker). Further, culling rate decreased (35.39 ± 0.53 *vs* 42.51 ± 7.51 % P=0.294) and higher-order lactations increased (24.17 *vs* 16,08%, P<0.0001) which could be the result of better ewe and lamb management. Another possible benefit could be the increase in the worker's welfare, since the workload does not concentrate so drastically in certain days.

Conclusions: Our study suggests that a 10LY herd management system can be compatible with good profitability and productivity and, more importantly, better animal welfare due to lack of animal overcrowding and better care of lambs and ewes during lambing. Furthermore, it could also mean better working conditions for the farm staff, since the workload is more uniformly distributed throughout the year.

SR-P06

Effects of maternal factors on the metabolic profile throughout pregnancy in dairy sheep

Jose Luis Pesantez Pacheco[12] Laura Torres Rovira[1] M. Victoria Sanz Fernandez[1] Ana Heras Molina[5] Natividad Perez Villalobos[4] Consolacion Garcia Contreras[1] Marta Vazquez Gomez[5] Fernando Hernandez[3] *Juan Vicente Gonzalez Martin[45] Antonio Gonzalez Bulnes[1] Susana Astiz[1]

[1]Department of Animal Reproduction, INIA, Av. Pta. de Hierro s/n, 28040 Madrid, Spain., [2]School of Veterinary Medicine and Zootechnics, Faculty of Agricultural Sciences, University of Cuenca, Av. 12 de Octubre, 010220, Ecuador, [3]Granja Cerromonte SL, 05358 San Juan de la Encinilla, Ávila, Spain, [4]TRIALVET SL, C/ Encina 22, Cabanillas de la Sierra 28721 Madrid, Spain, [5]Faculty of Veterinary Medicine, Complutense University of Madrid (UCM).

Objectives: Physiological states as pregnancy and lactation modify metabolism in sheep. The aim of this study was to evaluate the influence of pregnancy features (parity and type of pregnancy) on the maternal metabolism in high yielding Lacaune dairy sheep.

Material and methods: The study was carried out in a single commercial farm on 334 Lacaune dairy sheep, classified by age (187 mature and 147 maiden ewes), parity (145 multiparous *vs.* 42 primiparous) and type of pregnancy (161 single *vs.* 173 multiple). Fasting plasma samples were collected at two points during pregnancy mid and late-pregnancy (74±5 and 141±3 d, respectively) and *postpartum* (52±5 d after delivery). The following metabolic parameters were considered: plasma ß-hydroxybutyrate (ß-OHB), nonesterified fatty acids (NEFA), glucose, lactate, urea, cholesterol, triglycerides and fructosamine. Differences among groups and interactions were evaluated with ANOVA and Kruskal-Wallis test when non-normal distributed.

Results: ß-OHB was higher during gestation in mature than in maiden ewes (0.58±0.20 *vs.* 0.37±0.11 mmol/L; $P <$ 0.0001) at mid pregnancy, (0.67±0.34 *vs.* 0.55±0.21 mmol/L; $P <$ 0.0001) and late pregnancy, but did not differ with age at *postpartum*

(0.78±0.25 *vs.* 0.74±0.23 mmol/L; *P*> 0.05). During gestation ß-OHB was not affected by type of pregnancy, although, *postpartum* ß-OHB was lower in ewes that had carried out single gestation than in those with multiple pregnancy (0.59±0.27 *vs.* 0.65±0.31 mmol/L; *P*< 0.01). At mid pregnancy NEFA were lower in mature than in maiden ewes (0.46±0.22 *vs.* 0.57±0.17 mmol/L; *P*< 0.0001); whereas NEFA were higher in mature at late pregnancy and *postpartum* (0.67±0.29 *vs.* 0.55± 0.18 mmol/L; *P*< 0.0001 for late pregnancy); (0.50±0.18 *vs.* 0.44±0.16 mmol/L; *P*=0.004 for *postpartum*). At late pregnancy, ewes carrying a single pregnancy showed lower NEFA than those with multiple foetuses (0.57±0.25 *vs.* 0.67±0.25 mmol/L; *P*< 0.0001). Glucose levels during gestation did not differ with age, however, at *postpartum* mature ewes had lower levels than maiden ewes (67.90±6.44 *vs.* 74.63±7.54 mg/dl *P*<0.0001). Glucose during gestation was higher in ewes carrying a single gestation at mid (65.45±15.48 *vs.* 60.44±8.82 mg/dl; *P*< 0.004) and late pregnancy (71.84±14.62 *vs.* 67.37±12.53 mg/dl; *P*<0.003) but did not differ *postpartum*. Lactate was lower in mature ewes at mid pregnancy (16.34±8.73 *vs.* 18.85±10.13 mg/dl; *P*<0.003), and *postpartum* (11.13±6.90 *vs.* 12.07±5.64 mg/dl; *P*<0.01), but it was similar at late pregnancy and did not change by type of pregnancy. Urea was higher in mature ewes at mid pregnancy (57.44±11.23 *vs.* 39.95±7.86 mg/dl; *P*<0.0001) and *postpartum* (67.56±15.01 *vs.* 58.18±13.53 mg/dl; *P*<0.0001), but lower at late pregnancy (41.44±10.70 *vs.* 42.31±8.81; *P*<0.048). Urea was higher at late pregnancy in ewes carrying a single gestation (43.29±10.15 *vs.* 40.45±9.50 mg/dl; *P*<0.004). Cholesterol was higher during gestation in mature than in maiden ewes (*P*<0.0001). However, at *postpartum* cholesterol was higher in maiden ewes (108.79±21.76 *vs.* 100.44±21.74 mg/dl; *P*<0.001) and it was not affected by type of pregnancy. Triglycerides were higher in mature ewes (23.51±8.04 *vs.* 19.29±7.33 mg/dl; *P*< 0.001) at mid pregnancy. At *postpartum*, triglycerides were higher in maiden ewes (17.73±8.62 *vs.* 15.07±4.37mg/dl; *P*<0.001) and did not differ with type of pregnancy. Fructosamine was higher at mid gestation in mature ewes (310.77±31.63 *vs.* 275.47±30.58 umol/L; *P*<0.0001) and at the same time, it was affected by type of pregnancy (289.75±36.95 *vs.* 300.30±33.90 umol/L for single and multiple pregnancies respectively; *P*=0.013). The daily average milk yield during the lactation was not different between primiparous and multiparous (312.42±130.68 *vs.* 339.6±0.142.9 L; *P*>0.05); before getting pregnant, primiparous produced less than multiparous (1.71±0.62 *vs.* 2.07±0.67 L; *P*<0.05), and after conception primiparous produced the same as multiparous (1.11±0.38 *vs.* 1.07±0.46 L; *P*>0.05). Milk yield was not affected by type of pregnancy.

Conclusions: The present data reveal interactions among maternal factors (age and type of pregnancy) physiological status (pregnancy and lactation) and time of pregnancy on the metabolism of dairy ewes, which be related to health and productivity.

SR-P07

Seasonal lambing distribution of the Romanov breed in northwestern Croatia during five consecutive years

Seasonal lambing distribution of Romanov breed in Croatia

Drazen Djuricic[1] Hrvoje Valpotic[2] Romana Turk[2] Silvijo Vince[2] Juraj Grizelj[2] Branimira Spoljaric[2] Ivona Zura Zaja[2] Ivan Folnozic[2] Ivan Butkovic[2] *Marko Samardzija[2]

[1]Veterinary Practice Djurdjevac, Djurdjevac, Croatia, [2]Faculty of Veterinary Medicine University of Zagreb, Croatia

Objectives: The aim of this study was to investigate the lambing distribution of the Romanov breed in northwestern Croatia during five consecutive years. Most European breeds of sheep are seasonal breeders in the moderate climate region; however, the Romanov breed is a meat breed that is aseasonally polyoestrous. Romanov sheep are considered to be highly fertile, with a fecundity rate of 230% or more. In Croatia, the lambing season is primarily in the winter and spring for seasonal breeders.

Materials and methods: During five consecutive years (December 2011 to November 2016) at eight medium-scale sheep farms in northwestern Croatia, there were 5379 mattings with 5046 successful conceptions *i.e.* lambings. Ewes were kept at pasture, which primarily provided area for exercise, with access to stables during the night, in a semi-intensive environment. According to standard farming practices, animals had free access to good quality meadow hay (about 1.8 kg per doe daily), adequate concentrate and drinking water.

Results: Fertility was 93.81%. The seasonal distribution of lambings in this study was: 47.64% of ewes delivered in winter (n=2422), 23.37% in spring (n=1179), 18.82% in summer (n=950) and 9.81% in autumn (n=495). The winter season refers to the period of December to February. Sexual activity was lowest was during spring and early summer (March to June) with a peak of sexual activity from August to October. Litter size was greater during spring and winter than in other seasons (1.67 vs.1.36) though birth weight was lower in larger than in smaller litters (2.64±0.65 vs. 2.87±0.61).

Conclusions: More lambs during lambing season and a higher percentage of multiple births (triplets, quadruplets, etc.) was expected during the optimal breeding season, as seen in most European sheep breeds. Despite being aseasonally polyoestrous, the distribution of mating and lambing was not uniform through the seasons for the Romanov breed.

SR-P08

Expert knowledge elicitation for ranking hazards affecting dairy goat welfare in Italian farms

Luigi Bertocchi[1] Alessandra Gaffuri[2] Alessandra Angelucci[1] Francesca Fusi[1] Rosa Maria Strano[1] Jessica Ginestreti[1] Giandomenico Ferrara[1] Luca Bolzoni[3] *Giorgio Zanardi[1] Valentina Lorenzi[1]

[1]Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna "Bruno Ubertini", Via A. Bianchi 9, 25124 Brescia, Italy, [2]Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna, Sezione di Bergamo, Via P. Rovelli 53, 24100 Bergamo, Italy, [3]Istituto Zooprofilattico Sperimentale della Lombardia e dell'Emilia Romagna, Sezione di Parma, Via dei Mercati 13/A, 43100 Parma, Italy

Objectives: The opinion of 14 Italian veterinarians was gathered using an expert knowledge elicitation in order to charac-