001 TAI/FTET/AI

Time of ovulation after the induction and reproductive outcomes in mares inseminated with frozen semen

Maria Fernanda Zamai[1], Isabele Picada Emanuelli[1], Antonio Hugo Bezerra Colombo[1], Josmar Mazucheli[2], Márcia Aparecida Andreazzi[1], Fábio Luiz Bim Cavalieri[1]

[1]UniCesumar - UniCesumar, Maringá, PR, Brasil; [2]UEM - Universidade Estadual de Maringá, Maringá, PR, Brasil.

The use of cryopreserved equine semen has some limiting factors inherent to gametes: the reduction of sperm viability inside the female reproductive tract compared to fresh semen; and the viability of the oocyte in the physiologically reduced genital tract (8 to 12 h), varying according to the stage of development in which it is at the time of ovulation. In this way, controlling follicular growth, inducing ovulation and controlling the time of ovulation could optimize pregnancy rate. This was a retrospective study aimed at investigating whether the moment of ovulation after artificial induction of ovulation interferes with the fertility of mares inseminated with frozen semen. A total of 107 estrus cycles from the reproductive season for the years 2017 and 2018 were analyzed from 23 Quarter horse mares, all submitted to the same protocol of induction of ovulation and inseminated with frozen semen. The ovulation induction protocol started on day -2 with administration of hCG 1633 IU IV (only in the first two cycles of each animal) + 1.0 mg / animal GnRH (deslorelin acetate) via IM. After 32h four ultrasound evaluations were started to identify ovulation every 4h, in order to divide the animals into 3 groups according to the time of ovulation after induction of ovulation: G36; G40; G44 (ovulation 36, 40 and 44 hours after the inducer protocol). Animals that had ovulated at the first evaluation in 32 hours were discarded from the experiment. Identified at ovulation, artificial insemination was performed using the same stallion. Embryo collection was performed in D9 (D0 = ovulation time) and after transfer in recipient mares, the diagnosis of gestation was performed in D14. The dependent variables analyzed were embryo recovery rate (TER) and pregnancy rate (TP). The data were analyzed in the program R by the chi-square test ($P < 0.05$). The embryo recovery rate (p-value = 0.8116) and the pregnancy rate (p-value = 0.177) were similar in all groups of ovulation times, respectively: G1- 60% (29/48) and 86% (25/29); G2-65% (31/47) and 70% (22/31); G3 - 58% (7/12) and 57% (4/7). Instead of few number animal in G3, this study indicated that the time of ovulation after the artificial induction of ovulation does not interfere on the rate of embryo recovery and the pregnancy rate in mares inseminated with frozen semen.

002 TAI/FTET/AI

Fertility of lactating dairy cows submitted to a progesterone-based FTAI protocol initiated with GnRH or GnRH plus estradiol benzoate

Natália Picoli Folchini[1], Carlos Eduardo Cardoso Consentini[1], Jéssica Cristina Lemos Motta[1], Leonardo de França e Melo[2], Rodrigo Lemos Olivieri Rodrigues Alves[1], Lucas Oliveira e Silva[1], Matheus Cruz Silva[1], Mayara Silvestri[1], Danielle Nunes Gurgeira[1], Milo Charles Wiltbank[3], Roberto Sartori[1]

[1]ESALQ/USP - Department of Animal Science - Luiz de Queiroz College of Agriculture of University of São Paulo, Piracicaba-SP, Brazil; [2]Geneal - Geneal - Genetics and Animal Biotechnology, Uberaba-MG, Brazil; [3]UW, Madison, Department of Dairy Science - University of Wisconsin-Madison, Madison, WI, USA.

The aim was to compare two strategies to initiate resynchronization FTAI protocols in lactating dairy cows. A total of 543 lactating Holstein cows from two farms, producing 41.7 ± 0.71 kg/d of milk and with BCS of 3.1 ± 0.02 (1 to 5 scale) were used. Weekly, at time of pregnancy diagnosis, which was performed 31 ± 3 d after previous insemination, cows were randomly assigned to 1 of 2 groups. On D0, cows from Group EB/G received 2 mg estradiol benzoate (EB) and 16.8 μg buserelin acetate (GnRH), whereas in Group G, cows only received 16.8 μg GnRH. All cows received a new 2 g intravaginal progesterone (P4) device on D0. Seven d later (D7) every cow received 0.530 mg sodium cloprostenol (PGF), and on D8 another PGF was administered concomitant with 1 mg estradiol cypionate (EC) and P4 withdrawal. Cows received FTAI on D10. All hormones were from GlobalGen Vet Science, Jaboticabal, Brazil. Cows received a tail-head device for estrus detection (BOViFLAG) on D8 and were considered in estrus when the paint of the device had been removed by D10. Statistical analyses were done by PROC GLIMMIX of SAS 9.4 ($P \leq 0.05$). Ovulation rate after D0 was 54.6% (283/518) and did not differ between groups. Cows initiating the protocol with CL had lower ovulation rate than cows without CL on D0 [45.8 (173/378) vs. 78.6% (110/140)]. Luteolysis between D0 and D7 was greater in EB/G group on D0 compared to G group [41.4 (75/181) vs. 29.4% (58/197)]. Consequently, the proportion of cows with CL on D7 was higher in G group compared to EB/G group [87.0 (234/269) vs. 81.0% (209/258)], as well as number of CL on D7 [1.24 (269) vs. 1.08 (259)]. Cows receiving only GnRH on D0 expressed more estrus than cows from EB/G group [84.3 (231/274) vs. 77.8% (203/261)]. Pregnancy per AI (P/AI) of primiparous and multiparous were similar [38.1 (77/202) vs. 36.2% (118/326), respectively]. Cows with BCS>2.75 had greater P/AI compared to cows with BCS ≤ 2.75 [42.4 (139/328) vs. 29.3% (60/205)]. Cows with or without CL on D0 had similar P/AI [38.4 (147/383) vs. 34.9% (52/149), respectively], as well as cows with or without CL on D7 [38.4 (170/443) vs. 34.5% (29/84), respectively]. Luteolysis prior to the PGF treatment did not affect P/AI [36.8 (49/133) vs. 39.2% (96/245), for cows with or without CL regression after D0]. The P/AI was greater in cows expressing estrus compared to cows not showing estrus at the end of the protocol [44.0 (191/434) vs. 9.9% (10/101)] Finally, cows initiating the FTAI protocol with EB plus GnRH had similar fertility to cows initiating only with GnRH [37.8 (101/267) vs. 37.3% (103/276)]. In summary, even with higher incidence of luteolysis in cows receiving EB at the beginning of the protocol, P/AI was similar between experimental groups, maybe due to the high ovulation rate achieved in the study and the lack of effect of CL presence on D7 on fertility.
Acknowledgements: FAPESP, CNPq, GlobalGen Vet Science.

003 TAI/FTET/AI

The effect of subclinical endometritis on reproductive performance in postpartum *Bos indicus* beef cattle

Ramiro Vander Oliveira Filho[1], Gustavo Azevedo de Mello[2], Abigayle Pollock[3], Jose Luiz Moraes Vasconcelos[4], Ronaldo Cerri[5], Ky Pohler[1]

[1]TAMU - Texas A&M University, College Station, Texas, USA; [2]PUC - Pontifical Catholic University of Minas Gerais, Poços de Caldas, MG, Brazil; [3]UTK - University of Tennessee, Knoxville, Tennessee, USA; [4]UNESP - São Paulo State University, Botucatu, São Paulo, Brazil; [5]UBC - University of British Columbia, Vancouver, British Columbia, Canada.

Reproductive inefficiency can be caused by several factors including management issues, cow and bull infertility, heat stress, embryonic mortality and uterine disease, which leads to major losses for both the beef and dairy industries. Postpartum uterine disease has been well documented in dairy cows as well as the resulting decrease in fertility and increased reproductive culling. However, there is very little known about the incidence or its effect in beef cattle. The objective of the present study was to diagnose subclinical endometritis postpartum during a timed AI protocol and assess the presence of polymorphonuclear neutrophils (PMN) in the uterine lumen and its effect on pregnancy outcomes of Bos indicus beef cattle. A total of 320 multiparous Nellore cows (days postpartum 28 - 61) were assigned to receive an estradiol-based estrus synchronization + timed-AI protocol (TAI, d0). Concurrently with AI, estrus expression was evaluated using Estrotect Heat Detector patches. Endometrial cytology samples were taken by Cytobrush right before the beginning of the protocol (d-11). For each slide, 300 cells (neutrophils and/or endometrial epithelial cells) were counted in three different locations by two operators and the polymorphonuclear neutrophils ratio (% PMN) was assessed. Cows with 5% or higher PMN were considered as having subclinical endometritis. Pregnancy diagnosis was performed by transrectal ultrasonography 30 days after TAI. Data were analyzed with PROC GLIMMIX model in SAS 9.4. Cows that expressed estrus at or before d0 had increased ($P < 0.01$) pregnancy per AI compared to no estrus expression (58.9% ± 6.8 vs. 23.7% ± 5.2; respectively); however, no interaction between PMN and estrus expression was observed ($P = 0.84$). The prevalence of cows diagnosed as positive for subclinical endometritis was 7.5% (n = 24). Cows presenting PMN higher than 5.0 % had less pregnancies per AI ($P = 0.02$) compared to cows presenting PMN lower than 5% (29.6% ± 9.7 vs. 53.1% ± 3.1; respectively). In conclusion, subclinical endometritis does happen in Bos indicus postpartum cows, which led to a lower probability of these cows becoming pregnant at the first TAI.

004 TAI/FTET/AI

Effect of follicle diameter at the moment of pregnancy diagnosis by Doppler (22 days after TAI) on pregnancy rate of Nellore (*Bos indicus*) cows

Gabriel Cunha Cruz[1], Laísa Garcia da Silva[2], Odair Antonio Alves de Melo Neto[1], David Bueno Lourenço Filho[1], Matheus Furtado Pereira[1], Emiliana Oliveira Santana Batista[2], Alexandre Henryli Souza[2], Everton Luiz Reis[3], Guilherme Machado Zanatta[2], Romulo Germano de Rezende[2], Bruna Lima Chechin Catussi[2], Pietro Sampaio Baruselli[2]

[1]CRIA Fértil - CRIA Fértil, Goiânia, GO, Brasil; [2]USP - Universidade de São Paulo, São Paulo, SP, Brasil; [3]Agener - Agener União Química, São Paulo, SP, Brasil.

The objective of this study was evaluate the relationship of follicle diameter at the moment of pregnancy diagnosis by Doppler (22 days after TAI) with pregnancy rate of the first and second TAI. For this experiment, 844 multiparous Nellore (Bos indicus) cows were early-resynchronized 14 days after the first TAI. Considering day 0 the day of first TAI, on day 14, cows received an intravaginal device containing 0.75g of P4 (Prociclar®, Ceva, Paulínea) and were randomly distributed to receive a injectable P4 (short action-140mg of Progecio®, Agener União, São Paulo, or short action-100mg of Sincrogest® injetável, Ourofino, Cravinhos). On day 22, P4 device was removed and pregnancy diagnosis was performed by US Color Doppler (M5, Mindray, China). Cows with CL vascularization greater than 25% were considered pregnant. In addition, the largest follicle of all cows was measured. Cows considered non-pregnant received 300IU of eCG (Novormon®, Zoetis, Brasil), 1mg of EC (ECP®, Zoetis, Brasil) and 12.5mg of dinoprost (Lutalyse®, Zoetis, Brasil) and received second TAI on D24. Pregnant cows were submitted to pregnancy confirmation 10 days later (D32) when the false positive rate was evaluated. Follicle diameters were classified by tercile for first TAI [small (4 to 7.8 mm; mean: 5.4±1.5 mm), medium (7.9 to 10.4 mm; mean: 9.1±0.7mm) and large (10.5 to 28.4 mm; mean 13,2±2,7mm); n= 844], and for second TAI [small (4 to 11.1 mm; mean: 9.0±2.0mm), medium (11.2 to 13.2 mm; mean 12.2±0.5mm) and large (13.3 to 27.7 mm; mean 15.7±2.7 de mm); n=289] to analyze the effect of the follicle diameter on pregnancy rate of the first and second TAI. Statistical analyses were performed by GLIMMIX procedure of SAS®. There was an effect of the dominant follicle diameter on D22 on pregnancy rate of the first TAI [small: 92.5%(266/287), medium: 83.1%(231/279) and large: 20.5%(57/278); P<0.0001] and on pregnancy confirmation [small: 83.8%(231/266), medium: 79.9%(198/231), large: 80.7%(46/57); P<0.0001]. There was no difference for false positive rate of first TAI between terciles [small: 13.1% (35/266), medium: 14.2% (33/231), large: 19.3% (11/57); P=0.4326. There was no effect of follicle diameter on the second TAI [small= 57.7% (56/96), medium: 64.8% (64/96) and large: 50.9% (55/97); P=0.2005]. There was no effect of injectable P4 source on pregnancy rate of first TAI [Progecio®: 63.7%(226/355), Sincrogest®: 67.1%(328/489); P=0.3019], on second TAI [Progecio®: 56.75%(82/129), Sincrogest®: 52.03%(93/160); P= 0.4520] and on false positive rate [Progecio®: 11.8%(28/226), Sincrogest®: 15.0%(51/328); P=0.2763]. It is concluded that cows positive for pregnancy diagnosis by Doppler that present large follicles (>10.5mm) on day 22 have lower pregnancy rate on first TAI. It was not verified effect of follicle diameter on false positive rate (pregnant on D22 then non-pregnant on D30). There was no effect of follicle diameter of non-pregnant cows on pregnancy rate of the second TAI.

005 TAI/FTET/AI

Effect of nutritional supplementation with blocks on pre and/or post partum in reproductive efficiency of Nellore (*Bos indicus*) primiparous cows submitted to TAI

Bruna Lima Chechin Catussi[1], Laísa Garcia da Silva[1], Guilherme Machado Zanatta[1], Rafaela Maria Sutiro Angelieri[4], Emiliana Santana Batista[1], Juan Fernando Morales Gómez[2], Fernando José Schalch Júnior[3], Pietro Sampaio Baruselli[1]

[1]VRA-FMVZ/ USP - Departamento de Reprodução Animal da Universidade de São Paulo, São Paulo, SP; [2]FZEA/USP - Departamento de Qualidade e Produtividade Animal da Universidade de São Paulo, Pirassununga, SP; [3]Minerthal - Minerthal Produtos Agropecuários Ltda, São Paulo, SP; [4]Mater - Fazenda Mater, Santa Rita do Pardo, MS, Brasil.

The objective of this study was evaluate the reproductive efficiency and calves performance of Nellore primiparous cows that received block supplementation (SB) or control supplementation (SC). The study was conducted in Farm Mater, with 417 Nellore (Bos indicus) pregnant heifers, aging 31±2.3 months. 90 days before calving date (D-90), heifers were randomly distributed in 4 groups: Group B-B: received SB 90 days before and 120 after calving (n=89); Group B-C: received SB 90 days before and SC 120 days after calving (n=103), Group C-B: received SC 90 days before and SB 120 days after calving (n=117) and Group C-C: received SC 90 days before and SC 120 days after calving (n=108). Supplementation: SB=350g/kg of crude protein; 210g/kg NNP e 300mg/kg of sodium monensin (40g/100kg of live weight/day/animal; offered weekly); SC= 400g/kg of crude protein e 320g/kg NNP (40g/100kg of live weight/day/animal; offered every two days). Body weight (BW) and body condition score (BCS) of cows and body weight of calves (WC) over time were evaluated. The subcutaneous rump fat thickness (RUFAT) and rib fat thickness (RFAT) were measured by US (D40). Blood samples were also taken in subgroup to measure the insulin concentration (INS) and IGF-1 (D-90, D40 and D80). Cows were synchronized to receive two TAI (8 days P4/E2-based protocol,PGF/eCG/EC at P4 removal and AI 48 hours later) followed by natural breeding for 50days. Pregnancy diagnosis was done by US 30 days after TAI and 30 days after bull exposure. Statistical analyses were performed by orthogonal contrast using SAS®[Contrast 1(C1): SC vs. SB (C-Cvs.B-B+B-C+C-B); Contrast 2(C2): SB in 2 periods (pre and post-partum) vs. SB in 1 period (pre or post-partum; B-B vs. B-C+C-B); Contrast 3(C3): SB on prepartum vs. SB on pos-partum (B-Cvs.C-B). On C1, there was a difference for pregnancy rate (PR) of first TAI (SC=41.7% vs. SB=51.5%; P=0.04), on final PR (SC=74.1%vs. SB=80.9%; P=0.07), on RUFAT (SC=2.9mm vs. SB=3.4mm;P=0.003) and on RFAT (SC=1.2mm vs. SB=1.6mm; P=0.004]. SB increased BCS (P=0.02), IGF-1 (P=0.05), INS (P=0.05) and WC over time (P=0.01). On C2, SB in 2 periods increased BCS (P=0.05) and WC over time (P=0.0004). There was an interaction BCS*time on C3 (P<0.0001). Supplemented cows on pre-partum presented higher BCS on D40 and animals supplemented on post-partum presented higher BCS on D80 and D170. There was also an interaction insulin*time (P=0.06). Animals supplemented on pre-partum had higher INS on D40 and cows supplemented on post-partum presented higher INS on D80. In conclusion, cows supplemented with blocks presented an increase on RFAT, RUFAT, BCS, INS, IGF-1, PR for first TAI, final PR and on CW. Still, cows supplemented on pre and post partum had higher BCS and heavier calves. Also, cows only supplemented on pre partum presented higher BCS on D80 and D170. On D40, Insulin increases for supplemented cows on pre-partum. However, on D80 insulin is higher in animals supplemented on post partum.

006 TAI/FTET/AI

Estrus synchronization and reproductive performance of ewes treated with dinoprost or intravaginal progesterone device outside the breeding season

Guilherme Henrique Freitas Seugling[1], Maria Paula Marinho de Negreiros[1], Marcela Louvaes Rodrigues[1], Ana Clara Bertolini Pereira[1], Rian Lolico Chamorro[1], Gabriella Carolina Silva[1], Luiz Aguinaldo Ricetto Pegorari Júnior[1], José Gabriel Rigo Kairuz[2], Petrônio Pinheiro Porto[1], Thales Ricardo Rigo Barreiros[1], Wanessa Blaschi[1]

[1]UENP - Universidade Estadual do Norte do Paraná; [2]UEL - Universidade Estadual de Londrina, Londrina, PR, Brasil.

A trial was conducted to investigate the estrus manifestation, conception and pregnancy rates using different hormonal treatments outside the natural breeding season. A total of 83 multiparous crossbreed Santa Inês x Dorper ewes, 3–5 years of age, a body weight of between 40 and 45 kg and body condition score (BCS) 2.9±0.4 (scale 1: emaciated to 5: obese) were used. The experiment was conducted during spring at the commercial ranch in Bandeirantes city, Paraná State, Brazil (latitude 23.1054, longitude 50.3715, altitude 419m). The seasonality for crossbred ewes at this latitude is low. The animals were divided in a similar way to BCS in two experimental groups. Group PGF (G-PGF, n=43), the animals received 2.5 mg of dinoprost (Lutalyse, Zoetis, Brazil) by intramuscular route (IM); (D-8). Eight days later (D0), ewes received again 2.5 mg of dinoprost by IM route. Group CIDR (G-CIDR, n=40), ewes received (D8) a 0.33 g of progesterone intravaginal device (CIDR, Zoetis, Brazil). Eight days later (D0), the devices were removed plus and 2.5 mg of dinoprost by IM route. Approximately 12 hours after the dinoprost application, ewes were submitted to natural mating in the proportion of one ram to 10 ewes, at night (6 PM to 6 AM), for six consecutive days. The rams were diagnosed able to reproduction after an andrological examination. The rams were marked daily with paint in the sternal region and manifestation of estrus was measured by marking with paint on the pelvic region of the females at the end of each natural mating period. The pregnancy diagnosis was made by transrectal ultrasonography (Mindray, China, 7.5 MHz) 30 days after the end of natural mating. The results were analyzed by logistic regression ($P < 0.10$). There was no interaction of BCS with estrus manifestation rate ($p = 0.34$), conception rate ($p=0.53$) and pregnancy rate ($p = 0.45$). The rate of estrus manifestation was higher ($p= 0.06$) in G-CIDR [82.5%, (33/40)] than G-PGF [44.1% (19/43)]. Conception rate was similar ($p = 0.24$) in G-PGF [73.6% (14/19)] and G-CIDR [54.4% (18/33)]. The pregnancy rate was similar ($p=0.15$) in G-CIDR: 45.0 %(18/40) and G-PGF: 32.5 %(14/43). In conclusion, progesterone treatment possibly induced cyclicity in sheep since the study was performed outside the breeding season, although the genetic group is considered of low reproductive seasonality. The conception and pregnancy data presented promising results for the development of new studies to understand the use of estrus synchronization. Acknowledgments: Fundação Aralcária do Estado do Parana, Cabanha Sal no Cocho e Laboratórios Zoetis

007 TAI/FTET/AI

Effect of treatment with GnRH at the moment of embryos transfer on the follicular dynamics and conception rate of buffalo recipients

Damiana Chello[1], Julio Cesar Barboza da Silva[2], Guilherme Pugliesi[1], Nelcio Antonio Tonizza de Carvalho[4], Julia Gleyci Soares[1], Igor Garcia Motta[1], Carlos Alberto Souto Godoy Filho[1], Rodolfo Daniel Mingoti[3], Pietro Sampaio Baruselli[1]

[1]FMVZ/USP - Faculdade de Medicina Veterinária e Zootecnia/Univeridade de São Paulo; [2]UniFAJ - Centro Universitário de Jaguariúna, Jaguariúna, SP; [3]MSD - MSD - Saúde Animal, São Paulo - SP; [4]UPD/APTA - Unidade de Pesquisa e Desenvolvimento de Registro, Vale do Ribeira, SP, Brasil.

The objective of the present study is to evaluate the effect of GnRH treatment at the time of TET on the conception rate of buffalo embryo recipients. The hypothesis of the present study is that treatment with GnRH on the TET day induces the formation of an accessory corpus luteum (CL), increases the plasma concentrations of progesterone (P4), and, consequently, increasing conception rate. This study involved 265 Murrah and crossbreeding Murrah x Mediterranea buffaloes, aged from 2 to 15 years, without any fertility problems and with a good body condition score (BCS> 2.5). The experiment was carried out in 4 different farms: F1 (n=70), F2 (n=97), F3 (n=63) and F4 (n=35). The recipients were synchronized with the following protocol: on day 0 (D0) the buffaloes received an intravaginal P4 device (Prociclar® 750 mg; Ceva) associated with i.m. administration of 2 mg of estradiol benzoate (Sincrodiol®, Ourofino) and 0.53 mg of sodium cloprostenol (PGF2α; Sincrocio®, Ourofino). On day 9 (D9), the P4 device was removed and 0.53 mg PGF, 400 IU equine chorionic gonadotrophin (eCG; Sincro eCG®, Ourofino) and 1.0 mg estradiol cypionate (SincroCP®, Ourofino) were administrated (i.m.). On day 18 (D18), an ultrasound evaluation (DP 2200®, Mindray) was performed. Only the buffaloes that had a CL> 10 mm received a in vitro produced embryo. At TET (D18), recipients were divided into two groups: Group GnRH (G-GnRH; n=134) which received 25 μg of lecirelin i.m. (Gestran Plus, Tecnopec) and the Control Group (G-CONT; n=131), which did not receive any treatment. Additionally, a subset of 22 recipients was subjected to Doppler ultrasound (MyLabDelta, Esaote) examination in the following days: D18, D22, D25, D28 to evaluate the ovulation rate, the formation of an accessory CL and the vascularization of the CLs. Blood was taken from 35 animals in the same days for plasma P4 concentration analysis. Thirty days following TET, a new ultrasound examination was performed to evaluate conception rate. Statistical analyzes were performed using the SAS® GLIMMIX procedure. Conception rate differed across farms (P <.0005) [F1 = 34.2% (24/70); F2 = 6.1% (6/97); F3 = 31.7% (20/63); F4= 28.3% (10/35)]. Animal category also influenced conception outcomes and lactating buffaloes had lower fertility (12.8%) than non-lactating buffaloes (30%) or heifers (33.3%; P = 0.004). No significant difference in terms of conception rate was observed between the two experimental groups (G-GnRH = 23.8%, G-CONT = 21.4%, P = 0.6). Out of the 22 buffaloes examined with Doppler ultrasound, 36% (n = 4/11) of them showed an ovulation following the treatment with GnRH with a subsequent creation of an accessory CL. The GnRH treatment didn't have any effect on the plasma P4 concentration (P = 0.4). However, the recipients that ovulated after GnRH treatment presented higher P4 concentration (P=0.02). In conclusion, treatment with GnRH at the time of ET did not increase conception rate in buffalo recipients.

008 TAI/FTET/AI

Efficiency of the protocol of cyclicity induction with injectable progesterone in prepubertal 2-year-old Nelore (*Bos indicus*) Heifers

João Abdon Santos[1], Bruno González Freitas[2], Bruna Martins Guerreiro[2], Evandro Davanço Ferreira de Souza[2], Fabio Rocha[2], Fainer Lincoln[1], Ygor Ernandes Vaz da Silva Braga[1], Bruna Lima Chechin Catussi[3], Laísa Garcia da Silva[3], Augusto Rodrigues Felisbino Neto[2,3], Pietro Sampaio Baruselli[3]

[1]JA Reprogen - JA Reprogen, Eunápolis/BA; [2]Ourofino Saúde Animal - Ourofino Saúde Animal, Cravinhos, SP, Brasil; [3]VRA - FMVZ/USP - Departamento de Reprodução Animal - FMVZ/USP, São Paulo, SP, Brasil.

The present study evaluated the efficacy of a single-dose management protocol using long-acting injectable progesterone (P4) in 2-year-old Nellore (Bos indicus) heifers to induce cyclicity. The experiment was carried out in 3 farms and 259 Nellore (Bos indicus) heifers of 23.6 ± 1.5 months of age, weighing 335.4 ± 27.7 kg were used. All animals were evaluated by ultrasonography (M5 Vet, Mindray®, China) at day -10 to detect the presence of corpus luteum (CL). Only prepubertal heifers (without CL) were randomly distributed in three experimental groups. In the group Control Device (GCD; n = 88), the animals received a 1g progesterone P4 intravaginal device previously used (fourth use, Sincrogest®, Ourofino, Cravinhos, SP), associated with application of 1 mg i.m. of estradiol cipionate (EC) (SincroCP®, Ourofino, Cravinhos, SP) on the day of P4 device removal. In the Group P4 Injectable + EC (GP4I + EC; n = 84) heifers received 150mg i.m. of long-acting P4 (Sincrogest®, Ourofino, Cravinhos, SP) on day 0 and 1mg i.m. of EC (estradiol cipionate; SincroCP®, Ourofino, Cravinhos, SP) on day 12. Finally, in the Group P4 Injection Only (GP4I; n = 87) the animals received only 150mg im of long-acting P4 Injection (Sincrogest®, Ourofino, Cravinhos, SP) on day 0. In all groups, TAI protocol was started 24 days after the induction protocol. After 30 days an ultrasound examination was performed to evaluate the pregnancy rate. Variables were analyzed by the GLIMMIX procedure of SAS® version 9.4. There was no interaction between treatment and farm (P = 0.34). The rate of cyclicity at the start of the IATF protocol was higher for the Group Device (GCD: 93.7% a; GP4I + EC: 80.1% b; GP4I: 80.3% b; P = 0.047). Heifers above 320 kg body weight had an increase in the rate of cycling in response to the induction protocol in relation to heifers below 320 kg (88.9% vs. 71.5%, P = 0.003). The pregnancy rate for the TAI protocol did not differ between the experimental groups (GCD = 42.8%, GP4I + EC = 60.8%, GP4 = 44.8%, P = 0.061). It can be concluded that the single-dose cycling induction protocol provides similar pregnancy rates to TAI compared to the protocols with intravaginal P4 and EC by the day of P4 device removal and to treatment with injectable P4 associated with EC.

Acknowledgments: Ouro Fino Saúde Animal, JA Reprogen

009 TAI/FTET/AI

Evaluation of early resynchronization protocol with the onset by 14 or 15 days after first TAI in Nellore (*Bos indicus*) heifers

Stella Mara Aparecida Morais[1], Laísa Garcia Da Silva[2], Bruna Lima Chechin Catussi[2], José Eduardo Pereira Lima Filho[1], Pietro Sampaio Baruselli[2]

[1]FAZENDA SEGREDO - Fazenda Segredo, MS, Brasil; [2]VRA-FMVZ/USP - Departamento de Reprodução Animal da Universidade de São Paulo VRA-FMVZ/USP, São Paulo, SP, Brasil.

The objective of this study was to evaluate the efficiency of early resynchronization protocol in Nellore heifers with the onset by 14 or 15 days after the first TAI and the efficiency of two different sources of injectable P4 on the beginning of resynchronization protocol. The study was performed on Fazenda Segredo (Bataguassu, MS, Brasil), where 747 Nellore (Bos indicus) heifers, with mean age of 13.5±1.3 months, weighing 279.3±40.9 kg, were randomly distributed in a 2 X 2 factorial arrangement of treatments after first TAI (Day 0). All heifers were resynchronized with a 1g intravaginal P4 device used thrice (Sincrogest®, Ourofino, Cravinhos, SP), than 4 experimental groups were formed: Group 14A [on day 14 received 50mg i.m. of injectable P4 (Afisterone®); n= 198], Group 14S [on day 14 received 50mg i.m. of injectable P4 (Sincrogest injetável®); n= 169], Group 15A [on day 15 received 50mg i.m. of injectable P4 (Afisterone®); n= 170] and Group 15S [on day 15 received 50mg i.m. of injectable P4 (Sincrogest injetável®); n= 210]. P4 devices were removed eight days later by the day of pregnancy diagnosis (D22 for Group 14 and D23 for Group 15) using Color Doppler ultrasonography (Mindray® M5Vet, China) (Ginther, 2007). Heifers with a CL vascularization greater than 25% were considered pregnant. Heifers diagnosed as non-pregnant (with low or no CL vascularization) received 0,530 mg i.m. of cloprostenol (Sincrocio®, Ourofino, Brasil), 200 IU of eCG (SincroeCG®, Ourofino, Brasil) and 0,5 mg of CE (SincroCp®, Ourofino, Brasil), and they were inseminated 48 hours later. Heifers diagnosed as pregnant by Doppler were submitted to another US 15 days later, for pregnancy confirmation and false positive evaluation. Heifers that received the second TAI were checked for pregnancy 22 days after bred by US Color Doppler again. Statistical analyses were performed by GLIMMIX procedure of SAS® 9.4 version. There was no interaction between injectable P4 and day of the beginning of the protocol (P= 0.64). There was no effect on pregnancy rate of the first TAI [D14= 52.3% (192/367) vs. D15= 51.6% (196/380); P=0.90] and second TAI [D14= 40.6% (71/175) vs. D15= 42.6% (78/183); P= 0.78] according to the day of the beginning of resynchronization protocol. False positive rate was lower for the group resynchronized on Day 15 [D14= 23.4% (45/192) vs. D15=13.3% (26/196); P=0.002]. It is concluded that the type of injectable P4 and the day of the beginning of resynchronization protocol have no effect on the pregnancy rate. However, the resynchronization started on day 15 contributed to a lower false positive rate and may be an alternative for the early resynchronization protocol. Acknowledgment: Fazenda Segredo

010 TAI/FTET/AI

Strategies for induction of ovulation for fixed-time ai in lactating dairy cows submitted to a novel presynchronization protocol

Carlos Eduardo Cardoso Consentini[1], Leonardo de França e Melo[2], Jessica Cristina Lemos Motta[1], Rodrigo Lemos Olivieri Rodrigues Alves[1], Lucas Oliveira e Silva[1], Mariana Contini[1], Felipe Belchior Sargaço[1], Natália Picoli Folchini[1], Guilherme Madureira[1], Milo Charles Wiltbank[3], Roberto Sartori[1]

[1]ESALQ/USP - Department of Animal Science, Luiz de Queiroz College of Agriculture (ESALQ), University of São Paulo, Piracicaba, SP; [2] GENEAL - Geneal – Genetics and Animal Biotechnology, Uberaba, MG, Brazil; [3]UW - Madison - Department of Dairy Science, University of Wisconsin - Madison, Madison, WI 53706, USA.

The study evaluated strategies for induction of ovulation for first fixed-time AI (FTAI) postpartum in dairy cows submitted to Ovsynch-type protocols initiated after a presynchronization. A total of 909 lactating dairy cows (36.7±0.3 DIM and 38.9±0.6 kg/d of milk) from 6 herds were used. On D-15, cows received a used intravaginal progesterone (P4) device, and 7 d later (D-8), 1 mg estradiol cypionate (EC) and 0.530 mg cloprostenol (PGF), concomitant with P4 withdrawal. On D0 (onset of FTAI protocol), cows were randomly assigned to 1 of 3 groups, that differed only on the strategy to induce ovulation at the end of the protocol. On D0, cows received 16.8 μg buserelin acetate (GnRH) and insertion of a 2 g P4 device. On D6, cows received 0.530 mg PGF followed by a second PGF on D7, concomitant with P4 withdrawal. In Group EC, cows received 1 mg EC on D7 as inducer of ovulation. In Group EC/G, cows received EC on D7 and 8.4 μg GnRH administered 16 h before AI (56 h after the first PGF). Finally, in Group G, cows only received 8.4 μg GnRH 16 h before AI. The AI was performed on D9 (48 h after P4 removal) in all treatments and pregnancy diagnosis was performed 31 and 60 d after AI. Statistical analyses were performed with PROC GLIMMIX of SAS 9.4 ($P \leq 0.05$). The proportion of cows with CL at the beginning of presynchronization was 67.7% (427/631), and on D0 of FTAI protocols, it increased to 80.9% (433/535). On D6 (time of first PGF) 91.0% (342/376) of the cows had a CL. Ovulation rate after D0 was 63.3% (229/362). Pregnancy per AI (P/AI) was not different between cows with or without CL on D-15 [44.7 (191/427) vs. 38.7% (79/204)] and on D0 [44.3 (192/433) vs. 37.3% (38/102)], however, cows with CL on D6 had higher P/AI than cows without CL [45.9 (157/342) vs. 17.7% (6/34)]. Estrus expression was greater in cows receiving EC than cows only receiving GnRH [80.2 (203/253) vs. 46.1% (53/115)]. There was a tendency ($P = 0.07$) for interaction between treatment and estrus expression on P/AI on D31, in which estrus increased P/AI in EC group [53.7 (58/108) vs. 15.0% (3/20)], but not in cows with estrus in G group [41.5 (22/53) vs. 40.3% (25/62)]. The P/AI of primiparous was 1.5 times higher than multiparous in all groups, and overall, it was 55.3% (130/235) vs. 35.7% (101/283). There was no interaction between BCS and treatment, however, cows with BCS greater than 2.75 had higher P/AI than thinner cows [44.0 (243/552) vs. 30.7% (61/199)]. There were no differences between treatments on P/AI on D31, with overall P/AI of 40.4% (367/909). There was a tendency ($P=0.09$) for higher pregnancy loss in cows receiving only GnRH as ovulation inducer [19.5 vs. 10.1 vs. 12.2% for G, EC/G, and EC group, respectively]. In summary, although all ovulation treatments produced similar P/AI, further research is needed to optimize the presynchronization strategy and definitively confirm if lack of EC does not increase pregnancy loss. Acknowledgments: FAPESP, CAPES, CNPq and GlobalGen

011 TAI/FTET/AI

Effect of eCG on conception rate in 15 months old beef heifers, submitted to a FTAI program using a Progesterone device

A. Vater[1], J. Rodriguez[1], A.A Vater[1], J. Cabodevila[2], S. Callejas[2]

[1]Grupo IA total, Veterinarians Private Activity; [2]Área de Reproducción, Centro de Investigación Veterinaria de Tandil, (CIVETAN, CONICET-CICPBA), Facultad de Ciencias Veterinarias, UNCPBA, Tandil, Argentina.

The use of eCG is widely employed in Bos indicus breeds, however the use in Bos taurus is still controverse. The objective of this study was to evaluate if the use of eCG can influence conception rate of heifers submitted to FTAI. A total of 318 Hereford (Boss Taurus) heifers with 13 to 15 month old, were used from a commercial farms located in the state of Benito Juarez, Buenos Aires Province, Argentine. All heifers were evaluated in BSC (1-9), average (± S.D) 5.3±0.6; as well as ovarian structure (OS) by ultrasonography (Wed-3000 V), 1= corpus luteum; 2= Follicle ≥10 mm diam; 3= follicle <10 mm diameter). All heifers received on day 0 an intravaginal device with 0.6 g of P4 (Fertilcare 600®, PASRL, Argentine) and 2 mg of estradiol benzoate via i.m (Fertilcare Synchronization®, PASRL, Argentine). In D7, the device was removed and 0.265mg Cloprostenol Sodium (DProst®, PASRL, Argentine) and 0.5mg estradiol cypionate (Cipionato, PASRL, Argentine) were administered, both via i.m. The heifers where homogeneously subdivided into two groups: G0-control, n=159; and G250 [250 IU of eCG (Novormon®, Syntex; Argentine); n= 159. The FTAI was performed 52 to 54 hours after the device was removed and the pregnancy diagnosis was performed 32 days after FTAI by ultrasonography (Wed-3000V). The obtained data were analyzed by logistic regression through PROC Logistic of SAS® (α=0.05). There was no difference in the pregnancy rate (PR) between G0= 50.9% (81/159) and G-250 = 54.7% (87/159); however, the number of animals used does not allow to detect the differences observed as significant. The PR were not different between OS on day 0 [OS1 = 55.4% (31/56); OS2= 53.0% (44/83); OS3= 52.0% (93/179)]. Also, no differences were verified between PR and BSC group interaction: BSC5 = 52.4% (121/231); BSC6 = 53.7% (36/67); BSC7 = 55.0 % (11/20); P> 0.05). It is concluded that the use of 250 IU of eCG does not increase conception rate in Boss Taurus 13-15 months old heifers. More research will be necessary to conclude if the difference in the conception rate could be increased.

012 TAI/FTET/AI

Evaluation of a modification of the j-synch synchronization protocol on follicular dynamics and pregnancy rates in *Bos indicus* embryo recipients

Andrés Cedeño[1,2,4], Luis Morales[4], Luis Pinargote[1,3], Carlos Rivera[4], Ignacio Macías[4], Camila Guadalupe[4], Vanessa Figueroa[4], Gabriel Amilcar Bó[1,2]

[1]IRAC - Instituto de Reproducción Animal Córdoba, Córdoba, Argentina; [2]UNVM - Doctorado en Ciencias, Universidad Nacional de Villa María, Instituto A.P. de Ciencias Básicas y Aplicadas, Córdoba, Argentina; [3]INIAP - Instituto Nacional de Investigaciones Agropecuarias, Quevedo, Ecuador; [4]ESPAM - Laboratorio de Biotecnología de la Reproducción Animal, Escuela Superior Politécnica Agropecuaria de Manabí, Manabí, Ecuador.

The objective of this study was to compare the effect of the period of insertion of the progesterone (P4) device in the J-Synch protocol on follicular dynamics and pregnancy per embryo transfer (P/ET) in recipients. Sixty Bos indicus crossbreed beef cows, with a body condition between 2.5 and 3 (scale 1 to 5) were used. All the recipients were allocated to one of three groups [7-day J-Synch (n = 20), 6-day J-Synch (n = 20) and Conventional (n = 20)]. On Day 0, all recipients received 2 mg of estradiol benzoate (Sincrodiol®, Ourofino, Brazil) and the insertion of a P4 device (1g P4, Sincrogest®, Ourofino). All the recipients received at the time of P4 device removal (Day 6 in the 6-day J-Synch and Day 7 in the other two treatment groups), 500 μg Cloprostenol sodium (Sincrocio®, Ourofino), 400 IU of equine Chorionic Gonadotropin (SincroeCG® 6000UI, Ourofino). Cows in the Conventional group also received 0.5 mg ECP (SincroCP®, Ourofino) at the same time, whereas the recipients in the two J-Synch groups did not receive any further treatment. All recipients were also tail-painted for estrus detection (CeloTest, Biotay, Argentina) and all cows that had >50% of the paint removed at 72 h (J-Synch groups) or 54 h (Conventional group) from P4 device removal were considered in estrus. All cows were examined twice-daily by transrectal ultrasonography (Mindray DP50 Vet®, Shenzhen, China) from the time of P4 device removal until ovulation or 120 h after P4 device removal. In vitro produced fresh embryos were transferred on Day 17 in the 7-day J-Synch or Day 16 in the other two groups. Results were analyzed using the mixed GLM procedure (InfoStat, 2019). The diameter of the dominant follicle on the day of P4 device removal was larger (P=0.04) in cows in 7-day J-Synch group (9.94 ± 0.60 mm) than in those in the 6-day J-Synch (9.28 ± 0.71 mm) and Conventional (7.82 ± 0.59 mm) groups. The diameter of the preovulatory follicle was larger (P=0.03) in cows in the 7-day J-Synch (16.4 ± 0.2 mm) than in in the 6-day J-Synch (15.5 ± 0.3 mm) and Conventional (13.8 ± 0.2 mm) groups. The diameter of the CL on the day of the ET was also larger (P=0.01) in the 7-day J-Synch (21.89 ± 0.81 mm) than in the 6-day J-Synch (18.66 ± 0.78 mm) and Conventional (16.81 ± 0.95 mm) groups. The interval from P4 device removal to ovulation was longer (P=0.03) in cows in the J-Synch groups (7-day J-Synch: 86.0 ± 3.0 h, 6-day J-Synch: 83.0 ± 4.0 h) than in the Conventional group (64.0 ± 3.0 h). Although more cows were transferred in the Conventional group (P=0.05, 18/20, 90.0%) than in the 7-day J-Synch (85.0%, 17/20) and 6-day J-Synch groups (80.0%, 16/20), P/ET tended (P=0.09) to be higher in cows of 7-day J-Synch (59.0%) than in the 6-day J-Synch (50.0%) and Conventional (39.0%) groups. In conclusion, extending the period of P4 device insertion one more day in the J-Synch protocol is an alternative to synchronize estrus and ovulation in Bos indicus embryo recipients.

013 TAI/FTET/AI

A low dose of hCG (150IU) associated to inducing ovulation with estradiol benzoate can successfully replace eCG in timed AI protocols in Nelore cows

Alexandre Souza[1,3], Alessio Valenza[1], Tiago Carneiro[2], Guilherme Zanatta[3], Rodolfo Mingoti[3], Laísa Silva[3], Emiliana Batista[3], Pietro Baruselli[3]

[1]CEVA - Ceva Animal Health, Brazil & France, Libourne, France; [2]DVM - Independent Bovine Vet practitioner, São Paulo, Brazil; [3]VRA-USP - VRA-USP University of São Paulo, São Paulo, Brazil.

The objective of this study was to compare follicle growth and conception results in postpartum Nelore cows receiving either a low dose of hCG (150IU) vs eCG 300 IU during the final stages of the timed AI protocol. A total of 561 anestrous (absence of CL) Nelore cows, with average BCS of 2.6 (scale 0-5) and at 35 to 70 days postpartum were treated on D0 with 2mg of estradiol benzoate (Benzoato-HC, Ceva) and received an intravaginal progesterone device (Prociclar, Ceva). Eight and a half days later, the intravaginal device was removed and all cows were treated with a PGF2a (Luteglan, Ceva), 1 mg of estradiol benzoate, and randomized to receive either saline (Control, n = 145), 150 IU of hCG (Fertigon, Ceva, n = 204), or 300 IU of eCG (Folligon, MSD, n = 212). Timed AI was performed at 36 to 40h after device was removed. A subset of cows were evaluated for follicular dynamics and CL development (Control n = 13, hCG n = 13, eCG n = 12). Ultrasound exams for follicular growth evaluation were performed at device removal, and at 24h intervals until 96h, and 7 days post ovulation. Pregnancy diagnosis was performed at 30 days post AI. Data were analyzed by logistic regression using the GLIMMIX procedure of SAS (version 9.4). There were no differences in time to ovulation and distribution of ovulations across time among groups ($P>0.10$). Dominant follicle growth within the 24h following the device removal was similar between cows treated with hCG (2.04 mm) and eCG (1.98 mm) and both were greater than cows in the Control (1.60 mm) group ($P<0.05$). In addition, Corpus Luteum diameter was greater for hCG and eCG compared to Control cows ($P<0.01$). More importantly, conception results were similar for cows receiving hCG (53.2%) compared to cows in the eCG group (53.8%), and both yielded greater conception than Control cows (43.3%). In conclusion, hCG did not alter time to ovulation and produced similar follicular growth rates and CL development after device removal as compared to cows receiving eCG, both treatments resulting then in improved fertility compared to cows that did not receive neither stimulatory gonadotrophic treatment.

014 TAI/FTET/AI

Short-term alternative protocols for synchronized induction of estrus in dairy goats: preliminary results

Jenniffer Hauschildt Dias[1], Cleber Jonas Carvalho de Paula[2], Joanna Maria Gonçalves Souza-Fabjan[2], Aline Matos Arrais[3], Gilmar Pereira Alvim[4], Jeferson Ferreira da Fonseca[5]

[1]UFV - Universidade Federal de Viçosa, Viçosa, MG, Brasil; [2]UFF - Universidade Federal Fluminense, Niterói, RJ, Brasil; [3]UFRRJ - Universidade Federal Rural do Rio de Janeiro, Seropédica, Rio de Janeiro, Brasil; [4]EMBRAPA - EMPRAPA Gado de Leite, Coronel Pacheco, MG, Brasil; [5]EMBRAPA - EMPRAPA Caprinos e Ovinos, Coronel Pacheco, MG, Brasil.

In order to increase productivity and allow genetic improvement of Brazilian dairy goats, the use of estrus induction protocols associated with fixed time artificial insemination (FTAI) has great importance. However, for FTAI success, a great estrus synchrony is necessary. This study aimed to assess the efficiency of a classic protocol of estrus induction of six days of duration (Fonseca et al. Reprod. Biol. 17: 268-73, 2017) and an alternative protocol increasing the duration of the protocol by 12 h. A total of 19 pluriparous Saanen goats with mean body condition score of 3.3 ± 0.12 were submitted to one of two treatments. All goats received 60 mg of medroxyprogesterone acetate sponges (MAP, Progespon®, Zoetis, Brazil) for 6 d (G6; n = 9) or 6.5 d (G6.5; n = 10). At 24 (G6) and 36 h (G6.5) before sponge removal, 30 µg of d-cloprostenol i.m. (Prolise®, Agener União, Brazil) and 200 IU of eCG i.m. (Novormon®, Zoetis, Brazil) were administered. Estrus detection was performed twice daily aided by teaser males and goats were artificially inseminated with frozen-thawed semen by transcervical via 24 h after the onset of estrus. Pregnancy diagnosis was performed 45 days after sponge removal. The data are presented in a descriptive way. The estrus response rate was 100% in both groups. The interval from sponge removal to estrus onset was 30.6 ± 6.3 h and 36 ± 0 h for the G6 and G6.5 group, respectively. After sponge removal, four and six goats started estrus at 24 and 36 h, respectively, for G6 group, while all animals from G6.5 group started estrus at 36 h. The pregnancy rate was 88.9% (8/9) in G6 and 70.0% (7/10) in the G6.5 group, with a total pregnancy rate of 78.9% (15/19). These preliminary results pointed to two efficient synchronous estrus induction protocols resulting in elevated pregnancy rates in goats. Both protocols are also associated to less time consuming related to estrus detection. The fact that 100% of animals started estrus at the same time in G6.5 animals appeared to be very interesting for FTAI, but this must be confirmed in larger trial study. Financial support: Embrapa (02.13.06.026.00.04) and Fapemig (CVZ-PPM 00201-17).

015 TAI/FTET/AI

Reproductive efficiency in dairy heifers and its relationship with dam fertility, net merit and herd size

Emiliana de Oliveira Santana Batista[1], Alexandre Henrily Souza[2,1], Pietro Sampaio Baruselli[1]

[1]USP - Universidade do Estado de São Paulo, Butantã; [2]Ceva - Ceva Saúde Animal, Paulínia, SP, Brasil.

The objective of this retrospective study was to assess factors that can influence reproductive efficiency in Holstein heifers raised in confined systems. The database was criated in collaboration with the Dairy Herd Improvement Association (DHI – Agritech Analytics, USA). Records were from 45.951 Dam-daughter pairs, housed at 346 dairy herds located across 12 states in the US territory. Only records from nulliparous Dam and daughter pairs and with a minimum of 305 milk equivalent of 8 thousand kg were included in the analysis. Also, age at calving for Dam and daughter was limited at 22 to 35 months and breeding records were collected throughout 2012. Variables considered in the statistical analysis included net merit, age at first calving for the Dam and her respective daughter, conception at first AI following first calving (daughters only), as well as herd location and lactating herd size. Data was analyzed with the PROC HPMIXED and PROC CORR of SAS (Version 9.4). As expected, larger herds were more efficient, and in general heifers calved at earlier ages for both Dam and her respective daughter (PIn conclusion, larger herds clearly had better reproductive efficency in heifers. In addition, although there seem to be a slight carry over effect from Dams with poor fertility to their offspring, this negative effect on fertility appeared to be minimized through better management and genetic improvement, particularly in larger herds.

Agradecimentos: CAPES processo: 88882.315553/2019-01

016 TAI/FTET/AI

Interrelation between the Follicular and Luteal Characteristics of Nellore Females submitted to a Fixed-Time Artificial Insemination Program

Artur Azevedo Menezes[1], Aldo Barbosa Sousa[1], Lucas André Silva Batista[1], Marcus Vinícius Galvão Loiola[2], Antonio de Lisboa Ribeiro Filho[2], Marcos Chalhoub[2], Rodrigo Freitas Bittencourt[2], Alexandra Soares Rodrigues[1]

[1]UFOB - Universidade Federal do Oeste da Bahia, Barra, Bahia, Brasil; [2]UFBA - Universidade Federal da Bahia, Ondina, BA, Brasil.

The objective of this study was to correlate the structural characteristics of the preovulatory follicle and the corpus luteum in Nellore females submitted to a protocol for Fixed-Time Artificial Insemination (FTAI). For this experiment, 39 Nellore lacting female, multiparous category, 5 to 7 years old, body condition score of 3.03±0.03 (1 to 5 scale) were used and maintained in pasture with mineral supplementation and water ad libitum. In a randomized day denominated day zero (D0) the synchronization protocol was initiated through the insertion of intravaginal progesterone (P4) device (DIB®, Zoetis, São Paulo, Brazil) and administration of 2.0 mg of estradiol benzoate (Gonadiol®, Zoetis, São Paulo, Brazil) intramuscularly (im). On day nine (D9) the P4 devices were removed and then12.5 mg of dinoprost tromethamine (Lutalyse®, Zoetis, Sao Paulo, Brazil), 0.6 mg estradiol cypionate (ECP®, Zoetis, St. Paulo, Brazil) and 300UI Equine Chorionic Gonodotrophin (eCG) (Novormon®, Zoetis, São Paulo, Brazil) im were administered. On day 11 (D11), to determine the structural characteristics of the preovulatory follicle, the animals were examined by ultrasonography (US) in B mode and color doppler by measuring the follicular diameter (DFOL), the area of the follicular wall (AFOL) and the area of vascularization of the follicular wall (VFOL). In this experiment all 39 animals responded to the protocol. On day 24 (D24), we performed US in B mode and color doppler of the corpus luteum (CL), analyzing the luteal diameter (DCL), luteal area (ACL) and the area of vascularization of the CL (VCL). The statistical analysis was performed using SPSS, version 19, considering $P<0.05$. The correlation between the follicular (DFOL, AFOL and VFOL) and luteal characteristics (DCL, ACL, VCL and P4) were performed using the pearson correlation test. The overall means for DFOL, AFOL and VFOL were, respectively, 1.12±0.20cm; 0.42±0.13 cm² e 0.22±0.10 cm². For the luteal parameters, were observed an average, of DCL, ACL and VCL of, 1.92±0.29 cm; 3.18±0.78 cm²; 1.25±0.45 cm² respectively. There was positive and significant association between DFOL and ACL (r=0.41 and P=0.02). The AFOL has showed a positive and significant correlation with DCL (r=0.41 and P= 0.02), ACL (r=0.41 and P=0.02) and VCL (r=0.35 and P=0.04). Concerning the VFOL, a positive and significant correlation with VCL was observed (r=0.36 e P=0.04). It was concluded that there was a positive correlation between the follicular and luteal structural characteristics, making possible the use of follicular measurement as a tool to associate to CL morphology and thus orientate mating in FTAI programs.

017 TAI/FTET/AI

Live weight and age affects pregnancy rate in precocious Nelore heifers submitted to timed artificial insemination

Kaerton Soares Campelo[1], Mateus Anastacio da Silva[1], Antônio Carlos Damasceno Tavares[1], Francisco Augusto Souza Ferreira[1], Samuel Santos do Nascimento[1], Ana Clara Canto Souza[2], Rafael Luiz Stolf[2], Gabriela Sanches Scuisato[2], Denis Vinícius Bonato[2], Fábio Morotti[2]

[1]P - Produzir Agropecuária, Santa Inês, MA, Brasil; [2]UEL - Universidade Estadual de Londrina, Campus Universitário, Londrina, PR, Brasil.

The aim of this study was to evaluate the influence of age and live weight on the pregnancy rate in precocious heifers submitted to TAI protocol, followed by two resynchronizations. For this study, 385 Bos taurus indicus Nelore heifers with ages ranging from 10 to 15 months (mean 13.48±1.2 months) and live weight from 216 to 380 Kg (mean 285.7±33.3 Kg) were kept in a pasture-grazing system based on Panicum maximum. Before the experiment, all heifers passed by a gynecological examination and only the healthy were kept in the study. On a random day of the estrous cycle, the heifers received an intravaginal progesterone device previously used (18 days, CIDR®, Zoetis) and 2mg estradiol benzoate intramuscularly (IM, Sincrodiol®, Ourofino). Eight days later, the device was removed and 500µg of sodium cloprostenol (IM, Sincrocio®, Ourofino), 0,5mg estradiol cypionate (IM, SincroCP, Ourofino), and 200IU eCG (IM, SincroeCG, Ourofino) were administrated. The TAI was performed 48 hours after the device removal. The pregnancy diagnosis was performed 30 days after the TAI by transrectal ultrasonography (Ultramedic®, China; linear transducer 5 MHz). Non-pregnant heifers were submitted up to two resynchronizations, repeating the pregnancy diagnosis after 30 days. For data analysis, the animals were classified based on the mean of the two variables: according to age in<14 months old (N=170) and ≥ 14 months old (N=215) and according to live weight in low weight (< 285 Kg, N=191) and high weight (≥ 285 Kg, N=194). The pregnancy rate was analyzed by logistic regression including age and live weight categories as a fixed effect, as the bull and inseminator were included as covariates. Interactions were considerate significant when P≤0.05. Pregnancy rate at 1st, 2nd, and 3th TAI were 31.69% (122/385), 34.22% (90/263) and 26.59% (46/173), respectively, and the overall pregnancy rate (3 protocols sum) was 67.01%. The category of heifers with high weight showed higher overall pregnancy rate compared to the low weight (73.20% vs. 60.21%; P=0.025). The overall pregnancy rate was higher too among the heifers with age ≥ 14 months than the category<14 months old (72.56 vs. 59.41%; P=0.037) at the end of the breeding season. Both age and live weight influenced the overall pregnancy rate, and an interaction was observed (P=0.05) between these two factors. Considering both extremes, the high weighted and older heifers (≥14 months) presented 72,85% of overall pregnancy rate (125/173) while the low weight <14 months heifers presented only 56,88% (84/149). It was concluded that older and heavier precocious heifers present better results when submitted to TAI protocols, considering the range of 10 to 15 months and live weight from 216 to 380 Kg.

018 TAI/FTET/AI

Adjustment of dose of long-acting progesterone during super precocious resynchronization in Nelore heifers

Mateus Anastacio da Silva, Kaerton Soares Campelo, Francisco Augusto Souza Ferreira, Antônio Carlos Damasceno Tavares, Samuel Santos do Nascimento

Produzir - Produzir Assessoria Agropecuária, Santa Inês, MA, Brasil.

The objective of this study was to evaluate the dose of long-acting progesterone (P4) during super precocious resynchronization protocols in Nelore heifers. A total of 92 Nelore heifers (Bos indicus), aging between 12 and 14 months old, body condition score between 2 and 3 (1-5 scale) and with free access to pasture and mineralized salt were used. On a random day of the estrous cycle (D0), heifers received an intravaginal device with 1 g P4 (Sincrogest, Ourofino, Cravinhos, Brazil) and 2 mg estradiol benzoate i.m. (EB, Sincrodiol, Ourofino). On D8, the P4 device was removed and 500 μg cloprostenol sodium (PGF, Sincrocio, Ourofino), 0.5 mg estradiol cypionate (EC, SincroCP, Ourofino) and 300 IU eCG (Sincro eCG, Ourofino) were administered i.m., and heifers were submitted to timed artificial insemination (TAI) 48 h later (D10). On D24, heifers received a new intravaginal device with 1 g P4 associated to the administration of 100 (n = 46) or 50 (n = 46) mg long-acting injectable P4 (Sincrogest Injectable, Ourofino). On D33 the P4 device was removed and pregnancy diagnosis was performed by color Doppler ultrasonography (Mindray, Z5 Vet, China, 7.5 MHz linear transducer), evaluating the presence of the corpus luteum (CL) and its blood flow (vascularization score using 1-3 scale, being 1 = low and 3 = high vascularization), adapted from Pugliesi et al. (Brazilian Journal of Animal Reproduction, 41:140-50, 2017). Non-pregnant heifers received the same hormonal treatments performed on D8 at first AI, and were submitted to TAI 2 d later (D35). Heifers considered pregnant at the Doppler evaluation, were confirmed by ultrasonography in B mode 47 d after the second TAI, by looking at fetal presence and viability. Statistical analyses were performed using chi-square ($P \leq 0.05$). Pregnancy per AI (P/AI) based on ovarian color Doppler evaluation was 48.9% (45/92) and by fetal evaluation was 42.4% (39/92; P = 0.5), demonstrating low diagnostic failure that was 13.3% (6/45). The P/AI was 45.6% (21/46) and 39.1% (18/46) of heifers receiving 100 mg and 50 mg of long-acting injectable P4, respectively (P = 0.6). The vascularization score was 30.8% (12/39), 41% (16/39) and 28.2% (11/39) in grades 1, 2 and 3, respectively (P = 0.3). Thus, the doses of 50 and 100 mg of long-acting injectable P4 had a similar effect for super-precocious resynchronization protocols in Nelore heifers, requiring more studies with larger numbers of animals to confirm the results. Acknowledgements: Ourofino.

019 TAI/FTET/AI

Effect of different estradiol benzoate doses for synchronization of follicle wave in a timed-AI protocol in *Bos indicus* beef cows

Amanda Guimarães Silva[1], Leonardo Marin Ferreira Pinto[1], Nadark de Amorim Silva[1], Ana Clara Degan Mattos[2], Pablo Henrique Ambrósio[4], Keila Maria Roncato Duarte[3], Rafael Herrera Alvarez[3], Guilherme Pugliesi[1]

[1]USP - Universidade de São Paulo, Jardim Elite; [2]UNESP (FCAV) - Universidade Estadual Paulista, Via de Acesso Professor Paulo Donato Castelane Castellane S/N - Vila Industrial; [3]APTA Tietê - Agência Paulista de Tecnologia do Agronegócio, Tietê - SP; [4]UFSC - Universidade Federal de Santa Catarina, Curitibanos, SC, Brasil.

We aimed with this study to evaluate the effect of three different doses of estradiol benzoate (EB) on the ovarian follicular dynamics of Zebu beef cows submitted to timed-AI (TAI). Primiparous and pluriparous Nelore cows, lactating (n=54) or not (n=19), and with a body condition score between 2.5 and 4 (1 to 5 scale) were used. On a random day of estrous cycle (D0), cows received an 8 days-used intravaginal progesterone (P4) device (Sincrogest®, Ourofino Animal Health) and was randomly assigned according to cow's category to three groups according to the EB dose. Cows in the EB-1 (n=26), EB-1.5 (n=24) and EB-2 (n=33) groups and received, respectively, an im treatment with 1, 1.5 or 2 mg EB (Sincrodiol®, Ourofino Animal Health). A subgroup (n=15/group) were subject to daily ultrasonography from D0 to D11, to evaluate ovarian follicular dynamics. On D8, P4 devices were removed and cows received via im 1 mg estradiol cypionate (SincroCP®, Ourofino Animal Health), 530 µg sodium cloprostenol (Cioprostinn®, Boehringer-Ingelheim Animal Health Brazil), and 300 IU eCG (SincroeCG®, Ourofino Animal Health). All cows were painted with chalk marker in the sacrocaudal region to identify cows that displayed estrus between D8 and D10. Thawed semen from two bulls was used for TAI on D10 and equally distributed among the treatment groups. Pregnancy diagnosis was done on D47 by transrectal B mode ultrasonography to detect the presence of a viable embryo with heartbeat. The data were evaluated by ANOVA (PROC MIXED), Fisher's exact test or logistic regression (PROC GLIMMIX) of SAS. The time of follicle emergence (days) did not differ (P>0.1) among groups (EB-1, 4.0 ± 0.3; EB-1.5, 3.9 ± 0.4; and EB-2, 4.1 ± 0.4). Similarly, no difference (P>0.1) was observed for the follicle growth rate (mm/day) from emergence to TAI (EB-1, 1.13 ± 0.11; EB-1.5, 1.25 ± 0.08; and EB-2, 1.03 ± 0.08), diameter (mm) of the largest follicle at TAI (EB-1, 11.4 ± 0.6; EB-1.5, 12.0 ± 0.6; EB-2, and 10.4 ± 0.6), and proportion of cows detected in estrus (EB-1, 77% [20/26]; EB-1.5, 75% [18/24]; EB-2, 88% [29/33]). However, an interaction of treatment and category (P=0.05) was observed for the ovulation rate within 36 h after TAI, indicating a reduction in ovulation rate for the EB-2 group in multiparous cows (53% [8/15]A, 54% [7/13]A and 27% [6/22]B, which was not observed in the primiparous category. The pregnancy rate did not differ (P>0.1) between EB-1, EB-1.5 and EB-2 groups (42.3% [11/26], 41.7% [10/24], and 39.4% [13/33], respectively). However, for the EB-2 group, primiparous had a higher pregnancy rate than multiparous (64% [7/11]A vs. 27% [6/22]B). In conclusion, the reduction of EB dose at the beginning of TAI protocol does not impact negatively on follicle dynamics, but further studies are needed to mitigate the effects on ovulation and pregnancy rates of Bos indicus cows submitted to EB/P4 based TAI protocols. Acknowledgments: FAPESP (2015/10606-9, 2019/07805-0).

020 TAI/FTET/AI

PGF2α at the moment of AI on pregnancy rate of cows displaying different scores of estrus expression

Juliana Wilke Diniz Horta[1], Isabella Marconato Noronha[2], Cícero Fleury Guedes Martins[3], Ana Carolina Bahia Teixeira[1], Leticia Zoccolaro Oliveira[1]

[1]Escola de Veterinária - UFMG - Universidade Federal de Minas Gerais, São Luiz, Belo Horizonte, MG; [2]FMVZ UNESP Botucatu - Faculdade de Medicina Veterinária e Zootecnia, UNESP Botucatu, Botucatu, SP, Brasil; [3]AFB - Agropecuária Fazenda Brasil, Nova Xavantina, MT, Brasil.

Animals expressing estrus presents higher ovulation rate, greater probability of pregnancy and better fertility at timed-AI (TAI; Pereira et al., 2016). On the other hand, PGF2α may enhance the mechanisms involved in the ovulatory process (Pfeifer et al., 2014). Thus, our study was based on the hypothesis that PGF2α could improve the ovulatory capacity of animals with lower evidency of heat expression at TAI. The objective was to evaluate the influence of PGF2α application at the moment of AI on conception rate (CR) of animals expressing higher or lower estrus behavior. Data from first service of 182 multiparous Nelore cows with 50 days postpartum (CEUA UFMG 348/2018) were collected. On Day 0 (D0), the animals received a intravaginal progesterone implant (CIDR®) and 2mg i.m. of estradiol benzoate (Gonadiol®). On D7, 12.5mg i.m. of Dinoprost (Lutalyse®). On D9, 12.5mg i.m. of Dinoprost (Lutalyse®), 1mg i.m. of ECP®, 300UI of eCG (Novormon®) and CIDR was removed. In addition, estrus detection device (Estrotec) was applied on the base of tail of the cows. The TAI was performed 48 hours after (at D11), by two experienced technitians, using semen from two bulls. Randomly, at the moment of AI, some animals received 12.5mg i.m. of Lutalyse (PGF group; n=101) and part of the animals received 2.5mL of saline solution (Saline group). Data regarding to the expression of estrus were also recorded, with a scale (1 to 4) referring to the activation of the device (estrus expression grade 1 = ≤25% removal of gray protective paint; grade 2 = ≤50% removal of gray paint ; grade 3 = ≤75% removal of gray paint; grade 4 = >75% removal of gray paint) (Pohler et al., 2016). CR was analyzed by logistic regression and means were compared by Tukey's test, considering $P>0.05$ and <0.10. Total CR was 45.6% (83/182), being higher (51.8%; n=56/108) for cows expressing evident estrus (grades 3 and 4) than for cows that expressed lower evidency of estrus behavior (grades 1 and 2; CR:36.5%, n=27/74, P=0.051). No difference (P=0.81) was observed for CR on the total number of cows receiving PGF2α at D11 (PGF group=46.5%; n=47/101) or not (Saline group=44.4%; n=36/81). For animals expressing evident estrus (grades 3 and 4), no influence of PGF2α at the moment AI on CR was observed (Estrus+PGF=52.6%, n=57; Estrus+Saline=51.0%, n=51; P=0.88), as expected. However, there was also no effect of PGF2α at AI on cows expressing estrus 1 and 2 (No estrus+PGF=38.6%, n=44; No estrus+Saline=33.3%, n=30; P=0.70). Hence, the present hypothesis was not confirmed in this preliminary study of our research group. It was concluded that animals that express more evident estrus behavior present higher conception rate, independent of the application of PGF2α at the time of AI. Acknowledgments: Zoetis and Dr. Ky Pohler.

021 TAI/FTET/AI

High fertility bulls have higher efficiency on TAI and SOV, but not on IVEP

Guilherme Machado Zanatta[1], Flávia Morag Elliff[1], Marcos Henrique Alcantara Colli[1], Rodolfo Daniel Mingoti[1], Bruna Lima Chechin Catussi[1], Laísa Garcia da Silva[1], Alessandra Bridi[2], Gabriel Armond Crepaldi[3,1], Mayra Elena Ortiz D'Avlia Assumpção[1], Felipe Perecin[2], Pietro Sampaio Baruselli[1]

[1]VRA - FMVZ/USP - Departamento de Reprodução Animal - FMVZ/USP, São Paulo, SP; [2]ZMV - FZEA/USP - Departamento de Medicina Veterinária - FZEA/USP, Pirassununga, SP; [3]ST Repro - ST Repro, Indaiatuba, SP.

The aim of this study was to evaluate pregnancy rate/TAI, and embryo quality on TAI, SOV and IVEP of high and low fertility bulls. For this, we used three high and three low fertility bulls (STRepro's evaluation). The same semen batch for each bull was used on all biotechnologies. On Exp. 1, 562 cows were synchronized with P4/E2 based protocol, (8 days of device permanence) and PGF, eCG and EC on the day of device removal. TAI was performed 48h after device removal. After 7 days, cows were randomized in two groups: embryo collection (GC; n=301) and pregnancy rate (GP; n=261). The GC group was submitted to flushing (embryos were classified according to the IETS guidelines). The GP was submitted to pregnancy diagnosis 30 days after TAI. On Exp. 2, 60 superovulations were performed with a P4/E2 based protocol (D0), with 8 decreasing doses of FSH (D4 until D8), on D6 cows received 2 doses of PGF2α with 12 hours interval. On D7, the P4 device was removed and on D8 ovulation was induced with GnRH. Two TAI were performed, 12h and 24h after GnRH application. The embryo collections were done on D15 (same methods/classifications described above). For Exp. 3, we used ovaries from slaughterhouse were used for IVEP. The follicles were aspirated and grade 1 and 2 oocytes were matured in vitro. For the bulls' distribution on the IVF, the oocytes were randomized according to quality. The semen was thawed and submitted to a percoll gradient of 45/90% by centrifugation at 6600g/5min. The zygotes were cultivated in a KSOMaa medium at 5% CO2 and 5% O2 until the 8th day. The cleavage and blastocyst rates on total oocytes and blastocyst rate on cleaved oocytes were considered. Data were analyzed by Fischer's exact test and SAS® GLIMIX procedure. On Exp. 1, (GC), there was no difference on embryos recovery rate according to the bull's fertility: high=39.7% (50/126)/low=35.9% (46/128), (P=0.5). However, there was difference on fertilization rate [high=98.0% (49/50); low=78.2% (36/46); P=0.01] and quality rate [high=88.0% (44/50); low=60.8% (28/46); P<0.01]. On GP, there was an effect on pregnancy rate [high=54.6% (71/130); low=41.2% (54/131); P=0.03]. On Exp. 2 there was a difference on the fertilization rate [high=59.0% (154/261); low=42.7% (102/239); P=0.04], on the viability of the total structures [high=54.0% (141/261); low=38.9% (93/239); P=0.05], but there was no difference on the viability over fertilized structures [high=91.6% (141/154); low=91.2% (93/102); P=0.9]. On Exp. 3, there was no effect on cleavage rate [high=82.1% (619/754); low=81.9% (584/713); P=0.9], blastocyst rate on total oocytes [high=21.5% (160/754); low=21.9% (152/693); P=0.9] and blastocyst rate on cleaved [high=25.8% (160/619); low=26.0% (152/584); P=0.9]. In conclusion, bulls with high fertility showed higher efficiency on TAI (fertilization rate, embryo quality and pregnancy rate) and SOV (fertilization rate and embryo quality). However, these differences were not observed for IVEP.

022 TAI/FTET/AI

Induction of the puberty in *Bos indicus* heifers in the western amazon region

Suellen Miguez Gonzalez[3], Geraldo Francisco dos Santos Junior[1], Igor Emanuel Gomes Assunção[2], James Duarte[2], Tales André Guedes[2], Carlos Henrique de Andrade Oliveira[2], Fernando Castro Parizi[1], Fábio Morotti[3], Marcelo Marcondes Seneda[3], Evelyn Rabelo Andrade[2]

[1]UFAC - Universidade Federal do Acre, Distrito Industrial, Rio Branco, AC; [2]UNIR - Universidade Federal de Rondônia, Porto Velho, RO; [3]UEL - Universidade Estadual de Londrina, Londrina, PR, Brasil.

The western Amazon region, with more than one million head of cattle, represents a very specific location for cattle, due to unique environmental conditions. Studies on adaptation, behavior and reproductive physiology of bovine females in the Amazon are scarce. Therefore, the objective of this study was to evaluate two distinct hormonal protocols for puberty induction of Bos indicus heifers in the western Amazon region. Bos indicus prepubertal heifers (n = 127) aged 21 months (SD+/- 0.3 months) and mean weight of 318 kg (SD +/- 7 kg) were submitted to two distinct protocols for induction of cyclicity. All females were submitted to ultrasound examination of the ovaries to verify the absence of the corpus luteum (CL). Two evaluations were performed with a 12 day interval between them. Afterward, they were divided into two experimental groups, G-CIDR/ECP (n=54) and G-P4/ECP (n=73). The G-CIDR/ECP remained for 12 days with CIDR® (Pfizer Saúde Animal, São Paulo, SP, Brazil) of 4th use and on the day of its withdrawal, 0.6 mg of estradiol cypionate (E.C.P, Pfizer Saúde Animal, São Paulo, SP, Brazil; IM) was administered. The G-P4/ECP was given 150 mg of injectable progesterone (Sincrogest, Ouro Fino, Cravinhos, SP; IM) and one injection of 0.6 mg of ECP 12 after days the progesterone injection. Twelve days after the end of the hormonal protocols, the females were submitted to another ultrasound evaluation (SonoScape, Domed-Dominium Medical, EUA) for identification of cyclicity (ovulatory follicle or CL) and then the females were submitted to synchronization of ovulation for FTAI. Among the females, only the ones that were responsive to puberty induction, G-CIDR/ECP (n=30) and G-P4/ECP (n=51) were included in the FTAI protocol. After seven days of insemination, both groups were exposed to clean-up bulls. Data were analyzed by the logistic regression model, adopting a significance level of 5%. G-CIDR/ECP resulted in 81.48% (44/54) of females responsive to induction of cyclicity (presence of CL) while G-P4/ECP obtained 86.3% (63/73; p=0.463). Regarding the conception rate from FTAI and bull, the group G-CIDR/ECP and G-P4/ECP had 43.33% (13/30) and 33.33% (10/30), respectively. The G-P4/ECP received 54.9% (28/51) and 39.22% (20/51) for the evaluations above. Regarding the final pregnancy rate (FTAI+Bull), G-CIDR/ECP resulted in 76.67% (23/30) and G-P4/ECP 94.12% (48/51; p=0.023). We concluded that both cycling induction protocols were efficient in Bos indicus heifers from western Amazonia. However, injectable P4 provided a higher conception rate at the end of the reproductive season.

023 TAI/FTET/AI

Presynchronization by induction of a largest follicle using a progesterone device in GnRH-based-ovulation synchronization protocol in dairy cows

José Nélio Sousa Sales[1], Eduardo Alves Lima[1], Luiz Manoel Souza Simões[1], Luiz Augusto Capellari Leite Silva[1], Miguel Pizzolante Bottino[1], Ana Paula Castro Santos[1], Raphael Evangelista Orlandi[1], Bruna Martins Guerreiro[2], Bruno Gonzalez de Freitas[2], Michele Ricieri Bastos[2]

[1]UFLA - Universidade Federal de Lavras, Lavras, MG, Brasil; [2]Ouro Fino - Ouro Fino Saúde Animal, Cravinhos, SP, Brazil.

The objective of study was to evaluate the pre-synchronization by dominant follicle induction using a progesterone device prior to the Ovsynch protocol (P4synch) compared to estradiol/progesterone-based protocol in lactating Holstein dairy cows. Holstein dairy cows (n=349) were randomly assigned to one of two groups: P4E2 Group (n=179), cows received a progesterone intravaginal device (Sincrogest, Ouro Fino, Brazil) plus the administration of 2mg of estradiol benzoate (Sincrodiol, Ouro Fino, Brazil) and 10µg of Busereline (GnRH; Sincroforte, Ouro Fino, Brazil) on day 0 (D0). Eight days later (D8), the progesterone device was removed and 500µg of Cloprostenol (PGF; Sincrocio, Ouro Fino, Brazil) and 1mg estradiol cypionate (SincroCP, Ouro Fino, Brazil) were administered. The TAI was performed 48 hours later (D10). P4Synch Group (n=170), cows received a progesterone intravaginal device on day -10 (D-10). Ten days later (D0) starting the Ovsynch protocol (10 µg of GnRH on Day 0, 500 µg of PGF on Day 7 and 10µg of GnRH on Day 9), with withdrawal of the device on Day 7. The TAI was performed 15 to 20 hours after the second GnRH of the Ovsynch protocol. In subgroups of cows (n=92), ultrasound exams were performed on days 0, at the time of ovulation inducer and TAI. The pregnancy diagnoses were performed 30 days after TAI. Statistical analyses were performed by GLIMMIX procedure of SAS. The pre-synchronization rate (presence the follicle with more than 12 mm on D0) for P4synch group was 97.8% (45/46). There was difference among groups for presence of CL on D0 [P4E2 - 80.4% (37/46) and P4synch - 37.0% (17/46); P=0.001], follicular diameter on D0 (P4E2 - 15.0±0.8mm and P4synch 21.0±0.8mm; P=0.001), at the time ovulation induction (P4E2 - 13.9±0.9mm and P4synch 17.6±0.6mm; P=0.001) and TAI (P4E2 15.2±0.7mm and P4synch 17.2±0.8mm; P=0.05). Furthermore, there was no difference between groups for synchronization rate [presence de follicle with more than 12 mm on TAI; P4E2 – 76.1% (35/46) and P4synch - 80.4% (37/46); P=0.61], follicular persistence after ovulation induction [P4E2 - 8.7% (4/46) and P4synch - 15.2% (7/46); P=0.34] and pregnancy rate at 30 days after TAI [P4E2 - 37.4% (67/179) and P4synch - 42.4% (72/170); P=0.35]. In conclusion, that despite differences in follicular dynamics among groups, the pre-synchronization by large dominant follicle induction using progesterone intravaginal device prior to Ovsynch protocol (P4synch) presents similar results as the estradiol/progesterone-based protocol in the fertility of lactating Holstein dairy cows. Support: Ouro Fino Saúde Animal, CAPES, FAPEMIG

024 TAI/FTET/AI

Relationship of antral follicle count, animal reactivity and productive parameters with pregnancy rate to TAI in Brahman cows

Maria Eduarda Scheel Bomtempo[1], Marcela Bortoletto Cerezetti[1], Fábio Lucas Zito de Morais[1], Elis Lorenzetti[1,2], Fábio Morotti[1]

[1]UEL - Universidade Estadual de Londrina, Campus Universitário, Londrina-Paraná; [2]UNOPAR - Universidade Norte do Paraná, Jardim Aeroporto, Arapongas, Paraná, Brasil.

This study evaluated the relationship of antral follicle count (AFC), animal reactivity and variations of live weight and body condition score (BCS) with pregnancy rate in Brahman cows submitted to timed artificial insemination (TAI). Brahman cows (N=122; Bos taurus indicus) with 24-96 months old, 45-60 postpartum (50±2), BCS range 2.5-3.5(2.9±0.1; Scale 1-5) and weight between 300-560kg(414±6) were kept on the pasture of Brachiaria brizantha for this study. On a random day of the estrous cycle (D0), cows received an intravaginal progesterone device (FertilCare®1200, Vallée) and 2mg estradiol benzoate (EB; Ric-Be®, Tecnopec) intramuscularly (IM). After 8 days, the device was removed and cloprostenol (50mg, Estron®, Tecnopec), equine chorionic gonadotrophin (300IU, Folligon®, MSD) and estradiol cypionate (1mg, Fertilcare® Ovulação, Vallée) were IM applied. On the same day, the base of the tail was painted to assess estrus demonstration, and TAI was performed 48h later. The AFC (follicles ≥3mm) of each female was determined at D0. The BCS and reactivity score (in the trunk, according to Grandin, 1993) were assessed every day of the TAI protocol, and weight was measured at the D0 and at the pregnancy diagnosis (D40). For analysis the data were grouped according AFC groups (low≤15, intermediate≥16 and ≤29, and high ≥30 follicles), reactivity classification (calm -mean score=1, restlessness -mean score >1 and ≤ 2, and agitated -mean score ≥ 2.1), weight variation (gaining -positive variation +10 to +40kg, maintaining -variation of -9 to +9kg, and losing -negative variation -10 to -40kg) and BCS variation (gaining - positive variation +0.25 to +0.75points, maintaining - variation of -0.25 to +0.25points, and losing - negative variation -0.25 to -0.75points). Pregnancy rates were analyzed by logistic regression model (P<0.05) in the MINITAB18® statistical software. The overall pregnancy rate of the study was 50%(61/122), and it was not influenced (P>0.05) by the AFC groups, reactivity classification and variations weight, and BCS. Cows with low, intermediate and high AFC showed similar (P>0.1) pregnancy rate [52.6%(20/38), 50.9%(26/51) and 45.4%(15/33), respectively]. However, estrus of high intensity to TAI was present in 94.7% of cows with low AFC in relation 70.6% to intermediate and 84.8% to high AFC (P=0.05). Calm, restlessness and agitated cows exhibit pregnancy rate of 43.9%(18/41), 54.7%(35/64) and 47.1%(8/17, P>0.1), respectively. Similar (P>0.1) pregnancy rate was found in cows gaining, maintained and losing weight [44.7%(21/47), 54.6%(30/55) and 50.0%(10/20), respectively] or BCS [44.0%(11/25), 54.3%(44/81) and 37.5%(6/16), respectively]. It was concluded that the pregnancy rate of Brahman cows submitted to TAI is not related by AFC, reactivity classification and variations of BCS or live weight. However, low AFC resulted in a high proportion of cows with estrus of high intensity.

025 TAI/FTET/AI

Follicular dynamics and evaluation of ovulation rates on lactating dairy cows subjected to j-sync protocol

Ana Paula Depiere[1], Gustavo Henrique Lenz[1], Jankiel Primon[2], Adiel Cristiano Nino[3], Patrícia Diniz Ebling[1], Sabrina Parise[1], Ana Paula da Silva[1], Fernanda de Souza Rosa[1]

[1]UCEFF - Centro Universitário FAI, Itapiranga, SC; [2]Med. Vet - Médico Veterinário autônomo, Caibi, SC; [3]Med. Vet - Médico Veterinário autônomo, Palmitinho, RS, Brasil.

The J-sync protocol has been demonstrating good results in beef and dairy heifers and weaned beef cows in terms of ovulatory follicle size and consequently corpus luteum formation, as well in the endometrial preparation to receive the embryo, resulting in pregnancy high rates when compared to conventional protocols. There are no studies demonstrating its efficiency in lactating dairy cows yet, since their high hepatic metabolism of steroids hormones. Therefore the main objective of this study is measuring the follicular dynamics and ovulation rates of lactating dairy cows subjected to the J-sync protocol. 12 Holstein cows were randomly selected, averaging 3,5BSC, 4years, yielding 31Kg/Day of milk. Those were divided into 2 groups: J-Sync and PEPE (control group). On D0 all cows received an DIB containing 1g of Progesterone (Primer®, Agener União, Sâo Paulo, Brazil) and an IM administration of 2mg of Estradiol benzoate (Sincrodiol®, Ourofino, Cravinhos, Brazil). On D6 the DIB was removed from the cows of the J-synch group (n=6) and there was an IM administration of 150µg of D-cloprostenol (Prolise®, Agener União, SP, Brazil) and the oestrus was observed. On D9 (72h after the DIB removal), 0,025mg IM of gonadolreline acetate (Gestran Plus®, Tecnopec, SP, Brazil) were injected in those that didn't manifest oestrus, so they were AI 12h after the oestrus detection or on D9. However in cows from the PEPE group the DIB removal and the IM D-cloprostenol administration were on D9, and in the same day 0,5mg of IM estradiol cypionate (SincroCP®, Ourofino, Cravinhos, Brazil) was administrated. The FTAI happened on D11 54h after the DIB removal. The ultrassonography evaluations were performed with the Mindray DP3300 equipment with a retal linear transducer of 7,5MHz. In these evaluations it was observed the maximum diameter of the dominant and the subordinated follicles, the daily growth rate was also monitored from the DIB removal day until the AI scheduled moment (each 12h) and after 7 days, the ovulations of all the managed cows (n=12) were assessed. There wasn't a significant difference between the maximum diameters of the dominant follicles and the subordinated ones in the groups J-synch and PEPE (17,32vs17,8mm e 10,56vs11,1mm; $P>0,05$), however the follicular growth rate in the J-synch group trended to be higher when compared to PEPE (2vs1,64mm/d $P<0,1$). The cows subjected to the J-synch protocol obtained 100% of ovulation rate and 1 double ovulation, while 83% of ovulation rate was observed in the cows from PEPE group ($P>0,05$). We have concluded that the J-synch protocol can be efficient to lactating dairy cows, although we didn't observe difference in the size of the dominant and the subordinate follicle, the same was not observed in the ovulation rates between the protocols, just a tendency to have a higher follicular growth in J-synch, the necessity to increase the number of animals has been showed, as the necessity to evaluate the pregnancy rates.

026 TAI/FTET/AI

Progesterone pre-exposition to ovulation synchronization protocol increases follicular diameter and pregnancy rate in *Bos taurus* and *Bos indicus* suckled beef cows

Luiz Manoel Souza Simões[1], Eduardo Alves Lima[1], Mar Betjhai Perez Martinez[5], Guilherme Machado Zanatta[7], João Paulo Martinelli Massoneto[2], Mateus Felipe Osório dos Santos[6], Amanda Bilha Machado[4], Marcelo Maronna Dias[4], Bruna Martins Guerreiro[3], Bruno Gonzalez de Freitas[3], Michele Ricieri Bastos[3], José Nélio Sousa Sales[1]

[1]UFLA - Universidade Federal de Lavras, Lavras, MG, Brasil; [2]AAP - Agropecuária Água Preta, Cocalinho, MT, Brasil; [3]Ouro Fino - Ouro Fino Saúde Animal, Cravinhos, SP, Brasil; [4]MV - Médico Veterinário Autônomo, Capivari do Sul, RS, Brasil; [5]UNAM - Universidade Nacional Autônoma do México, Cidade do México, México; [6]UniRitter - UniRitter, Porto Alegre, RS, Brasil; [7]USP - Universidade de São Paulo, São Paulo, SP, Brasil.

Three studies were carried out to evaluate the effects of pre-exposition of injectable progesterone (P4i) to a TAI protocol in Bos taurus and Bos indicus suckled beef cows. In experiment 1, the effect of P4i prior to the TAI on the pregnancy rate (P/AI) was evaluated in 568 suckled Nelore cows, at 30-60 days postpartum (DPP) and BCS of 2.68±0.01. In experiment 2, the effect of P4i prior to the TAI on follicular dynamics and P/AI was evaluated in 518 suckled Bos taurus cows, at 30-90 DPP and BCS of 2.69±0.01. On D-10 from both experiments, cows were divided into two experimental groups (Control and P4i). Control cows received 2mg of estradiol benzoate and a progesterone intravaginal device on day 0 (D0). On D8, the progesterone device was removed and cows received 500µg of Cloprostenol, 300IU of eCG and 1mg of estradiol cypionate. In the P4i Group, cows received 150mg of P4i (Sincrogest Injetável®, Ouro Fino, Brazil) on D-10 and were submitted to the same synchronization protocol as the Control Group. On a subset of cows of experiment 2 (n=401), ultrasound exams were performed on days 0, 8, 10 and 12 to evaluate the diameter of largest follicle (LF), follicular growth between D8 and D10 (FG) and ovulation rate. In experiment 3, the effect of the replacing eCG with P4i prior to the TAI protocol on follicular dynamics and P/AI was evaluated in 446 suckled Nelore cows, at 30-60 DPP and BCS of 2.63±0.01. Ten days before the TAI protocol (D-10), cows were allocated in a 2x2 factorial design to either receive or not 150mg of P4i on D-10 and receive or not 300UI of eCG on D8 of the TAI protocol (Control, eCG, P4i and P4ieCG Groups). Ultrasound exams were performed on D0, D8 and D10 to evaluate the LF and FG. The pregnancy diagnoses (3 experiments) were performed 30 days after TAI. Statistical analyses were performed by the PROC GLIMMIX of SAS. In experiment 1, the P/AI was greater in cows that received P4i previous to the TAI [Control 48.1% vs P4i 57.2%; P=0.03]. In experiment 2, the LF on D0 (Control 11.6±0.2 vs P4i 13.3±0.3mm; P=0.01), LF on D8 (Control 11.3±0.2 vs P4i 11.8±0.2mm; P=0.08) and P/AI [Control 45.6% vs P4i 54.8%; P=0.03] were greater in cows that received P4i previous to the TAI. In experiment 3, there were interaction effects between P4i and eCG for the LF on D10 (Control 10.2±0.3c; P4i 10.3±0.2c; eCG 11.2±0.3b; P4ieCG 12.3±0.2amm; P=0.04). The LF on D0 (P<0.01) and D8 (P<0.01) was larger in cows receiving P4i prior to the TAI protocol. In addition, there was no effect of P4i on all other variables studied. The FG (P<0.01) and P/AI [No-eCG 25.5% vs eCG 52.7%; P<0.01] were higher in cows receiving eCG. In conclusion, pre-exposition to P4i on TAI protocol increased diameter of the LF (D0 and D8) and pregnancy rate of Bos taurus and Bos indicus suckled beef cows. However, in suckled Bos indicus cows, pre-exposition to P4i is not suitable to replace eCG in TAI protocols. Support: Ouro Fino Saúde Animal and FAPEMIG.

027 TAI/FTET/AI

Evaluation of the luteolytic efficiency of different doses of sodium cloprostenol and dinoprost tromethamine administered on days 4 and 11 of luteal phase in beef cows

Lindsay Unno Gimenes[1], Gabriel Artur Marciano do Nascimento[1,2], Rafael Rodrigues Corrêa[3], Rodrigo da Costa Maia[4], Débora Ferreira Lopes[5], Larissa Nicolau Fortunato[6], Vitor Barbosa Fialho Martins[2,1], Bruno de Souza Mesquita[2], José Ricardo Garla de Maio[2], Bruno Gonzalez de Freitas[2], Gabrielle Nellis Bragaglia[2], Vanessa Garcia Rizzi Mussi[2]

[1]UNESP - Jaboticabal - Universidade Estadual Paulista - Câmpus de Jaboticabal, Jaboticabal, SP; [2]Ourofino Saúde Animal - Ourofino Saúde Animal, Cravinhos, SP; [3]Médico Veterinário - Médico Veterinário, Jaboticabal, SP; [4]UFOP - Universidade Federal de Ouro Preto, Ouro Preto, MG; [5]FZEA/USP - Faculdade de Zootecnia e Engenharia de Alimentos, Pirassununga, SP; [6]Médica Veterinária - Médica Veterinária, Franca, SP, Brasil.

In this study the effect of different doses (0, 50 or 100% of recommended dose [RD]) of sodium cloprostenol (SC, Sincrocio®, Ourofino Animal Health, Cravinhos, Brazil) and dinoprost trometamine (DT; Lutalyse®, Zoetis, São Paulo, Brazil) administered I.M. in beef cows on days 4 (D4) and 11 (D11) of luteal phase was evaluated. The hypothesis is that the use of 50% RD of SC and DT is so effective as 100% RD to induce complete luteolysis in beef cows when administered on D11, while on D4 it is expected no effectiveness of any treatment. Non-lactating and cyclic cows (n = 92) had ovulation synchronized to receive the experimental treatments (D0 = ovulation). Animals which ovulated on D0 (n = 54) were randomized according to BCS, breed and luteal diameter to receive SC 0 µg (0%; untreated, nD4=3; nD11=3), SC 250 µg (50%; nD4=5; nD11=7), SC 500 µg (100%; nD4=5; nD11=5), DT 0 mg (0%; untreated, nD4=2; nD11=2), DT 12.5 mg (50%; nD4=5; nD11=6) or DT 25 mg (100%; nD4=5; nD11=6). Ultrasonographic examinations of the corpus luteum (CL) were made pre-treatment (0), and 24, 48, 72, 96 h post-treatment, in mode B to estimate CL diameter (cm) and Color Doppler to estimate vascularization area (VA, percentual of colored pixels). Serum progesterone concentration (P4 - ng/ml) was evaluated 0, 8, 24 and 48 h post-treatment, by radioimmunoassay. Data were analyzed by ANOVA, in a factorial arrangement 2 (SC and DT) x 2 (D4 and D11) x 3 (0, 50 and 100% RD) with time repeated measures, and Tukey test, with significance at 5% level (SAS). There was no difference in luteolytic response after administration of SC and DT. An interaction day of luteal phase (day) x time post-treatment (time) was observed: on D4, CL diameter (0h: 1.5±0.1; 96h: 1.4±0.1) and serum P4 (0h: 1.1±0.2; 48h: 1.8±0.2) remained constant ($p \geq 0.05$); whereas, on D11 a reduction ($p < 0.05$) was observed for CL diameter (0h: 1.7±0.1; 96h: 1.2±0.1) and serum P4 (0h: 4.7±0.2; 48h: 1.2±0.2). The interaction of dose x time reflected an increase in CL diameter (0h: 1.6±0.1; 96h: 1.9±0.1; $p < 0.05$) and constant serum P4 (0h: 2.1±0.4; 48h: 3.5±0.4;$p \geq 0.05$) in untreated animals, while treated animals had a reduction ($p < 0.05$) in CL diameter (50% - 0h: 1.6±0.1; 96h: 1.1±0.1; 100% - 0h: 1.7±0.1; 96h: 1.0±0.1) and serum P4 (50% - 0h: 3.1±0.2; 48h: 0.8±0.2; 100% - 0h: 3.4±0.2; 48h: 0.2±0.2). The three-way interaction in VA reflected similar ($p > 0.05$) luteal blood perfusion for untreated animals (D4 - 0h: 18.5±3.3; 96h: 20.3±3.3; D11 - 0h: 14.2±3.3; 96h: 17.6±3.3), and for those treated on D4 (50% - 0h: 17.4±2.3; 96h: 18.0±2.3; 100% - 0h: 15.7±2.3; 96h: 7.2±2.3); whereas, animals treated with 50% (0h: 21.2±2.0; 96h: 0.3±2.0) or 100% (0h: 18.7±2.2; 96h: 0.7±2.2) on D11 presented reduction in VA ($p < 0.05$). In conclusion, we accepted our hypothesis, demonstrating that the use of 50% RD of SC and DT may be an effective alternative to induce complete luteolysis when administered on day 11 of luteal phase in beef cows.

028 TAI/FTET/AI

Use of GnRH to increase the pregnancy rate from different categories in Nelore females submitted to TAI

Fábio Morotti[1], Luigi Carrer Filho[2], Eriko da Silva Santos[2], Murilo Rezende Figueira[2], Marcela Bortoletto Cerezetti[1], Marcelo Marcondes Seneda[1]

[1]UEL - Univesidade Estadual de Londrina, Londrina, PR, Brazil; [2]Neopecuária - Genética e Reprodução Bovina, Londrina, PR, Brazil.

The use of GnRH at the time of TAI has increased the pregnancy rate in cows that do not show estrus. Therefore, the objective of this study was to compare the increment in pregnancy rate among nulliparous, primiparous and multiparous treated with GnRH at the time of TAI. Nelore females (146 nulliparous heifers, 139 primiparous and 200 multiparous cows) with body condition score (BCS) ranged from 2.50 to 3.50 (range 1-5) and 35 to 60 days postpartum were submitted TAI protocol. On a random day of the estrus cycle (D0) the animals received an intravaginal progesterone device (heifers - 0.5 g, Repro one®, GlobalGen; cows - 1.0 g Repro neo®, GlobalGen) associated with intramuscular (IM) application of estradiol benzoate (2 mg, Syncrogen® GlobalGen). At the day of removal of the device (D8), the females receive (I.M) cloprostenol (50 mg, Induscio®, GlobalGen), equine chorionic gonadotropin (300 IU, eCGen®, GlobalGen) and estradiol cypionate (heifer - 0.6 mg and cow - 1 mg, Cipion®, GlobalGen). All the females receive painting at the base of the tail to evaluate the estrus demonstration. The TAI was performed 48 hours after withdrawal of the device using semen from two Nelore bulls with known fertility. Cows showing estrus (paint removed) were conventionally inseminated and those who maintained the paint on the tail (total presence or up to 50% of the paint) received 10 μ buserelin acetate (IM, Prorelinn®, Boehringer Ingelheim) concomitant to insemination. The pregnancy diagnosis was performed by transrectal ultrasonography 30 days later and non-pregnant females received a resynchronization following the same procedure already described. The data were analyzed by the logistic regression model including effects of category, bull, progesterone source and TAI order. BCS and postpartum days were included as covariables ($P \leq 0.05$). All results refer to the combined analysis of the two TAI protocols. The overall pregnancy rate was 74.43% (361/485), being similar ($P = 0.85$) among nulliparous (74.66%, 109/146), primiparous (73.38%, 102/139) and multiparous (75.00%, 150/200). In overall pregnancy analyses, there was no influence of animal category, source of P4, order of TAI or interactions ($P>0.1$). Considering females with estrus manifestation, the pregnancy rate was 58.97% (286/485), being higher ($P = 0.06$) for nulliparous (63.70%, 93/146) and multiparous categories (61.50%, 123/200) compared to primiparous (50.36%, 70/139). Considering females that did not show estrus and received GnRH, the highest pregnancy rate ($P = 0.01$) was for the primiparous category (23.02%, 32/139), compared to nulliparous (10.96%, 16/146) and multiparous (13.50%, 27/200). It is concluded that GnRH can be used strategically in category of females to increase the pregnancy rate in TAI programs.

029 TAI/FTET/AI

Relationship between antral follicle count and age at puberty and fertility of beef heifers subjected to timed AI

George Moreira da Silva[3,1], Jair Sábio de Oliveira Junior[4,3], Elizângela Mirian Moreira[5,1], Jéssica de Souza Andrade[3,4,3], Vanessa Rachele Ribeiro Nunes[1], Marcelo Marcondes Seneda[2], Luiz Francisco Machado Pfeifer[1]

[1]Embrapa - Empresa Brasileira de Pesquisa Agropecuária, Porto Velho; [2] UEL - Universidade Estadual de Londrina, Londrina; [3]UNIR - Universidade Federal de Rondonia, Porto Velho; [4]Facimed/Bionorte - Facimed/Bionorte, Porto Velho; [5]FAPERO - FAPERO, Porto Velho, RO, Brasil.

In Experiment 1, Nelore prepubertal heifers (n=30), 16 months of age, 272.3 ± 23 kg were examined with ultrasound. Videos from the ovaries were recorded for further AFC (≥ 3 mm). Heifers were divided into two experimental groups according to the number of AFC: 1) Low AFC (<22 follicles), and 2) High AFC (≥22 follicles). Further ovarian ultrasonic evaluations were performed every 15 days until the detection of a corpus luteum (CL) in the ovary. Once puberty was determined, all heifers were subjected to a estradiol progesterone-based TAI protocol [2 mg BE (Gonadiol®, Zoetis)+ CIDR®(Zoetis) on D0 / 2 mL PGF (Lutalyse®, Zoetis) + 0,6 mg ECP (E.C.P.®, Zoetis) – CIDR®on D8 / TAI 48 h] and a estrus detector device (Estrotect®) were placed in the sacrocaudal region. After CIDR removal, the dominant follicle was monitored by ultrasonography every 12 h until the ovulation. Area of the ovary, interval to estrus and ovulation were analyzed by the general linear model (GLM) procedure and Tukey's test was used to determine differences between groups. The estrus, ovulation and pregnancy rates were analyzed by Chi-square test. No differences (P>0.05) on the age at puberty, ovulation and estrus expression rates, and preovulatory follicle diameter between groups were detected. The ovary of the Low AFC heifers was smaller in the prepuberty period (4.4±1.1 vs. 5.6±0.7 cm2). At TAI, Low AFC heifers displayed estrus (48±0.0 vs. 58.5±12.3 h), and ovulated (60±6.3 vs. 72.6±15.5 h) earlier, and had higher pregnancy per AI (76.9%, 10/13 vs. 29.4%, 5/17) than High AFC heifers (P<0.05). In Experiment 2, 147 Nelore pubertal heifers, 16 months of age, 330 ± 20 kg, were subjected to a TAI protocol [2 mg BE (Syncrogen®, GlobalGen) + 0.5 g P4 (Repro one®, GlobalGen) on D0 / 2 mL PGF(Induscio®, GlobalGen) on D7 + 300 UI eCG (eCGen®, GlobalGen) + 0,6 mg ECP (Cipion®, GlobalGen) – P4 on D9 / TAI 48 h]. On Day 9, heifers were painted with chalk marker in the sacrocaudal region to identify cows that displayed estrus. On Day 0, ultrasound examinations were performed in all heifers to AFC and heifers were divided in two groups: Low AFC (<22 follicles, n=31), and High AFC (≥27 follicles, n=78). In this experiment, AFC were performed on Day 0 of the protocol, therefore, videos from the ovaries were not recorded. Thus, heifers that presented AFC between 22 - 26 were considered as intermediate AFC, and thus, were discarded from this experiment. No differences (P>0.05) on the estrus expression (77.4%, 24/31 vs. 73.1%, 57/78), and on the P/AI (41.9%, 13/31 vs. 50%, 39/78) were detected between Low and High AFC heifers, respectively. The results from these experiments demonstrate that AFC did not affect age at puberty and Low AFC heifers presented better ovarian responses when subjected to TAI protocols. However, more studies are necessary to elucidate the herd and genetic effects, since differences on fertility between Experiment 1 and 2 were detected. Acknowledgements: This study received funding support from Embrapa (MP1/PC3 Project n. 01.03.14.011.00.00) and from CNPq (Universal Project n: 407307/2016-8).

030 TAI/FTET/AI

Effect of cyclicity, body condition score, antral follicle count and body weight gain on the pregnancy rate of Nelore cows submitted to fixed-time artificial insemination

Maria Paula Marinho de Negreiros[1,2], Guilherme Henrique Freitas Seugling[1,2], Luiz Aguinaldo Ricetto Pegorari Junior[1,2], Rian Lolico Chamorro[1,2], José Gabriel Rigo Kairuz[3], Gabriella Carolina Silva[1,2], Ana Clara Bertolino Pereira[1,2], Wanessa Blaschi[1], Thales Ricardo Rigo Barreiros[1]

[1]UENP - Universidade Estadual do Norte do Paraná, Jacarezinho, PR; [2]PIBIC,FAP - PR - Fundação Araucária do Estado do Paraná, Curitiba, PR; [3] UEL - Universidade Estadual de Londrina, Londrina, PR, Brasil.

The present study aimed to evaluate the effect of cyclicity, antral follicles count (AFC), body condition score (BCS) and body weight gain (BWG) on the pregnancy rate of Nelore cows submitted to timed artificial insemination (TAI). A total of 194 Nelore cows, 30 to 45 days post-partum with BCS of 2.7±0.5 (range 1 - 5); in the region of Congonhinhas, State of Parana was used. The animals were submitted to two ultrasound examinations (Mindray 2200, 7.5 MHz, China) with an interval of 14 days for evaluation of cyclicity by the presence of CL, and antral follicles>3 mm were counted by ultrasonography, using the transrectal linear probe. At the time of the second ultrasound evaluation, the animals had body weight measured and received an intravaginal progesterone device (CIDR®, Zoetis, Brazil) and 2mg of BE (Gonadiol®, Zoetis, Brazil). Nine days later, the implants were removed and the animals received 12.5 mg of dinoprost (Lutalyse®, Zoetis, Brazil), 300IU eCG (Novormon®, Zoetis, Brazil) and 1.0 mg EC (ECP®, Zoetis, Brazil). Forty-eight hours later the cows were inseminated with semen a single bull. New body weight measure and pregnancy diagnoses were performed 30 days later by ultrasonography examination. Data were analyzed by logistic regression ($p < 0.10$). The pregnancy rate had no interaction with BCS [BCS ≤ 2.5: 40.5% (30/74); BCS =2.75: 52.7%(19/36); BCS ≥ 3.0: 44.0(37/84); (p=0.50)], presence [57,5 (19/33)] or absence of CL [41,6 (67/161) p=0,23] and AFC [AFC ≤ 16: 49.1% (30/61); AFC 26 to 36: 44.1%(49/111); AFC>36: 31.8% (7/22), p=0,54]. There was an effect (p=0.05) of BWG during the experimental period (minimum: - 73.0kg and maximum: 73kg). Cows that maintenance or BWG up to 73 kg had a higher (p=0.09) pregnancy rate [48.8% (62/127)] than cows with loss of up to 73 kg of body weight [35.8% (24/67)]. In conclusion, the BWG between the TAI protocol and the pregnancy diagnosis affected the pregnancy rate. Therefore, BWG deserves to be highlighted as important aspects to increase the efficiency of biotechnology in beef cows. Acknowledgements: Fundação Araucária do Estado do Paraná.

031 TAI/FTET/AI

Hormonal associations aiming to optimize fertility outcomes of Nelore cows submitted to 7-d fixed-time AI protocols

Rodrigo Lemos Olivieri Rodrigues Alves[1], Carlos Eduardo Cardoso Consentini[1], Abraham López Oliva[5], Guilherme Madureira[1], Lucas Oliveira e Silva[1], Alexandre Barbieri Prata[2], José Renato Gonçalves[4], Milo Charles Wiltbank[3], Roberto Sartori[1]

[1]ESALQ/USP - Department of Animal Science, Luiz de Queiroz College of Agriculture of University of São Paulo, Piracicaba, SP; [2]Globalgen - Globalgen Vet Sience, Jaboticabal, SP; [3]UW - University of Wisconsin, Madison, WI, USA, Madison, WI 53706, EUA; [4]Figueira Farm - "Hildegard Georgina Von Pritzelwiltz" Experimental Station, Londrina, PR, Brazil; [5]UNAM - Cuautitlán Higher Education Faculty, Campo Uno, 54740 Cuautitlán Izcalli, Mexico.

The study evaluated fertility outcomes of Nelore cows submitted to 7-d fixed-time AI (FTAI) protocols. A total of 1461 lactating Nelore cows (911 multiparous and 550 primiparous) at 61.4±21.8 DIM and with BCS 3.1±0.01, during first (993) and second postpartum AI (468) were used. On D0, cows were randomly assigned to experimental groups and received an intravaginal progesterone (P4) device (1g) and 2mg estradiol benzoate (EB). On D7, every cow received 0.530mg cloprostenol sodium (PGF) and 300 IU eCG, concomitant with P4 withdrawal. FTAI was performed 48h later (D9). Experimental treatments were: administration (P1) or not (P0) of PGF on D0, 1 (C1) or 0.5 (C0.5) mg estradiol cypionate (EC) on D7, and 8.4μg (G1) buserelin acetate (GnRH) or no GnRH (G0) on D9, resulting in 8 treatments: P1C1G1 (189), P1C1G0 (190), P0C1G1 (176), P0C1G0 (181), P1C0.5G1 (169), P1C0.5G0 (176), P0C0.5G1 (187), and P0C0.5G0 (193). Hormones were from GlobalGen Vet Science. Statistical analyses were done by PROC GLIMMIX of SAS 9.4 (P≤0.05). Presence of CL on D0 did not differ between first AI and resynch cows [20% (279/1391)]. There was no interaction between the 3 factors of the study (PGF on D0, EC dose on D7, and GnRH at AI), and P/AI were similar between first and second AI [57% (835/1461)]. Multiparous had greater P/AI than primiparous (64 vs 46%) and cows with BCS >3 achieved higher conception rate than thinner cows [63 (413/660) vs 53% (422/801)]. There was an interaction between EC dose and GnRH treatment, in which cows receiving 0.5mg were helped by GnRH [61 (218/356) vs 49% (182/369)]. Presence of CL on D0 resulted in higher P/AI [(67 (174/260) vs 56% (594/1062)]. The GnRH treatment on D9 only improved fertility of cows that did not show estrus [47 (88/288) vs 36% (82/231)]. In addition, there was an interaction between EC dose and BCS, in which cows with low BCS (≤3) receiving 0.5mg EC had lower P/AI than cows treated with 1mg EC [49 (200/407) vs 56% (222/394)]. Treatment with 1mg EC induced more estrus than 0.5mg [72 (496/693) vs 67% (442/664)], and cows with CL on D0 also had more estrus than those without CL [81 (191/236) vs 67% (655/982)]. However, estrus was not influenced by PGF on D0 [70% (846/1218)]. Multiparous had greater dominant (DF) and ovulatory (OF) follicle than primiparous [9.9±0.1 (n=187) vs 8.8±0.1mm (n=93); 12.5±0.1 (n=208) vs 11.3±0.2mm (n=86), respectively]. Cows that expressed estrus had larger DF [9.6±0.1 (n=202) vs 9.0±0.2mm (n=63)] and OF [12.3±0.1 (n=241) vs 11.6±0.2mm (n=53)]. In conclusion, if cows are treated with 0.5 mg of EC on D7, GnRH treatment at AI is necessary, especially for cows not showing estrus. Cows with lower BCS may have fertility improved by using 1mg EC on D7. Moreover, the CL presence at the beginning of the FTAI protocol indicates a better nutritional and reproductive status, resulting in greater estrus expression and better fertility.

Acknowledgments: FAPESP, CNPq, CAPES, GlobalGen, Figueira Farm, STGenetics.

032 TAI/FTET/AI

Use of estradiol at day 14 post-TAI does not impair the pregnancy maintenance and increases the pregnancy rate in resynchronized beef heifers

Igor Garcia Motta[1], Danilo Zago Bissinoto[2], João Abdon Santos[3], Fainer Lincoln Savazzi Bertoncini[3], Vitor Hugo Guilger Gonzaga[1], Gilmar Arantes Ataide Júnior[1], João Vitor Vasconcellos[2], Bruno Gonzalez de Freitas[4], Kleber Menegon Lemes[5], Ed Hoffmann Madureira[1], Guilherme Pugliesi[1]

[1]VRA-FMVZ-USP - Departamento de Reprodução Animal, Pirassununga, SP, Brasil; [2]FZEA-USP - Faculdade de Engenharia de Alimentos e Zootecnia, Pirassununga, SP, Brasil; [3]JA Reprogen, Eunápolis, BA, Brasil; [4]Ourofino - Ourofino Saúde Animal, Cravinhos, SP, Brasil; [5]Boehringer-Ingelheim - Boehringer-Ingelheim Animal Health do Brasil Ltda, Campinas, SP, Brasil.

We aimed to evaluate the effects on pregnancy rate of using estradiol benzoate (EB) or 17β-estradiol (E2) associated to progesterone (E2+P4) in a resynchronization protocol at 14 days post-TAI in heifers. Thus, 1178 Nelore and 117 cross heifers (NelorexAngus) had the ovulation synchronized and were submitted to TAI (D0). On D14, heifers received an intravaginal P4 device (1g, Sincrogest, Ourofino Saúde Animal) and were randomly split in 3 groups: control (no treatment; n=433); EB (1mg EB, Sincrodiol, Ourofino; n=431); and E2+P4 (1mg E2 + 9mg P4, Betaproginn, Boehringer-Ingelheim; n=431). On D22, color Doppler ultrasonography was performed to detect non-pregnant (NP) heifers based on luteolysis detection (Pugliesi et al., Biol Reprod, 4: 1-12, 2014). The NP heifers received 1mg E2 cypionate (SincroCP, Ourofino), 500µg sodium cloprostenol (Sincrocio, Ourofino) and 200IU eCG (SincroeCG, Ourofino), and the largest dominant follicle (DF) was measured. A second TAI was performed on D24. In a subgroup of NP heifers (n=337), an estrous detection patch (Boviflag, ABS Pecplan) was used between D22 and D24, and DF was measured at the second TAI. Confirmatory diagnoses based on detection of embryo/fetus with heartbeat were performed between D37-67 after first TAI, and 43-47 days after second TAI. Data were evaluated by ANOVA (PROC MIXED), LSD test or logistic regression (PROC GLIMMIX) of SAS. No interaction with breed and lot was observed. Pregnancy rates (PR) after first TAI did not differ ($P>0.1$) between the control, EB and E2+P4 groups on D22 (53% [230/433], 53% [229/431] and 50% [217/431]) and confirmatory diagnoses (43% [149/344], 44% [154/349] and 46% [156/342]), respectively. Pregnancy loss between D22 and D37-67 was similar ($P>0.1$) in the control (19% [36/185]), EB (15% [28/182]), and E2+P4 (15% 28/184]) groups. On D22, the DF diameter (mm) was greater ($P<0.05$) in the control group (11.9 ± 0.14), than in the EB (11.3 ± 0.1) and E2+P4 (11.5 ± 0.1) groups. Proportion of heifers detected in estrus, and DF diameter on D24 did not differ ($P>0.1$) among the groups (overall mean: 63 ± 4.5% and 13.0 ± 0.2 mm, respectively). However, DF growth rate (mm/day) from D22 to D24 was greater ($P<0.05$) in the EB group (0.89 ± 0.08) than in the control (0.59 ± 0.07) and E2+P4 (0.66 ± 0.09) groups. The PR for the second TAI was greater ($P<0.05$) in the EB group (47% [94/200]) than in the control group (37% [76/203]), but did not differ ($P>0.1$) in the E2+P4 group (43% [93/214]) compared to the others. Cumulative PR (first and second TAIs) did not differ ($P>0.1$) between control, EB and E2+P4 groups (59% [204/344], 65% [227/349], 64% [220/342], respectively). In conclusion, administration of 1mg EB or 1mg E2 + 9mg P4 at 14 days post-TAI does not impair the pregnancy, and the 1mg EB treatment increases the pregnancy rate in resynchronized beef heifers for a second TAI within 24 days. Acknowledgments: FAPESP (2015/10606-9; 2017/18613-0); Geneplan; JA Reprogen; Faz Querência.

033 TAI/FTET/AI

Associative and isolated effect of vaccination against impacting reproductive diseases and mineral supplementation in inseminated Nelore cows

Jessica Souza Lima[1], Reiller Moraes Silva[5], Aline Gomes da Silva[1], Bruno Sivieri de Lima[2], Gustave Decuadro-Hansen[3], Luc M. Durel[4], Eliane Vianna da Costa e Silva[1], Gustavo Guerino Macedo[1]

[1]UFMS - Universidade Federal de Mato Grosso do Sul, Campo Grande, MS, Brasil; [2]Virbac - Virbac Latin America, Santiago de Chile, Chile; [3]Virbac - Virbac do Brasil, São Paulo, SP, Brazil; [4]Virbac - Virbac SA, Carros, France; [5]Reprogene - Reprogene, Iporá, Goiás, Brazil.

Considering the seasonality of pasture production, cattle farms generally experience deprivation of food, decreasing mainly the body condition score (BCS) and immunological status resulting in open females after breeding season, increasing the generation interval. In tropical countries like Brazil, almost 2/3 of soil needs nutrients correction. To overcome this problem, the present study aimed to study the administration of mineral supplementation and vaccination against impacting reproductive diseases on synchronized Nelore females for TAI, considering pregnancy and pregnancy loss. Nelore females (n = 1361) had their BCS registered on D-21 with a random blood collection of 150 to measure serum biochemical status and antibodies title for Leptospira sp., IBR and BVD. Considering the D0 as the beggining of the synchronization of ovulation protocol and D10 the TAI, females were randomly assigned to four groups: Vaccine (n=314) at D-21 and D0, 5 ml i.m. of Bovigen®Repro(Virbac, Brazil; cont inactivated BoHV-1 and 5 Bov Herpesvirus, BVD-1 and 2 Bov Viral Diarrhea, Leptospira interrogans: pomona, wolffi, hardjoprajitno, icterohaemorrhagiae, canicola, copenhageni, bratislava; borgpetersenii hardjo bovis, Campylobacter fetusFetus and venerealis, venerealisintermedius, and 10 mg/dose of sodium selenite in 10% aluminum hydroxide); Supplement(n = 314) at D0 15 ml i.m. of Fosfosal® [(Virbac, Brazil; 100 ml contain sodium glycerophosphate (14g), monosodium phosphate (20.1g), copper chloride (0.4g), potassium chloride (0.6g), magnesium chloride (2.5g), sodium selenite (0.24g)]; Vacc+Supp (n = 363) 5 ml i.m. of the Vaccine at D-21 and D0 and 15 ml i.m. of supplement at D0; and Control(no treatment; n = 365). US was performed at D40 (P/IA30) and D100 (P/IA90) to evaluate pregnancy. BCS was registered on D40 (BCS30) and D100 (BCS90). Data were tested by normality using guided analysis of SAS 9.4, and the model by proc GLIMMIX. When significant, Tukey and lsmenas test were used to compair means. Serum analysis showed more than 80% of animals had at least 2 diseases. Phosphorus blood concentration was 7.2 mg/dl. Pregnancy was affected by Ca (preg= 2,55 e non-preg = 2.33 mg/dl; $p<0.05$) and creatinine (preg=5.85 e non-preg= 5.76; $p<0.05$). The BCS30 was 3.2 (1 – skinny; 5 – obese) and there was no effect of time (D-21 to DG40). Data showed P/AI30 for Vaccine, Supplement, Vacc+Supp and Control were 54 %, 52%, 57% and 49% ($p>0.05$), respectively. There was a tendency of higher pregnancy for Vacc+Supp (55%a) than Control (45%b; $p<0.1$). There was no effect of pregnancy loss Vaccine (5%), Supplement (4%), Vacc+Supp (3%) and Control (6%). Considering only pluriparous cows, there was no increase in P/AI using Vacc+Supp (59%) than Control (51%; $P<0.05$). Thus, the animals presented a very good BCS and effect of the supplement was only as immunostimulant; also starting a breeding season with supplementation and vaccination can increase the pregnancy rate and profitability of farmers.

034 TAI/FTET/AI

The Efficacy of a New Pedometer Tool For Heat Detection in Holstein Cows Raised in a Compost Barn System

Julian Scariot, Ricardo Zanella

UPF - Universidade de Passo Fundo, Passo Fundo, RS, Brasil.

Heat detection is considered the major problem related with the reproductive success in farm animals. In cows, the beginning of estrus is associated with specific behavioral changes as increase in the animal movement, reduction of feed intake and animals stand to be mounted by others. Therefore measurements of those signs could be used as an aid for heat detection in cattle. For this we have tested the efficiency of a new pedometer system developed by Gimenez® with a low total cost of less than R$500,00 per animal. This system is connected to a cell phone antenna which releases a signal every 2 hours indicating the cattle movement. Animals were submitted to a system calibration period of 10 days to evaluate the cattle regular movement. When an increase in movement is detected, the system releases a signal indicating the beginning of heat. This could predict the most accurate time for the success of the AI. In this study we have evaluated the use of a pedometer system in 25 Holstein cows raised in a compost barn system. Twenty three (n=23) open cows without any reproductive problem, and 2 pregnant cows serving as negative controls were evaluated. Cows were followed for 60 days with the use of Ultra Sound in a weekly base, for the identification of ovarian structures. The sensitivity and specificity of the pedometer system and visual observation was calculated to detect heat in cattle. The presence of a new CL seven days after the heat detection was used to confirm the ovulation. Sixteen cows (70%) out of twenty tree, were identified in heat using the pedometer system, and had a CL seven days after the detection. Six cows had the presence of a CL, however didn't show changes in their movement. Ten cows (n=10) showed heat using the pedometer and visually. Six (n=6) were identified in heat only with the use the pedometer system. Only one cow showed visual signs of heat and were not identified in heat with the pedometer and had a CL seven days after the detection. None of the pregnant cows showed heat. The sensitivity of the pedometer system was 70%, and the specificity was 100%, in contrast with the sensitivity of the visual heat detection of 47% and 100% of the specificity. Forty one percent (41%) of the cows, presented heat between 8:00am and 10:00am, 25% between 04:00am and 06:00am, and 17% between 00:00 and 12:00. The average daily milk production of cows identified in heat with the use of the pedometer was 37.66 L with an average days in lactation of 202.2 days, for the cows that did not show heat was 34.66 L and DEL of 208.5 (P=0.32 and P=0.8). No correlation was identified between milk production and efficiency of the pedometer. The pedometer system has the possibility to reduce the human labor and therefore it will reduce the error associated with the heat identification. Our data supports the use of the pedometer system, as an efficient tool for heat identification in cattle raised in a compost barn system.

035 TAI/FTET/AI

Effect of levamisole at beginning of FTAI protocol on the reproductive performance of Nellore cows

Luiz Carlos Louzada Ferreira[1], Henrique Jorge Fernandes[3,2], Luana Gomes da Silva[1], Tatiane Carvalho da Cunha[1], Ellen Caroline Soligo[1], Fernando de Almeida Borges[2]

[1]Cia Assessoria - Cia Assessoria, Campo Grande, MS; [2]UFMS - Universidade Federal de Mato Grosso do Sul, Campo Grande, MS; [3]UEMS - Universidade Estadual de Mato Grosso do Sul, Aquidauana, MS, Brasil.

The aim with this work was to evaluate the impact of the use of Levamisole at the beginning of the fixed time artificial insemination (FTAI) protocol on the fertility of cows. The study was conducted in a farm in Miranda city, Mato Grosso do Sul, Brazil. During three breeding seasons, 2016-2017, 2017-2018 and 2018-2019, we evaluated 2368 Nellore cows the first FTAI and 946 Nellore cows the second FTAI, in a program with two FTAI by season. Cows were divided in two groups: one treated with a single dose of levamisole phosphate at 4.7 mg / kg (LEV) (1315 and 404 at first and second FTAI, respectively) and the control (CON), which received a sterile saline solution of 1 ml / 40 kg, both on the day zero of the FTAI protocol. All animals were last treated for gastrointestinal nematodes five months before the beginning of the study. Pregnancy diagnosis was carried out 30 days after artificial insemination (AI). Cows that were not pregnant in this first diagnosis, received a second FTAI protocol, and a new pregnancy diagnosis was carried out 30 days after the second AI. To evaluate the anthelmintic efficacy, in the two first breeding seasons, feces were collected in D0 and D9 of the FTAI protocol. Fecal egg counts were evaluated using the MiniFlotac method, sensitivity 1:5. The efficacy of Levamisole in the first year was 86.6% and in the second year 92.48%, with a high frequency of *Haemonchus* spp. and *Cooperia* spp. in pre and post treatment. Data were evaluated in a completely randomized design using the PROC GLIMMIX of SAS University. Interactions between breeding season and treatments were evaluated and removed of the model as not significant. In the first FTAI, the pregnancy rate of the LEV cows (56.5 ± 11.7%) did not differ statistically from the CON ones (54.0 ± 11.8%). In the second FTAI, pregnancy rate of the LEV cows (45.0 ± 4.62%) also was not different (P >0.05) of the CON cows (43.7 ± 4.36%). Therefore, Levamisole used on zero day of the first FTAI protocol did not affect the fertility index in FTAI.

036 TAI/FTET/AI

Use of injectable progesterone associated to an intravaginal device (CIDR) for early resynchronization of Nelore cows and heifers submitted to three TAIs in 48 days

Gilmar Arantes Ataide Junior[1], Anderson Kloster[2], Danilo Zago Bisinotto[1], Émerson Moraes[4], Igor Garcia Motta[1], Izaias Claro Junior[3], José Henrique Tanner[5], José Luís Moraes Vasconcelos[2], Leonardo Souza[4], Guilherme Pugliesi[1]

[1]USP - Universidade de São Paulo, Pirassununga, SP; [2]UNESP - Universidade Estadual Paulista, Botucatu, SP; [3]Zoetis - Saúde Animal, São Paulo, SP; [4]Qualitas - Melhoramento Genético, Aparecida de Goiânia, GO; [5]Profissional Autônomo, Pontes e Lacerda, MT, Brasil.

We aimed to evaluate the pregnancy rate (P/AI) of beef cattle submitted to super-early resynchronization protocol using a progesterone (P4) device (CIDR, Zoetis) alone or associated to 100mg injectable P4 (iP4; Afisterone, Ceva). Nelore heifers (n=498) and cows (n=760) were underwent TAI (D0). On D13, animals were divided in two experimental groups: CIDR (insertion of a CIDR), and CIDR+iP4 (CIDR plus im 100mg iP4). On D22, an early pregnancy diagnosis (PD) was performed based on detection of luteolysis by color Doppler ultrasonography (DopplerUS; Z5 Vet, Mindray). When luteolysis was detected, non-pregnant animals (NPA) received im 12.5 mg dinoprost trometamine (Lutalyse; Zoetis), 0.6 mg estradiol cypionate (ECP; Zoetis) and 200 (heifers) or 300 (cows) IU eCG (Novormon, Zoetis). A 2nd TAI was performed on D24 in NPA (214 heifers and 302 cows). On D37, 1st AI pregnant females (absence of luteolysis) went through a PD based on detection of an embryo with heartbeat and those with pregnancy loss were resynchronized by insertion of a CIDR plus 2 mg estradiol benzoate (CIDR+EB). On D37, animals submitted to the 2nd TAI were resynchronized using the reverse experimental group of the 1st resynchronization. Another early PD by DopplerUS was done on D46 and ovulation was induced in NPA as on D22. A 3rd TAI was done on D48 in NPA (172 heifers and 211 cows). On D61 and D85, a PD was done to confirm pregnancies from the 2nd and 3rd TAI, respectively. The P/AI was evaluated by logistic regression using PROC GLIMMIX of SAS, considering the effects of group, sire, body condition score (BCS), farm, category and the possible interactions. The P/AI at the 1st TAI were 57% (284/498) for heifers and 60% (458/760) for cows. The overall P/AI for both categories tended to differ (P=0.08) between animals resynchronized with CIDR (38%, 148/387) and CIDR+iP4 (43%, 178/411). However, an interaction of group by BCS was observed (P=0.04), reflecting a greater (P=0.01) P/AI in the CIDR+iP4 group only when BCS was ≤ 2 (53% [32/60] vs. 28% [13/46]). When evaluated separately for each category, the P/AI in resynchronized heifers did not differ (P>0.1) between the CIDR (38%, 61/160) and CIDR+iP4 (44%, 73/167) groups, but an interaction of group by BCS was again observed (P=0.01). For cows, P/AI did not differ between the CIDR (38%, 87/227) and CIDR+iP4 (43%, 105/244) groups, but an effect of BCS was observed (P=0.04). The P/AI in animals receiving the CIDR+EB were 44% (26/59) and 58.5% (24/41) for heifers and cows, respectively. It was concluded that the supplementary dose of 100mg iP4 improved the P/AI in Nelore cattle submitted the super-early resynchronization protocol only when they have a BCS ≤ 2, regardless of the category (heifer or cow). Acknowledgments: Bela Vista and Longavira Farms, FAPESP (2015/10606-9; 2018/20058-7), Nelore GOU and Zoetis.

037 TAI/FTET/AI

Correlation of antral follicle count and scrotal circumference

Fábio Lucas Zito de Moraes, Ana Clara Canto Souza, Maysa Lopes Orsi, Anne Yaguinuma de Lima, Denis Vinícios Bonato, Andressa Guidugli Lindquist, Fabiana De Dio Sarapião, Fábio Morotti, Marcelo Marcondes Seneda

UEL - Universidade Estadual de Londrina, Londrina, PR, Brasil.

The scrotal circumference is an important criterion of the andrology exam because it is related to the reproductive performance of the bull. The antral follicle count (AFC) has been on the spotlight of recent studies on fertility, but there is a lack of studies about the AFC of the mother and the reproductive potential of their progeny. We analyzed the correlation between the AFC of cows and the scrotal circumference of respective offspring. Nelore (Bos taurus indicus) cows (n = 63) were used. All the females were multiparous, age 36 to 96 months old and body condition between 2.5 and 3.5 (1 to 5 scale), kept on a pasture-grazing system (Brachiaria brizantha) with mineral supplementation. The antral follicle count was evaluated by transrectal ultrasonography with a 5 Hz linear transducer (Aloka SSD-500, Aloka Co. Ltda., Tokio, Japan) on the first day of the timed artificial insemination protocol. The cows were included in one of three groups: high AFC (≥25 follicles, n=20), intermediate AFC (15 to 20 follicles, n=25) and low AFC (≤12 follicles, n=18). The male calves from those cows were kept on the same farm, and they were examined at the age of 18 months. These 63 young bulls (one son of each cow) had their scrotal circumference (SC) measured around the largest point using the specific device for that purpose. The SC mean of each group (according to mother's AFC) were analyzed by the Kruskal-Wallis and Mann-Whitney-Wilcoxon tests and the correlation between the AFC and the SC were obtained by the Spearman test. All the tests were performed by the software R at 5% significance level. The AFC ranged from 5 to 80 follicles, with a mean of 22.48 ±15.65 cm (SD). The scrotal circumference of the offspring ranged from 31 to 44 cm, with a mean of 36.48 ±2.46 cm (SD). The bulls from mothers with high AFC group had the largest scrotal circumference (n= 20, 37.75 ±2.07cm), comparing to the SC from mothers with intermediate (n=25, 36.44 ±2.52 cm) and low (n= 18, 35.22 ±2.11cm) AFC (p = 0.002). We found a positive linear correlation (r = 0.447; p = 0.0002) between the AFC of the mother and the scrotal circumference of her son.

038 TAI/FTET/AI

Influence of use of protected fat in the transition period on endometrial vascular perfusion and conception rate in Holstein cows

Sebastião Inocêncio Guido[1], Fabiani Coutinho Lordão Guido[2], Leonardo Fernandes de Alencar[1], Paulo Roberto Lins de Azevedo[1], Júlio César Vieira de Oliveira[1], Joaquim Evêncio Neto[2]

[1]IPA - Instituto Agronômico de Pernambuco, Estação Experimental de São Bento do Una, PE, Brasil; [2]UFRPE - Universidade Federal Rural de Pernambuco, Recife, PE, Brasil.

The aims of this study were to evaluate the influence of the supplement of a fatty acid compound (FA) in the transition period associated the diet with spineless cactus on the uterine vascular perfusion, body condition score, beta-hydroxy-butyrate concentration (BHB) and postpartum conception rate in Holstein cows. Sixty-three cows were evaluated in the transition period and maintained in a semi-intensive system. Cows at 220 days of gestation were submitted to the pre-calving period of 60 days. They were fed with 45% of spineless cactus, 11% of sorghum silage and 44% of protein concentrate with 14% of CP added mineral supplement in the former as dry matter (DM) base diet. At 21 days before calving, protein supplementation was altered to 22% of CP. The cows were distributed in two experimental groups (G1 and G2). In the G1 (n = 30) cows received in the transition period the base diet added of 100g of the compound of FA (protected fat) consisting of linoleic acid, linolenic acid and conjugated linoleic acid (Megalac®-E, Vaccinar). G2 (n = 33) consisted of cows that received only the base diet. All cows were submitted to the assessment of the body condition score (BCS) on the scale of 1 to 5. Being evaluated at the beginning of the transition period and at the end of the voluntary waiting period (VWP) at 40 days postpartum. The blood concentrations of BHB were measured in all cows, and the dosages were performed at the beginning of the transition period and at the end of the VWP using commercial kit Ketovet®. After the VWP, all cows from both groups underwent ultrasound examination, using linear endorectal transducer with 6.0 MHz in color Doppler mode to evaluate endometrial vascular perfusion (EVP), with scores ranging from 1 to 4 for diagnosis of subclinical endometritis according to Guido (2019). As well as evaluating the appearance of vaginal mucus using Metricheck® and assigning scores from 0 to 3. Immediately after the evaluations, the cows (G1 and G2) were submitted to TAI protocol, and the diagnosis of pregnancy was performed 30 days later. The data were submitted to analysis of variance ANOVA and to the Z test at 5%. Regarding the BSC results, there was no difference ($p=0.41$) between the groups, nor in relation to the pre and postpartum periods. In relation to BHB, mean postpartum concentrations were higher ($p=0.00016$) in G2 (1.7 mmol/mL). In the evaluation of EVP, higher scores ($p = 0.00231$) was found to G2; 2 (70.8%) and 3 (39.4%). Metricheck in G2, a superior result ($p<0.0251$) was observed for the score 2 in 45.5% of the cows. The conception rate was higher ($p=0.00214$) in G1 cows (62.5%) than G2 (42.4%). Therefore, it was concluded that cows supplemented with protected fat during the transitional period presented satisfactory results regarding BHB concentrations and higher postpartum conception rate. As well, proportionally cows not supplemented had elevated endometrial vascular perfusion scores, suggestive of subclinical endometritis.