...from the president

2004 – The Silver Anniversary of the Society for Theriogenology!

What a year this has been! Cattle prices remain very high, the pork market is doing well, demand for veterinary services for horses, companion animals, small ruminants and exotics continues to grow. What a good time to be a veterinarian and what an especially good time for Theriogenology. For the first time in the United States goats are the fastest growing agricultural commodity. These growing markets create wonderful opportunities for veterinarians to augment their practices through Theriogenology services. There is rapidly growing demand for semen cryopreservation, estrus synchronization, artificial insemination, embryo transfer, in-vitro fertilization, early pregnancy diagnosis, and fetal sexing and other advanced reproductive technologies in farm animals. Likewise client interest in pet population control as well as semen cryopreservation, breeding management and artificial insemination in pets and exotic species is at an all time high.

The officers and Board of Directors of the Society for Theriogenology remain dedicated to serving the needs of our members and their clients and remain focused on the SFT mission to advance the science and practice of animal reproduction. As we strive to remain abreast of information related to animal reproduction the SFT Newsletter includes timely abstracts on a variety of reproduction topics. The “Theriogenology Question of the Month” published in the Journal of the American Veterinary Association through the efforts of Dr. Craig Smith presents interesting clinical cases in an easily understood format. The Society for Theriogenology Website provides a wealth of information and links to valuable resources. The Annual Conference of the Society for Theriogenology continually evolves to meet the changing needs of our membership. Companion animal portions of the conference have been a huge success in recent years and 2005 promises to continue this trend. Elsewhere in this issue you will find more information regarding the 2005 Annual Conference in Charleston, S.C. The 2006 conference will be held in St. Paul, MN, and Dr. Franz is pursuing the site for the 2007 conference. I again urge you to investigate the very user friendly SFT WEB site developed by Dr. Patrick Hearn and Dr. Charles Franz (www.therio.org). This is a very valuable resource for our membership.

As of this writing your board is preparing for the Winter Board meeting in early January. We have numerous issues to discuss related to future directions and opportunities for SFT. We realize each of us has opportunity for membership in numerous professional organizations and societies and we make those decisions to join organizations that provide value to us. Please contact any officer, board member or the SFT office with your suggestions or concerns that will enhance the value of SFT to you.

The election is behind us, we just celebrated Veterans Day and as we approach the holiday season I hope we all take time to remember how our great country has developed and what a wonderful opportunity we have to pursue our professional goals and dreams and to enjoy freedoms that do not exist anywhere else in the world. Thanks to all the visionary men and women whose dedication and efforts provided this environment we enjoy. I believe we are truly blessed to live in this country and wish each of you a safe, prosperous and rewarding holiday season.
Make Plans to Join Your Colleagues in a City Rich in History, Charleston, South Carolina

The planning for the 2005 SFT conference is proceeding quite well. Most of the speakers are committed and the symposia are being planned. The format will be somewhat expanded this year with the meeting starting at noon on Tuesday the ninth of August. The theme of this meeting is genetics. The section chairs have kept the subjects very practical and I am sure that there will be much useful information to take home to your practices. Along with genetics will be up to date topics on ultrasound, assisted reproductive techniques, and methods effective reproductive management. We will have a wonderful group of national and international speakers who will have much new information to share.

In addition to the main conference, there will be three additional symposia offered. On Tuesday afternoon, before the convention begins, a very practical session on reproductive pharmacology will be presented. This symposium will be divided into a general session followed by smaller species specific sessions so that there can be frank discussions in smaller groups about the use of products in real life situations. This is an exciting endeavor that the board believes is an important subject in the wake of all of the recent increases in reproductive management.

The board has also decided that there will be much useful information to share. There will be two symposia on Saturday, each of which will have participatory laboratories. A small animal symposium on assisted reproductive techniques will be held at the convention site and an equine wet lab on stallion ultrasonography and advanced reproductive techniques in the mare will be conducted at a nearby clinic.

The meeting has been arranged so that there will not only be a wealth of continuing education but also some free time to enjoy the city of Charleston along with the surrounding area. There is a lot to see in this historic city with its friendly southern charm, excellent low country food and plenty of history. Don’t forget to plan some additional time outside of the meeting. We are planning another family night for Thursday evening. The Charleston Aquarium will be a casual time to get together and enjoy a relaxing evening.

Make your plans to attend the Charleston meeting August 9th-13th there should be plenty for anyone interested in the field of Theriogenology.

New SFT Website

Check out the new Society for Theriogenology website. Go to www.therio.org and select “Member Login.” Enter your first name and last name without any spaces and for the password type in SFT (You can use lower case). After you have entered this information you will be asked to change your “Member Profile and Password.” If any of the information regarding your address, phone number, etc., is not correct you may change it at this screen. You may also from this screen change your password to something that may be easier for you to remember.

We hope that all of our Society for Theriogenology members will take a few minutes to look at the new website and all the great features that the Society for Theriogenology has to offer. To highlight just a few:

- Do you need a phone number or address for a member? Do you need to update your personal information? Click on “Find a Member.”
- Would you like to submit a classified ad for posting to the SFT website? Link to “Classified.”
- Do you need Continuing Education hours? Click on “Education/Reference.”
- Looking for extra help in your busy veterinary practice? Click on “Job Bank” to post job openings.
- Do you need a new computer for the office? Click on “Member Mall.”
- Are you looking for a particular book on Reproduction? You may click on the “Education/Reference” tab or you may click on the book cover on the SFT Home Page.
- Do you need to look at Proceedings from the 2002, 2003 or 2004 SFT/ACT Conferences and Symposia? Click on “Education/Reference.”
- Do you need to reorder BSE Forms or Morphology Stain? Click on “Buy Forms/Books.”

We encourage all of our Society for Theriogenology members to take a look at the “Member Mall” along with “Elsevier, Saunders and Mosby” page on our Society for Theriogenology website. Whether you are looking for a new Dell Computer or would like to shop on Amazon.com, you can find these great stores along with many other fine retail shops through the “Member Mall” section of the Society for Theriogenology website. Please notice that we are now offering some of the most popular books on reproduction from Elsevier, Saunders and Mosby. So, when you are need of great books on reproduction or if you need to order a new computer for your office, look at the SFT website before you order, and know that a portion of the dollars that you spend will be coming back to the Society for Theriogenology.

If you have any questions about the website or encounter any problems with logon, please let me know.

Tammy Wallace
Tammy@Franzmgt.com
The 2005 Family Night is graciously sponsored by Pfizer Animal Health and will be held at the beautiful South Carolina Aquarium. All members of the family are welcome. Join your colleagues for an evening of food and camaraderie.

Complete program, with speakers and topics, will be in the Winter 2005 issue.
News from the North Carolina State University Student Chapter ...

The North Carolina State University Student Chapter of the Society for Theriogenology was formed over the summer and opened for membership this semester. We have 47 members for our very first year, and 17 are members of the national SFT. The NCSU SCSFT officers for 2004-2005 are: Cynthia Eaton—founding president, Lisa Kivett—current president, Rebecca Fraser—vice president, Melissa Smith—secretary, and Amanda Blanton—treasurer. The NC State chapter is committed to providing high-quality educational opportunities involving reproduction of all species including equine, bovine, small animal, small ruminant and exotics. SCSFT activities planned for this semester include wetlabs on equine palpation and artificial insemination and canine breeding soundness and artificial insemination. The SCSFT is also committed to providing conference trips to supplement theriogenology education. A small group of NCSU students attended the SFT Annual Conference in Lexington and we expect to have a large group for Charleston next year. We will also be sending five students to the Bluegrass Equine Reproduction Symposium in Lexington in October. We are looking forward to a very active year, filled with opportunities and growth!

Exciting New Member Service ...

Journal of Theriogenology now available to SFT members

The Society for Theriogenology and Elsevier, publisher of the Journal of Theriogenology, have teamed up to offer SFT members a subscription to the Journal. The complimentary subscription is an on-line subscription and will feature current Journal issues in addition to searches of back issues. As an added benefit, SFT members may purchase a printed subscription for only $80.00 per year. This is a savings of approximately $200 per year, and with 18 issues brings the per issue price to less than $4.50. A convenient order form will be included with your 2005 dues statement for this optional benefit. Elsevier will promote the Theriogenology journal as the “Official journal of the Society for Theriogenology” and print this designation on the cover, website, etc. The SFT will have available up to five pages in each issue to promote the Society and its activities.

At the SFT annual meeting, the proposal was discussed by the board of directors: It was felt that the journal had an excellent reputation, the website was superb, and the Theriogenology journal merged very well with goals of the SFT (to promote education and provide the leading clinical “Therio” resource and information as we go forward into the 21st century). Your comments, solicited in the last SFT News, were overwhelmingly positive. We appreciate your support as we develop this relationship to provide you with another valuable member service. The Elsevier website is very professional and beautifully laid out. Obviously, Elsevier has spared no expense in making the website a showcase for medical information and education. The high-resolution graphics are first rate and the search capabilities are excellent: there is every conceivable way to search, and options to search just Therio or other Elsevier journals, or Pubmed and Medline as well at the same time. The entire text is searched, not just the titles and keywords, and the results are highlighted in yellow. There are multiple options on how the articles can be displayed on the screen, depending on your personal preference and the resolution of your monitor. All papers are available in either HTML or PDF files. The HTML files are small and download fine on dialup (28k), and the PDF files are excellent and ready to print. Take a look at the Elsevier site and explore it for yourself at: http://www.journals.elsevierhealth.com/periodicals/the

Watch for more information coming soon.

CALL FOR ARTICLES/STORIES FROM STUDENTS

LET US HEAR FROM YOU!

If you have news from your SFT Student Chapter, or College of Veterinary Medicine, that you would like to share with SFT members, please send it to charles@franzmgt.com. Please make sure to put “SFT Newsletter Article” in the subject line of your message.

Make sure to mark your calendar, for SFT’s Future Meetings

CHARLESTON, SC
AUGUST 9-13, 2005

ST. PAUL, MN
AUGUST 16-19, 2006
GUIDELINES FOR APPLICATION SUBMISSION

Society For Theriogenology Student Case Presentation Competition
SFT Annual Meeting
Charleston, SC
August 11, 2005

All applicants must be student members of The Society For Theriogenology. This includes student members graduating in the spring of 2005.

An Abstract of the Student Case Report must be received by February 15, 2005. Please include the following with your submission:

1. Name, home address and school address
2. Telephone number
3. Email address
4. Name, title, address and phone number of the faculty member working with you.
5. Abstract of your case (300 words or less).
   a) Title
   b) The importance of the case to Theriogenology
   c) A discussion of the diagnostic approach and treatment options considered.
   d) Results/discussion
   e) References

We will not need any photos, graphs, or diagrams at this time. Prior to the conference you will be required to submit a copy of your Power Point Presentation to the SFT home office. You will also be required to bring a copy with you to the conference.

Abstracts must be submitted by February 15, 2005. Please submit them in either Word or Word Perfect format to my e-mail address: jayacims@tecinfo.com. The abstract should be in normal style, Arial font, 10-font size, single spacing, and 1” margins.

Five presentations will be selected. You will know by March 30th whether your presentation has been selected. Further instructions will follow notification.

Please be aware that this is a competition. The contestants will be judged on both the quality of their investigation or and the quality of the presentation. Therefore you must attend the meeting in Lexington, Kentucky to be eligible for the awards. The SFT will award five cash prizes:

- First place $ 450
- Second place $ 375
- Third place $ 300
- Fourth place $ 225
- Fifth place $ 150

More than one student may be involved with the presentation of a case, however only one prize will be awarded per presentation.

A panel of academicians and private practitioners will review manuscripts. All applicants will be notified by March 30, 2005.

Completed abstracts and questions can be sent to:
James H. Alexander, DVM
1810 Glencrest
Yazoo City, MS 39194
Mobile – 601-946-1296
Home - 662-746-8307
Jayacims@tecinfo.com

SOCIETY FOR THERIOGENOLOGY

Student Membership Statistics
NOVEMBER 2004

<table>
<thead>
<tr>
<th>COLLEGE:</th>
<th>FACULTY REPRESENTATIVES</th>
<th>NUMBER OF STUDENTS</th>
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<tr>
<td>Auburn (AL)</td>
<td>Dr. Dwight Wolfe</td>
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<td>Atlantic (PEI)</td>
<td>Dr. Rob Lofstedt</td>
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<td>U.C. Davis (CA)</td>
<td>Dr. Robert Bon Durant</td>
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<td>Dr. Robert Mortimer</td>
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<td>Dr. Cliff Shipley</td>
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<td>Dr. David Sprecher</td>
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<td>Montreal (QB)</td>
<td>Dr. Refean LeFebvre</td>
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<td>No Carolina St. (NC)</td>
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<td>Dr. Lionel Dawson</td>
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<td>Dr. Tracey Chenier</td>
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<td>Oregon St. (OR)</td>
<td>Dr. Chuck Estill</td>
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<td>Pennsylvania (PA)</td>
<td>Dr. Patricia Sertich</td>
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<td>Western Coll Sas CA (SK)</td>
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<tr>
<td>Western Univ (CA)</td>
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<tr>
<td>Ross Univ</td>
<td>Dr. Richard Torbeck</td>
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<tr>
<td>St. Georges</td>
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Greetings from the ACT! The fall has been productive so far as our potential diplomates prepare their credentials and study plans. Credential packets were submitted with a new deadline of November 1 this year in an effort to facilitate packet completion prior to review by the Executive Board. This early deadline allows Charles Franz and the management team an opportunity to review packets, identify deficiencies and request changes to packets well in advance of the January Executive board meeting. This new deadline also eliminates the complicating rush of the holidays as applicants gather materials such as letters of recommendation. As always, your feedback regarding this change is welcome.

An exciting step toward a more unified study system for our potential diplomates was the creation of a dedicated listserv for ACT applicants. Using this listserv, applicants can share study resources and expertise. Through prospective diplomates or Charles, ACT mentors can also forward case discussions, literature reviews and other useful study materials. We anticipate that this listserv will be an important tool for all candidates, but especially those in practice or in species-directed programs. Thank you, Charles, for your good work with our new listserv.

I was honored, recently, to represent the ACT at the European College of Animal Reproduction (ECAR) Executive Board meeting held in Ghent, Belgium.

My trip was part of an ongoing effort to solidify our relationship with our colleagues in the ECAR. My interactions with the ECAR board members and exam candidates were very positive. Like the ACT, the ECAR strives to certify high quality individuals as they build their specialty college in reproduction. The group is represented by almost all countries of the European Union with a total of 189 Diplomates as of November 2004. Fourteen individuals sat the examination in 2004 with 7 people successfully attaining Diplomate status. Examination pass rates, to date, are similar to the ACT. Issues faced by the examination committee include expanding their database of useful questions (submission of questions is one method through which ECAR Diplomates can achieve mandatory recertification), software options for database management and recruitment of new Diplomates to the College. On a broader level, the Board members of ECAR discussed pressing issues such as financial stability in the College, diversity of College members (with a global representation being the ultimate goal), recertification of Diplomates (mandated by the European Board of Veterinary Specialists every 5 years) and web-based management of the organization. As I listened to discussions during this meeting, I was struck by the similarity between our two organizations. While the ACT has overcome some of the hurdles faced by the ECAR (financial and managerial stability, implementation of web-based communication), the ECAR is the clear authority in other areas (recertification). Recognizing the talented individuals in both of our Colleges, it would seem beneficial to collaborate our efforts, where appropriate, to enhance the productivity of our organizations. I look forward to continued communication with our fellow ECAR Diplomates, and hope that one or two members of the Executive Board can join us for our strategic planning session and Board meeting in January, 2005.

Speaking of which, plans for the ACT strategic planning session are in full swing. Under the guidance of Mr. Ed Noe, data are being gathered to provide the foundations for our strategic planning discussions. Goals for this session include defining our current and future missions for the ACT, defining the viability of the ACT in the job marketplace and the status of our training programs. I see this planning session as pivotal to the ACT as we best define our role in a changing veterinary workplace. I strongly encourage your input prior to this session and welcome you to communicate directly to me at macphersonm@mail.vetmed.ufl.edu. With the comments of our membership I am certain that we will formulate a strong plan for the future of our College.
Lambing rates and litter sizes following intrauterine or cervical insemination of frozen/thawed semen with or without oxytocin administration

KING, ME; MCKEVEY, WAC; DINGWALL, WS; MATTHEWS, KP; GEBBIE, FE; MYLNE, MJA; STEWART, E; ROBINSON, JJ (2004) THERIOGENOLOGY. 62, 1208-1244

Intrauterine insemination by laparoscopy is required to achieve acceptable lambing rates in ewes when using frozen semen, but the procedure has evoked welfare concerns. Oxytocin has been used to dilate the cervix as a means of accessing the uterus during conventional cervical insemination, but its effect on fertility is not well documented. Three hundred crossbred ewes were synchronized in estrus and randomly allocated to 1 of 3 insemination procedures using frozen/thawed semen containing 400 × 10^6 progressively motile sperm/mL: single cervical (0.2 mL), multiple cervical (4 × 0.05 mL), or laparoscopic (0.05 mL per uterine horn). The effects of each insemination procedure on lambing rate (percentage of treated ewes lambing) and litter size (lambs per ewe lambing) were tested with and without oxytocin (10 IU given i.m.) prior to fixed-time insemination. Oxytocin did not permit complete cervical penetration in any ewes and neither lambing rate nor litter size was influenced by the number of inseminations. Lambing percentages were 69% and 42% (P < 0.01) for the laparoscopic and cervical insemination methods, respectively, and oxytocin reduced these to 58% (not significant) and 10% (P < 0.001), respectively. Corresponding litter sizes for ewes not receiving oxytocin were 1.91 and 1.51 and for those receiving oxytocin 1.83 and 1.41 (laparoscopic versus cervical, P < 0.02). Thus, in the absence of complete cervical penetration at insemination, 10 IU oxytocin decreased the number of ewes lambing but had no effect on their litter size.
The Society for Theriogenology (SFT) and American College of Theriogenologists (ACT) issue a call for research abstracts to be presented at the Annual Conference August 9-13, 2005 in Charleston, SC. Abstracts will be considered in two categories:

1. Competitive Category: Abstracts submitted for this category must have a graduate student or resident as the first author (only one submission per first author will be accepted in this category). These abstracts will be judged on the basis of scientific merit (written). The 8 abstracts with the highest written scores will be selected for presentation during the abstract competition. Graduate students and residents chosen to present in the abstract competition will receive one complimentary registration for the meeting. The abstracts will be presented during a plenary session and judged for presentation quality (oral). Financial awards will be given to the four presenters with the highest total score (written plus oral).

   The first author (graduate student or resident) will be required to present the abstract during the abstract competition at the SFT Annual Conference. Oral presentations will be 10 minutes in length; an additional 2 to 3 minutes will be allowed for questions only. Time limits will be strictly enforced for the abstract competition; exceeding the 10-minute time limit will result in disqualification from the competition.

2. Non-Competitive Category: All individuals, including practitioners, faculty, graduate students, residents, and veterinary students, are encouraged to submit abstracts to be considered for presentation during a general session or an educational session (there may be more than 1 submission per first author in this category). Presenters in this category will not receive a complimentary registration to the conference. Oral presentations will be 10 minutes in length; an additional 2 to 3 minutes will be allowed for questions only.

   General: Presenters of research abstracts will not be reimbursed for travel or other expenses incurred in presenting an abstract, nor will they receive an honorarium. Accepted abstracts will be printed in the Annual Conference Proceedings.

GUIDELINES: WHAT TO SEND AND HOW TO SEND IT

   Electronically: Submit via e-mail (address on top of Submission Form) or on a 3.5” disk (compatible with Word) Font: 12 point Times New Roman Length: No longer than one page
   Paper: 8.5” x 11” Margins: 1.5” top and bottom – 1” left and right
   Header: The title, authors, and their affiliations must be centered at the top of the page.
   Content: Abstracts should state clearly the aims of the project, describe the methods used, and summarize the findings. Keywords (up to 5) should be listed at the bottom of the page. Form: You must complete and submit the following submission form for your abstract.

   Abstracts not adhering to these guidelines will not be considered for presentation.

DEADLINE: Abstracts must be received no later than Tuesday, March 15, 2005 for consideration.

Those submitting abstracts for consideration will be notified by May 1, 2005 if their abstract(s) were accepted or declined.

** If you find that you will be unable to present your abstract, please notify the SFT office immediately

** Please Note: Submission form and additional information available at www.therio.org
Maternal diet and other factors affecting offspring sex ratio: a review


Mammals usually produce approximately equal numbers of sons and daughters, but there are exceptions to this general rule, as has been observed in ruminant ungulate species, where the sex-allocation hypothesis of Trivers and Willard has provided a rational evolutionary underpinning to adaptive changes in sex ratio. We review circumstances whereby ruminants and other mammalian species, especially rodents and primates, appear able to skew the sex ratio of their offspring. We also discuss some of the factors, both nutritional and non-nutritional, that potentially promote such skewing. Studies conducted in our laboratory on mice suggest that age of the mother and maternal diet, rather than the maternal body condition per se, play directive roles in controlling sex ratio. In particular, a diet high in saturated fats but low in carbohydrate leads to the birth of significantly more male than female offspring in mature laboratory mice, whereas when calories are supplied mainly in the form of carbohydrate rather than fat, daughters predominate. Because diets fed to the mice in these experiments were nutritionally complete and because litter sizes did not differ between treatments, dietary inadequacy seems not to be the cause for sex-ratio distortion. A number of mechanisms, all of which are testable, may provide an explanation for the phenomenon. There are potential implications of these observations for human medicine and agriculture.
Influence of glucose and fructose in the extender during long-term storage of chilled canine semen

The use of chilled, extended semen in dog breeding is becoming increasingly popular as preparation and transportation is less expensive and regulations are often less complicated than for frozen semen. Sugar is one of the main constituents in semen extenders, and glucose and fructose are metabolized in separate pathways by freshly ejaculated dog sperm. In this study, glucose, fructose, or an equal mixture of both was used in an egg-yolk-tris (EYT) extender at 2 different concentrations (10 and 70 mM). EYT extender without sugar supplementation, providing only the glucose (3–4 mM) originating from the egg-yolk, served as a control. The longevity of the chilled semen at 5°C was 23 days: the quality of physical and functional characteristics decreasing with time. Glucose and fructose had a strong influence on motility and movement patterns of chilled canine semen. The beneficial effect of 70 mM sugar concentrations compared to 10 mM and the control was pronounced and maintained sperm motility > 70% for 8 days of storage, compared to 4 days in the control extender. Fructose maintained higher sperm motility than did glucose and the mixture. VAP values were higher in sugar-supplemented extenders (P < 0.05). Neither type nor concentration of the 2 sugars influenced sperm plasma membrane, acrosome integrity, or the acrosome reaction following ionophore challenge. Sugar consumption by dog sperm varied between the different periods of storage and with sugar concentrations provided in the extenders. Glucose consumption by dog sperm was greater than fructose consumption when both sugars were present in equal amounts, indicating that dog sperm used glucose in preference to fructose. In conclusion, the major influence of the 2 sugars on chilled semen was to support motility. EYT extender supplemented with fructose at a concentration of 70 mM was found to be the best of the tested extenders for long-term preservation of chilled canine semen.

Semen quality of postpubertal boars during increasing and decreasing natural photoperiods

The present study analyses the effects of increasing and decreasing photoperiods on the semen quality of 20 selected postpubertal Landrace boars. The boars were exposed, throughout 75 days, to increasing and decreasing photoperiods of natural light, a constant temperature of 21 ± 1 °C and 60%–70% of humidity, fed with a nutritious diet, and submitted to a rhythm of semen collection of twice a week. During the last 2 weeks of each treatment, semen samples were analyzed and the parameters measured were ejaculate volume and pH, sperm concentration, sperm production and the number of semen doses per ejaculate, sperm vitality, sperm motility, osmotic resistance of spermatozoa, and sperm morphology. The comparative analysis between increasing and decreasing photoperiods indicated that the semen quality of boars exposed to a decreasing photoperiod was reduced as a consequence of decreased sperm concentration, sperm production, and the number of semen doses. There was no difference between increasing and decreasing photoperiods in terms of sperm vitality and sperm motility, nor in the osmotic resistance of spermatozoa to isotonic and hypotonic media. The analysis of sperm morphology showed significantly lower frequencies of mature and immature spermatozoa with a distal cytoplasmic droplet and significantly higher frequencies of immature spermatozoa with a proximal droplet in boars exposed to the decreasing photoperiod. These results indicate that the sperm quality of the selected boars decreased during decreasing photoperiods, in comparison with increasing photoperiods, mainly due to impaired testicular function.

Maternal nutrient restriction reduces concentrations of amino acids and polyamines in ovine maternal and fetal plasma and fetal fluids

Amino acids and polyamines are essential for placental and fetal growth, but little is known about their availability in the conceptus in response to maternal undernutrition. We hypothesized that maternal nutrient restriction reduces concentrations of amino acids and polyamines in the ovine conceptus. This hypothesis was tested in nutrient-restricted ewes between days 28 and 78 (experiment 1) and between days 28 and 135 (experiment 2) of gestation. In both experiments, ewes were assigned randomly on day 28 of gestation to a control group fed 100% of National Research Council (NRC) nutrient requirements and to a nutrient-restricted group fed 50% of NRC requirements. Every 7 days beginning on day 28 of gestation, ewes were weighed and rations adjusted for changes in body weight. On day 78 of gestation, blood samples were obtained from the uterine artery and umbilical vein for analysis. In experiment 2, nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135. Fetal weight was reduced in nutrient-restricted ewes on day 78 of gestation either continued to be fed 50% of NRC requirements or were realimented to 100% of NRC requirements until day 135.
Factors affecting temporal relationships between estrus and ovulation in commercial sow farms

The main objective was to examine effects of season, parity, genotype, lactation length, and weaning-to-estrus interval on duration of estrus (DE) and onset of estrus-to-ovulation interval (EOI) in sows farmed. Detection of estrus and ovulation by the back-pressure test and transabdominal ultrasonography, respectively, were performed every 6 hours from day 2–10 postweaning in 535 sows (approximately 89 sows per farm per season). The average weaning-to-estrus interval, DE, and EOI of the 501 sows that returned to estrus by day 10 postweaning were 4.6 ± 0.1 days, 55.2 ± 0.5 hours, and 41.8 ± 0.5 hours, respectively. Farm X season (P < 0.01), parity X season (P < 0.05), and farm X weaning-to-estrus interval (P < 0.05) interactions for DE and EOI were detected. Sows weaned in the summer had an 8-hours longer (P < 0.001) DE and EOI than those weaned in the spring on farms 1 and 3. On farm 2, however, DE and EOI did not differ (P = 0.09) in sows weaned in summer versus spring. On each farm, parity 3 and ≥ 4 sows had a 4.5-hours longer (P > 0.05) DE and EOI than parity 1 and 2 sows in the summer, but there were no differences (P > 0.11) in DE or EOI among parity classes in the spring. There was a linear decrease of DE (P < 0.001) and EOI (P < 0.05) as weaning-to-estrus interval increased from the 3– to the 7-day class on each farm. However, the range of weaning-to-estrus interval that exhibited a stepwise decrease of DE and EOI was narrower on farm 1 (3–5 days) than farms 2 and 3 (3–6 days). Only farms 1 and 3 had multiple genotypes. Genotype did not affect (P > 0.14) DE on either farm, but the EOI of genotype B was 4 hours shorter (P < 0.05) than genotype C on farm 1. On each farm, DE decreased linearly (P < 0.01) as lactation length increased from ≤ 13 to > 20 days. In general, factors that affected EOI also affected (P < 0.05) the percentage of inseminations that occurred within 24 hours preovulation to 3 hours postovulation. These data indicate that factors other than weaning-to-estrus interval, such as season and parity, can significantly alter DE and EOI. However, the effects of season and weaning-to-estrus interval on DE and EOI can be inconsistent among farms.

Equine abortion and premature birth associated with Cellulosimicrobium cellulans infection

During the 2002 and 2003 foaling seasons, Cellulosimicrobium (Cellumonas) cellulans (formerly Oerskovia xantibioelytica) was the principal microorganism isolated from fetal tissues or placentas from cases of equine abortion, premature birth, and term pregnancies. Significant pathologic findings included chronic placentalitis and pyogranulomatous pneumonia. In addition, microscopic and macroscopic alterations in the allantochorion from 4 of 7 cases of placentitis were similar to those caused by Crossiella equi and other nocardioform bacteria. This report confirms a causative role of C. cellulans infection in equine abortion.

Combined ACTH and glucocorticoid treatment improves survival and organ maturation in premature newborn calves

Glucocorticoids play an important role in prenatal organ maturation in many species. In humans, maternal treatment with synthetic glucocorticoids improves neonatal adaptation of prematurely born infants. In cows, preterm calf survival is improved following a single maternal glucocorticoid administration. We hypothesized that stimulation of endogenous cortisol secretion by adrenocorticotropic hormone (ACTH) treatment combined with maternal dexamethasone treatment, would be even more efficient in stimulating organ maturation in the prematurely delivered calf. Three groups of premature calves were delivered by caesarean section at 90% of gestation length from dams that were either untreated or injected with dexamethasone before delivery, combined with either prenatal or postnatal ACTH treatment to the calf. During the first 24 hours after birth, thermoregulation, blood chemistry, liver values, and organ weights were recorded. In the untreated calves, survival was significantly correlated with blood oxygenation and sodium and calcium levels at the moment of birth. There were marked maturational effects of the treatments on body temperature regulation, blood acid-base status; oxygenation; glucose, insulin, and IGF-1 levels; and weight of the heart, liver, gastrointestinal tract, and thymus. For many of the measured metabolic, endocrine, and organ weight parameters, the intrauterine ACTH treatment was associated with improved values relative to the postnatal ACTH treatment, which appeared to have no immediate effect on calf viability. In conclusion, the premature calf delivered by caesarian section at 90% of gestation length showed blood chemistry, metabolic, endocrine, and organ growth characteristics that indicated severe prematurity. However, the maturation of organ function in newborn premature calves following maternal glucocorticoid injections was further enhanced if it was preceded by intra-fetal injections of ACTH.
Changes in plasma gonadotropin concentrations and urethral closure pressure in the bitch during the 12 months following ovariectomy

Reichler,LM; Pfeiffer,E; Picic,CA; Jochle,W; Rose,MM; Hulser,AM; Arnold,D (2004) Theriogenology 62, 1391-1402

Urinary incontinence due to acquired urethral sphincter incompetence is a common side effect of spaying, for which the underlying cause remains unknown. Spaying not only results in a significant reduction in the urethral closure pressure within 1 year but also in an increase in the plasma gonadotropin concentrations. To investigate the possible link between the postovariectomy changes in plasma gonadotropins and urethral closure pressure, gonadotropin and urodynamic measurements were performed in 10 Beagle bitches before and for a period of 1 year after spaying. Plasma gonadotropin concentrations rose quickly after ovariectomy and peak levels were seen within 3–5 weeks, followed by a sharp drop until week 10. A steady increase was observed subsequently until week 42, when a plateau was reached. One year after spaying, the mean FSH concentration was 75.3 ± 32.1 ng/mL, a 17-fold increase, and the LH was 8.3 ± 3.8 ng/mL, an 8-fold increase over the prespaying values. Ten months after spaying, the mean urethral closure pressure (9.7 cm H2O) was significantly reduced when compared to the mean preoperative value of 15.4 cm H2O. However, there was no clear relationship between the gonadotropin concentrations and the urethral closure pressure. From these results it seems unlikely that chronically elevated gonadotropins are the underlying cause for reduced urethral closure pressure after spaying resulting in urinary incontinence.

Effect of biostimulation on uterine involution, early ovarian activity and first postpartum estrous cycle in beef cows

Landaeta-Hernández,AJ; Giangreco,M; Meléndez,P; Bartolomé,E; Bennett,LF; Rae,DO; Hernández,Z; Archbald,LT (2004) Theriogenology 61, 1521-1532

The objective was to determine the effect of biostimulation (bull-exposure) on uterine involution (UI), plasma progesterone concentration (P4), size of largest follicle (LF), number of follicles larger than 5 mm (F > 5), presence of fluid in uterine lumen (PF), presence of luteal tissue (LT), and length of the first estrous cycle postpartum (LEC). Ninety Angus cows with calves were allocated by parity and body frame into three groups (30 per group) 1 week postpartum. Two groups were exposed to bulls (BE) and one non-exposed group (NE) served as a control. Data were collected during weekly sessions of palpation per rectum, ultrasonography and bleeding on a subgroup of 30 cows (10 cows per group) for 6 weeks, and permanent surveillance of estrus with HeatWatch® on all 90 cows. There were no significant differences between BE and NE cows for UI (17.1 ± 1.1 days versus 20.1 ± 1.6 days), LF (9.5 ± 1.7 mm versus 11.0 ± 2.4 mm), F > 5 (1.20 ± 0.3 versus 1.47 ± 0.09), and PF. However, LT was detected in more BE than NE cows (13 versus 2; P < 0.001). Overall differences in P4 were found between BE and NE cows with detected LT (2.00 ± 0.3 ng/ml versus 1.05 ± 0.4 ng/ml, respectively; P < 0.05). More BE cows resumed reproductive cyclicity with estrous cycles normal in length compared with NE cows (16/30, 53%; 16/30, 53%; and 8/30, 26.6% for the two BE groups and the NE group, respectively; P < 0.01). In conclusion, BE hastened luteal function but did not affect uterine involution.

The influence of the corpus luteum on ovarian follicular dynamics during estrous synchronization in goats


Ovarian follicular dynamics and fertility are unaffected by the presence or absence of a corpus luteum during synchronization of estrus with progestins in goats. On day 5 of the estrous cycle (estrus = day 0), a gestagen-containing sponge was inserted in the vagina for 11 days. To remove corpora lutea, 1 group of goats (CL–; n = 41) received 7.5 mg of luprostiol on days 7 and 8 of the estrous cycle. The second group of goats retained the CL (CL+; n = 38). Growth and development of follicles ≥ 4 mm in diameter were measured daily from onset of estrus to 2 days after subsequent ovulation in 7 goats from each group, using rectal ultrasonography. Estrus was detected by the use of a reproductively sterilized buck and estrus does were subsequently mated. The number of waves of follicular development (CL– = 5.57 ± 0.2 versus CL+ = 3.14 ± 0.14; P > 0.05) did not differ between groups. The second wave of follicular development was present at the time of progesterone decline in the CL+ group and neither its duration (CL– = 5.6 ± 0.7 days; P > 0.05) nor the day of commencement of the third wave of follicular development (CL– = 11.6 ± 0.7 versus CL+ = 11.8 ± 0.6; P > 0.05) were altered by the concentration of endogenous progesterone. The pregnancy rate was similar between the two groups. (CL– = 68.29% versus CL+ = 65.79%; P > 0.05). Thus, in goats, ovarian follicular dynamics and fertility were not altered by the presence or absence of a corpus luteum during estrous synchronization.
Effect of post-insemination supplementation with PRID on pregnancy in repeat-breeder Holstein cows

VILLARROEL, A; MARTINO, A; BONDURANT, R; BÉLETANG, F; SISCHL, I (2004) THERIOGENOLOGY. 61, 1471-1475.

The efficacy of cabergoline solely or combined with a PGF_2α analogue alfaprostol (Gabbrostim™) in inducing abortion at different stages of pregnancy was investigated in 18 queens. The queens were assigned to two treatments: group I (n = 10)–cabergoline (15.5 μg/kg; daily, orally) and group II (n = 8)–cabergoline (15.5 μg/kg; daily, orally) combined with alfaprostol (10 μg/kg; every other day, subcutaneously). Each group was divided into two subgroups according to the duration of pregnancy when treatments started: group IIA (n = 6) started on day 34 to 42 after mating, group IIB (n = 2) on days 45 and 47, respectively. Termination of pregnancies was successful in all cats of group IA, while treatments failed in both cats of group IB, even though seven and eight treatments, respectively, were given. Mean (± SD) plasma progesterone concentrations before the start of treatments were 85.0 ± 12.3 nmol/L and decreased within 3 days to 8 nmol/L and subsequently to basal values, when the queens aborted (group IIA, n = 6) or gave birth prematurely (group IIB, n = 2). When abortions failed (group IB, n = 2), progesterone concentrations remained elevated (16.9 and 9.8 nmol/L). Duration of combined therapy during late pregnancy in group IIB (n = 2) lasted about 10 days. In both cases, premature birth occurred and the kittens died within 16 h after birth. Overall, treatments starting on days 25 to 42 of pregnancy (groups IA and IIA) had abortion rates of 100%. The average duration of treatments was 5.6 ± 1.5 days (range, 3 to 8 days). Adverse effects were vomiting that occurred in 6 of the 109 (5.5%) treatments. In conclusion, young late lactation repeat-breeder cows benefited from progesterone supplementation, in terms of maintaining pregnancy until traditional time of pregnancy diagnosis.

Induction of abortion in queens by administration of cabergoline (Galastop™) solely or in combination with the PGF_2α analogue alfaprostol (Gabbrostim™)


Embryonic mortality contributes to repeat-breeding in dairy cows; luteal insufficiency is a known cause of embryonic mortality. The objective of this study was to assess the efficacy of supplementation with exogenous progesterone for 14 days on pregnancy maintenance in inseminated repeat-breeder dairy cows. On day 5 after insemination, treated cows (n = 148) received a modified PRID (i.e., without estradiol capsule), which was removed on day 19. Control cows (n = 148) did not receive any treatment. Overall there was no effect of PRID supplementation on pregnancy rates. However, when the study population was stratified by parity and stage of lactation, PRID supplementation significantly improved pregnancy rate in first- and second-parity late lactation cows (risk ratio = 3.26; 95% CI = 1.22, 8.69). Pregnancy rates did not differ between PRID-treated cows with (n = 81) and without vaginitis. Control cows tended (P = 0.077) to have a higher proportion of abortions than PRID-treated cows (7/50 versus 2/51, respectively). In conclusion, young late lactation repeat-breeder cows benefited from progesterone supplementation, in terms of maintaining pregnancy until traditional time of pregnancy diagnosis.

Unilateral hysterectomy (cornuectomy) in the bitch and its effect on subsequent fertility

SEYREK-INTAS, K; WEHREND, A; NAK, Y; BASHI TEK, H; YILMAZBAS, G; GÜKHAN, E; BUSTEDT, H (2004) THERIOGENOLOGY. 61, 1171-1177.

During cesarean section of bitches, a beginning tissue necrosis of the uterus is often encountered. These alterations mostly require ovariohysterectomy that means the end of breeding life. The aim of this study was to create a model for unilateral hysterectomy during dystocia and to evaluate subsequent fertility. Unilateral cornuectomy was performed in 18 clinically healthy bitches of different ages, breeds, and at different stages of the sexual cycle. Four bitches were not available for follow-up examinations. Twelve bitches were mated at the first obvious estrus period postoperatively and 10 pregnancies were diagnosed. Nine bitches each delivered 1 to 5 puppies (mean, 3.8 puppies/litter) after a gestation period of 63 to 67 days. The puppies (n = 38) were in good condition and showed high vitality. Unilateral cornuectomy of the uterus had no adverse effects, and postoperative mating resulted in pregnancy without complications and a normal parturition. In the case of pathological changes in one uterine horn during a cesarean section, unilateral hysterectomy seems to be an alternative to ovariohysterectomy.
Fixed-time artificial insemination of postpartum beef cows at 72 or 80 h after treatment with the MGA® Select protocol

The objective was to determine the appropriate timing of fixed-time artificial insemination (AI) following administration of the MGA® Select protocol. Cows at two locations (location 1, n = 114; location 2, n = 97) were assigned to fixed-time AI at 72 or 80 h by age, body condition score (BCS), days postpartum (DPP), AI technician, and sire. All cows were synchronized with the MGA® Select protocol, consisting of oral administration of melengestrol acetate (MGA; 0.5 mg/head per day) for 14 days, GnRH (Cysotrelin, 100 μg, i.m.; day 26) 12 days after MGA withdrawal, followed in 7 days with PGF2α (PG; Lutalyse, 25 mg, i.m.; day 35). Cows were inseminated at 72 h (n = 108) or 80 h (n = 103) after PG, and GnRH (100 μg) was given at insemination. Location was not significant and, therefore, was removed from the model. Mean BCS (5.2 ± 0.1, 72 h; 5.3 ± 0.1, 80 h) and DPP (34 ± 2, 72 h; 35 ± 2, 80 h) did not differ (P > 0.1) between treatments. Serum progesterone concentrations ≥ 1 mg/ml were defined as cyclic (33/108, 31%, 72 h, versus 32/103, 31%, 80 h; P > 0.1). Cows with serum progesterone concentrations ≥ 1%, 80 h; P > 0.1). Although pregnancy rates were higher (P < 0.05) for cows inseminated at 72 h (69/108, 64%) versus 80 h (52/103, 50%) after PG, pregnancy rates at the end of the breeding season did not differ (P > 0.1) between treatments (98/108 (91%), 72 h; 88/103 (85%), 80 h). In conclusion, pregnancy rates were higher when postpartum beef cows synchronized with the MGA® Select protocol were inseminated at 72 h versus 80 h after PG.

Effect of ram exposure at the end of progestagen treatment on estrus synchronisation and fertility during the breeding season in ewes

Two experiments were conducted to examine the effects of ram exposure during the breeding season, in combination with progestagen treatment, on estrus synchronisation, fertility, the LH surge, and ovulation in ewes. Experiment 1 was subdivided into experiments 1a and 1b. In all experiments, crossbred ewes were treated with an intravaginal sponge for 12–14 days and 3 days before sponge withdrawal, ewes were divided into control (no further treatment; n = 191, 103, and 50 for experiments 1a, 1b, and 2, respectively) or ram-exposed (3 mature rams/50 ewes were introduced [+Ram]; n = 187, 99, and 49 for experiments 1a, 1b, and 2, respectively). After sponge withdrawal, ewes in experiments 1a and 2 received 500 IU equine chorionic gonadotropin and rams were removed from all +Ram groups. In experiment 1a and 1b, raddled, sexually intact rams were introduced to ewes 48 hours after sponge withdrawal. The timing of mating was recorded and ewes were maintained until lambing. In experiment 2, estrus behavior was determined every 4 hours, and time of the LH surge and ovulation were determined from a subset of 10 ewes per group. In experiment 1a, less +Ram ewes were bred by 48 hours after ram introduction (control 98% versus +Ram 89%; P < 0.001) and in experiments 1a and 1b, 14% fewer (P < 0.05) of the ewes bred in the first 3 hours after ram introduction lambed to that service. In experiment 1a, ram-exposed ewes had a lower litter size than control ewes (1.93 ± 0.06 versus 1.70 ± 0.06 lambs/ewe; P < 0.05). In experiment 2, rams advanced (P < 0.05) estrus, the LH surge, and ovulation by 2–6 hours, compared with control ewes. We speculate that exposure of ewes to rams increased LH secretion and that this in turn increased follicle development and the production of estradiol that led to a more rapid onset of estrus, the LH surge, and ovulation. In conclusion, ewes that were bred had lower fertility in the +Ram groups than control groups.

Effect of bovine viral diarrhea virus infection on fertility of dairy heifers

A prospective field study in heifers from birth to first breeding was undertaken on two commercial dairies to assess the effect of bovine viral diarrhea virus (BVDV) congenital and post-natal infection (PNI) on fertility. A high BVDV type 2 antibody titer (1:4,096) at 10 months of age was associated with 32 more days to conceive, compared with a low titer (1:128). Conversely, infection with BVDV by 5 to 6 months of age and high BVDV type 2 titers 1 month before conception or breeding was associated with improved fertility. Heifers with evidence of congenital BVDV infection had lower fertility than non-infected heifers (15 to 42 days longer time-to-first AI), which depended on BVDV type 2 titers at 10 months of age. Neospora caninum infection was associated with additional services per conception (SPC) and Leptospira interrogans infection was associated with a delay in the time-to-first breeding. It appears that under field conditions, the effect of subclinical BVDV infection on subsequent heifer fertility may be due to a complex of interrelationships among multiple BVDV infections that depend on the type and timing of infection relative to reproductive development and events.
ABSTRACTS

Prognostic value of spermatological parameters as predictors of in vitro fertility of frozen-thawed bull semen

TARTAGLIONE, CM; RITTA, MN (2004) THERIOGENOLOGY. 62, 1245-1252

Cryopreservation imposes irreversible damage to sperm membranes, such as swelling and disruption of plasma and acrosome membranes, changes in membrane fluidity, altered influx of calcium, and changes in enzyme activity. Morphologic integrity of the sperm plasma membrane has been widely studied using different techniques, including exposure of spermatozoa to hypoosmotic solutions (provides information concerning the biochemical activity of the sperm tail membrane), supravital test using eosin stain (yields information regarding sperm head membrane integrity), and Trypan-blue Giemsa stain (TBG; reveals both sperm plasma membrane and acrosome integrity). The objective of this study was to combine these tests to provide information about the integrity of the whole sperm surface, as well as acrosome status, and determine if the results of these tests were associated with sperm in vitro fertilizing ability. Stepwise regression analyses yielded a model in which fertility (maintain variable) was expressed as a combination of the results of different spermatologic parameters (independent variables). The results of a test combining supravital eosin staining of samples previously submitted to hypoosmotic swelling test (STHOST) accounted for the greatest proportion of variation in fertilization rates (78%). Inclusion of the results of dual staining with TBG increased the proportion of variation in fertility rate that could be accounted for to 82%. Therefore, sperm plasma membrane integrity and function, as well as acrosome integrity, can be considered important variables for normal sperm function and STHOST and TBG could be used for the prognosis of the potential fertility of bovine semen samples used for in vitro fertilization or artificial insemination.

Effect of the interval between estrus onset and artificial insemination on sex ratio and fertility in cattle: a field study

MARTINEZ, F; RAAB, A; MARTINEZ-PASTOR, F; ALVAREZ, M; ANELE, B; BOIXO, J; DE PAZ, P; ANEL, I (2004) THERIOGENOLOGY. 62, 1264-1270

We conducted a field trial in cattle to study the effect of the interval between the onset of estrus and artificial insemination (AI) on sex ratio and fertility. Data were obtained from 716 cows that had been inseminated at different times between 8 and 44 hours after the visual detection of estrus. Before analyzing the data, it was grouped in 3 intervals considering the time between estrus onset and AI (8–18, 18–30, and ≥ 30 hours). Our results show that the percentage of calved females (73.05%) is significantly superior for early inseminations (8–18 hours), and it decreases 1.85% per hour from the onset of estrus. Delayed AI (≥ 30 h) produced a significant deviation of the sex ratio toward males (72.06%); nevertheless, fertility (percentage of successful pregnancies) diminished significantly from 66.19% at 8–18 hours to 45.5% at ≥ 30 hours). In conclusion, variations in the interval between the onset of estrus and AI modify sex ratio. However, we must consider its effect on fertility.

Estrus synchronization in beef heifers with progestin-based protocols. I. Differences in response based on pubertal status at the initiation of treatment

WOOD-FOLLIS, S; KOJIMA, FR; LUCY, MC; SMITH, MF; PATTERSON, DJ (2004) THERIOGENOLOGY. 62, 1518-1528

Two progestin-based protocols for estrus synchronization in replacement beef heifers were compared on the basis of estrous response, interval to and synchrony of estrus, and pregnancy rate. The objective was to determine whether addition of GnRH to a melengestrol acetate (MGA)-prostaglandin F2a (PGF2a) estrus synchronization protocol would improve synchrony of estrus without compromising fertility in yearling beef heifers. Heifers at 2 locations (location 1, n = 60 and location 2, n = 64) were assigned randomly to 1 of 2 treatments by breed and pubertal status. Heifers were defined as pubertal when concentrations of progesterone in serum were elevated (≥ 1 ng/mL) in either 1 of 2 samples obtained 10 and 1 day prior to treatment initiation. Prior to MGA administration, 18/60 (30%) and 36/64 (56%) of the heifers at locations 1 and 2, respectively, were pubertal. Heifers in both treatments were fed MGA (0.5 mg/head/d in a 1.8 kg/head/d supplement) for 14 days followed by 25 mg of PGF2a i.m. (MGA-PGF2a) 19 days after MGA withdrawal (day 33 of treatment). One-half of the heifers at each location received 100 mg of GnRH i.m. 12 days after MGA withdrawal (day 26 of treatment; MGA® Select). The control group received only MGA-PGF2a. Heifers were observed for signs of behavioral estrus continuously during daylight hours for 7 days beginning on the day PGF2a was administered. Heifers were inseminated 12 hours after observed estrus. There was a treatment by location by pubertal status interaction (P < 0.05) for interval to estrus. Compared to the respective control treatment at each location, prepubertal heifers assigned to the MGA® Select protocol at location 1 had longer intervals to estrus, whereas at location 2, prepubertal heifers assigned to the MGA-PGF2a protocol had longer intervals to estrus. The higher number of pubertal heifers at location 2 was associated with a reduced variance in the interval to estrus among MGA® Select-treated heifers. Total estrus response and synchronized conception rates were similar between treatments at both locations. These data suggest that addition of GnRH to the MGA-PGF2a protocol may improve synchrony of estrus; however, the degree of synchrony may be influenced by pubertal status of heifers at the time treatments are imposed. Further studies are needed to define production systems in which the MGA® Select protocol is warranted for use in beef heifers.
Factors affecting conception rate after artificial insemination and pregnancy loss in lactating dairy cows

CHEBEL, RC; SANTOS, JP; REYNOLDS, JP; CERRI, RLA; JUCHEM, SD; JOVERTON, M (2004) ANIM. REPROD. SCI. 04, 230-235

Objectives were to determine factors associated with conception rate (CR) and pregnancy loss (PL) in high-producing lactating Holstein cows. In study 1, CR was evaluated in 7,633 artificial inseminations (AI) of 3,161 dairy cows in 2 dairy farms. Pregnancy diagnosis was performed by palpation per rectum 39 ± 3 days after AI. Environmental temperature was recorded at different intervals prior to and after AI. In study 2, 1,465 pregnancies from 1,393 cows diagnosed at 31 ± 3 days after AI by ultrasonography on 5 dairy farms were re-examined 14 days later to determine PL. Temperature ≥ 29°C was considered to be heat stress (HS). Exposure to HS was defined as the following: NH, no heat stress; HS1, exposure to at least 1 day of maximum temperature ≥ 29°C and average daily maximum temperature (ADMT) < 29°C; and HS2, exposure to ADMT ≥ 29°C. In study 1, exposure of cows to HS1 and HS2 from 50 to 20 prior to AI was associated with reduced CR compared to cows not exposed to HS (28.8%, 23.0%, and 31.5%, respectively). Post-AI HS was not associated with CR. Cows inseminated following estrus detection or timed AI had similar CR. As the number of AI increased, CR decreased. Multiparous cows had lower CR than primiparous cows, and occurrence of milk fever and retained placenta was associated with decreased CR. In study 2, PL was not associated with exposure to HS either prior to or after AI. Cows diagnosed with clinical mastitis experienced increased PL, but parity, number of AI, AI protocol, milk production, and days postpartum at AI were not associated with PL. In conclusion, CR was affected by HS prior to AI, parity, number of AI, and postparturient diseases, whereas PL was affected by clinical mastitis.