

**NOTES & NEWS
FROM
COLORADO GENETICS, INC
2010**

We have recently completed our Spring version of Notes & News to send along a few suggestions and ideas we have collected from meetings, professional journals, newsletters and breeders during the past year. Hopefully you may find an idea or two that can be helpful in planning your future breeding programs.

NUTRITION

- ❖ Recipient cows with low or marginal blood selenium (Se) concentrations may tend to show decreased Embryo Transfer (ET) pregnancy rates. A few blood samples can check your herd status.
- ❖ Examples of supplements containing appropriate protein and energy content per head per day:
 - 3 to 5 lb. of 20-30% range cake
 - 1.5 lb. soybean meal plus 3-6 lb. corn
 - Distillers grain - 3 lb. DDGS or 5 lb. MDGS or 8 lb. WDGS
 - 3 lb. (up to 0.25% body weight)
- ❖ Remember, cows may not be able to utilize energy from feed efficiently if protein is inadequate and vice versa.
- ❖ Don't forget that first calf heifers often require more care, an increase in nutritional requirements and potentially more time from calving to breeding in order to again become pregnant and to remain in the herd. Body condition at calving has a strong influence on length of time to resume cycling --- don't let her loose weight after calving.
- ❖ Studies done by Dr. Rick Funston of the University of Nebraska, indicates that by providing protein supplement for cows on winter range, "...we're impacting marbling before that calf 's even born." Steers from supplemented dams had nearly a 5% increase in Choice grade and heifers demonstrated an approximate 13% increase in pregnancy rate during a breeding season of 45 days. An increase in both profitability and productivity.
- ❖ Multimin, an injectable trace mineral (ITM), contains zinc, manganese, selenium and copper for cattle use. At Colorado Genetics, Inc. (CGI) we have been utilizing this product in various herds for several years. Our findings, along with outside data, has convinced us to now routinely use Multimin on all donors and recipients along with suggesting it's use for AI programs. This ITM allows for by-pass of the gastrointestinal absorption mechanism, therefore allowing the minerals to be delivered directly to the tissues. Multimin is not designed as a replacement to a well balance mineral-vitamin program, as it is only used as a complement. We believe increased embryo production and pregnancy rates can be achieved.

- ❖ We continue to recommend a breeding mineral that contains chelated minerals such as Albion Breeder Pak, Manna Pro Redi Pak and others available today. Chelated minerals are amino acids (protein building blocks) attached to trace minerals which are absorbed in the small intestine that enhances absorption of the minerals.

VACCINATIONS

- ❖ Research now suggests that the first vaccination with a modified live virus vaccine such as IBR-BVD-PI₃-BRSV can be given to calves as early as 65-70 days of age if boosted again at weaning. It is now believed maternal antibodies do not interfere with the effectiveness of the vaccine and protection can be initiated earlier in life to reduce future disease treatments and cost. This is not true for bacterin vaccines; check with your local veterinarian.
- ❖ Best time to vaccinate for scours is 3-4 weeks prior to calving.
- ❖ Recently, an E-coli vaccine received conditional licensure in the USA. Early studies at Kansas State University show a significant increase in E-coli blood titers, after colostrum suckling, in the calves born to vaccinated cows. Studies continue to investigate the vaccines possible effect on E-coli calf diarrhea and shedding of the virus at slaughter.
- ❖ Some studies indicate that Lepto hardjo-bovis, from a reproductive standpoint, may provide a whole range of problems including reduced pregnancy rates, embryonic death and infertility and may be “responsible for economic losses associated with rebreeding, extra day’s open and reduced weaning weights.” Absolute diagnosis of the disease is often difficult. Pfizer recently introduced a new vaccine, Bovi-Shield Gold HB that, along with 5 other viral organisms, provides protection against Lepto hardjo-bovis. A vaccination program can begin with replacement heifers and is also safe for use on pregnant cows, calves and nursing pregnant cows.

DISEASE UPDATE

- ❖ Trichomoniasis was identified in cattle in the 1930’s and has since become a venereal disease that has economically impacted the industry through embryonic death, abortions, pyometra (uterine infection) and infertility. Currently there is no legal treatment for the disease in the USA, so producers must rely on cow vaccination, prevention testing and removal of positive animals. Recently Colorado has proposed changes to the Trich rule with the state to include:
 1. Two negative PCR tests to remove a bull from quarantine.
 2. Bulls over 12 months of age would need to be tested.
 3. Length of sexual rest for a bull before a test is performed would be 30 days (not the present 7 days).
 4. Non-virgin bulls that are not Trich tested will be identified at market with a Trich back-tag as “slaughter only” bulls.Test all acquired bulls (3 negative tests) and retest owned bulls each year.
- ❖ Bovine viral diarrhea (BVD) and specifically testing for persistently infected animals (BVD-PI) has become a topic of much discussion in recent years. Since PI cattle become infected prior to birth, never recover and can infect others in the herd, it is increasingly

more economically important. Remember, all resulting ET calves born to BVD-PI positive recipients will also test positive. A “Testing Strategy Guide” can be obtained from IDEXX Laboratories, Inc. that outlines herd testing, vaccination program and a surveillance /maintenance strategy by calling 1-800-548-9997.

- ❖ Some oral probiotic preparations have been shown to assist, along with timely and sufficient amounts of colostrum, in the prevention of calf scours. One example is “Calf’s Choice Total” that is absorbed well and contains fat/energy.

HEIFER DEVELOPMENT

- ❖ Traditionally, heifers have been developed for breeding by reaching a target weight of 60% to 65% of their expected mature weight based on the belief that puberty was reached at a predetermined size and age. Dr. Rick Funston has re-evaluated heifer development programs in light of increased feed input costs over recent years. He states, “Intensive development systems might maximize pregnancy rates but do not necessarily optimize profit or sustainability. Higher input costs could exceed the value of the extra calves.” His studies have shown that delaying post wean gains until 46 to 56 days pre-breeding followed by accelerated gains did not adversely affect reproduction but did decrease feed costs and that age at breeding time is more important than weight. In fact, he says age and early growth rate influenced time of puberty and preg rate more than average daily gain post-weaning.
- ❖ Also, Dr. Funston stated that in a five year study, “...the data indicates that managing cows on marginal levels of nutrition, improved the ability of their offspring to sustain reproductive performance when they are managed with marginal levels of harvested feed inputs.”
- ❖ Heifers developed on a feed lot ration and then moved to grass for breeding can often have a change in nutrition that has a tremendous effect on embryo survival. Weight loss can amount to more than 50lbs. in two weeks and one study has indicated that follicular growth (ovarian egg development) was decreased and 60% of the heifers became anovular (did not ovulate an egg) within approximately two weeks of the diet change (Mackey et.al). Dr. Perry of South Dakota State University recently pointed out during his presentation that, “Heifers should be carefully managed from weaning to breeding” to insure that they are not under or over conditioned at breeding. Also, he indicated that Spring grass can vary a great deal in nutrient content and that energy and/or protein sources may need to be supplemented to avoid increased early embryonic mortality.
- ❖ Reproductive tract scoring (RTS) of heifers 30 to 60 days prior to breeding has shown to be a predictor of heifer fertility and is likely to be a good predictor of lifetime production of the cow in the herd as longevity becomes more important to producers. A University of Georgia study of nearly 2000 heifers found that during a 70 day breeding season the percentage of heifers to conceive were RTS 5 = 94.6%; RTS 4 = 91%; RTS 3 = 87.6% and RTS 2 and 1 = 70.5% ... nearly a 25% difference between the best and the worst scores!! Visit with us about reproductive tract scoring of your heifers to select heifers for

reproductive efficiency, that will tend to conceive early in the breeding season, wean heavier calves and more likely to breed back earlier in future breeding programs.

SHIPPING AND EED

- ❖ As discussed earlier, early embryo death (EED) can be influenced by various factors that include a drop in the body condition score (BCS) from a high pre-calving score to a much less BCS at breeding time, a negative energy balance post partum, etc. Time of shipping cattle after insemination can also cause an increase in EED if embryo development timelines are not considered.

<u>Embryo Event</u>	<u>Days Post Breeding</u>
Embryo in oviduct	1-5
Embryo into uterus	5-6
Rapid embryo growth and development	7-14
Maternal recognition of pregnancy	16-17
Early uterine adhesion	19-24
Begin placenta attachment	25-35
Placental attachment to uterus	40-42

Shipping of cows between 1-5 days, while the embryo is still in the oviduct, has been shown to be the best time to avoid embryo death. The most critical time to ship are probably between days 10 to 42 when the embryo is most susceptible to stress, heat, a change in uterine environment, etc. It is believed that there is very little embryo loss after day 45 when precautions are taken to decrease stress and overloaded trailers for long distances. For recipients that receive a 7 day old embryo, I suggest that the cattle be moved the same day as the embryo transfer.

ESTRUS SYNCHRONIZATION

- ❖ Reducing the length of the calving season can be the first step toward improved beef production efficiency. A researcher recently gave the following example. Assume an 85 day calving season with 100 calves equally distributed in four 21 day periods. If you move the calving distribution from 25% in each period to 40-20-20-10 you are shifting 45 calves into an earlier period making them an average of 21 days older at weaning that means approximately an additional 1890 lbs. of weaned calf which is certainly a significant amount in this example. Many synchronization programs that are available continue to be refined and increased research data is available to better select a program that is most suitable for a particular producer. The following is meant to be a guideline for commonly used protocols.

1. MGA FOR HEIFERS ONLY!

- Feed MGA at the recommended dose of 0.5 mg/hd/day and to be fed daily in 4-5 lbs. of feed.

- 14-19 day program will increase and improve synchrony over the 14-17 day program resulting in the same or improved pregnancy rate.
 - Heat detection is required.
 - If an injection of GnRH (Cystorelin) is given 12 days after stopping MGA feeding, it has been shown to tighten the synchrony for breeding after the Prostaglandin (PGF), Lutalyse or Estrumate, is injected 7 days later.
2. *14 DAY CIDR PROGRAM*
- Replaces 14 day MGA feeding and improves synchrony and pregnancy results but requires 5 times through the chute
 - CIDR only for 14 days → remove CIDR → 9 days later GnRH → 7 days later PGF → 70 to 74 hours later timed AI (TAI) + GnRH (33 day program)
3. *CO-SYNCH PLUS CIDR FOR AI*
- **Cows:** CIDR + GnRH in a.m. → remove CIDR + PGF 7 days later at 4:00 to 6:00 p.m. → AI + GnRH at 60-66 hours (7:00 to 9:00 a.m.) **NOT** at 48 hours or EED can increase.
 - **Heifers:** CIDR + GnRH in a.m. → remove CIDR + PGF 7 days later in a.m. → AI + GnRH at 52-56 hours (2:00 to 4:00 p.m.) **NOT** at 72 hours or EED can increase. This increases the number of heifers that have two chances to conceive by the 25th day of the breeding season.
4. *5 DAY CO-SYNCH PLUS CIDR FOR COWS ONLY!*
- Requires one more chute run for second PGF injection given 2 hours following the first PGF
 - Some studies show an increase in pregnancy rate as compared to the 7 Day program
 - AI at 72 hours after CIDR removal
5. DO NOT leave CIDR in a cow/heifer longer than 7½ to 8 days or pregnancy rate will decrease.
- ❖ No data is currently available to show any differences between any brand of GnRH or PGF for an estrus synch program.
 - ❖ The use of PGF, with or without a CIDR, will increase the percentage of ovulation in heifers close to spontaneous puberty.
 - ❖ Dr. Funston reports very acceptable results for synchronizing heifers to be bull bred by putting the bull in with the heifers for 5 days of breeding and then injecting all heifers with prostaglandin and again returned to the bull...heifers bred during the first five days will not respond to PGF therefore will not show heat or abort. Some producers have then only kept replacements from those bred the first 25 days as they feel this program aids in selecting for fertility and environmental adaptation.
 - ❖ For AI, a very similar program to the one above can be used for cows or heifers. Heat detect and AI females for 6 days and remove them to another pasture or pen, then inject all remaining females with prostaglandin and continue to heat detect and AI for 4 to 5 days at which time the clean-up bull can be turned into the pasture.
 - ❖ In regard to a CO-Synch/CIDR program for cows, Dr. Cliff Lamb of the University of Florida, states that at the time of CIDR removal, if the calves are pulled from the cows until TAI at 60-66 hours later, he has seen an approximate 10% increase in pregnancy

rate. Also, the calves only need to be sorted once and do well until returned to the cows.

- ❖ The biggest and most important reason for decreased herd fertility is non-cycling (anestrous) cows at the start of the breeding season. Be sure your cows have the opportunity, by post partum interval and nutrition, to be bred early.
- ❖ When heat detecting without synchrony, studies show you need to detect 90% or more of the cows in heat during the 21 days in order to be equal to TAI for total pregnancy rate.
- ❖ CIDR's can be used more than once; call us about the protocol.
- ❖ At CGI we are again able to use the same hormonal treatment in our synchrony programs that we had in the past with an increase in pregnancy rate. Call us for details.
- ❖ Remember, a "gomer bull" with the cows tends to increase TAI conception rates due to pheromone stimulation between the bull and cows.

SEXED SEMEN AND IVF

- ❖ During a recent visit to Sexing Technologies (ST) offices in Texas, I received the following updates in the areas of semen sexing and in-vitro fertilization (IVF) advancements.
 1. Through the company's website, www.sexingtechnologies.com, a producer can go to "economic aids" and preview a worksheet that can be customized to fit an individual breeding program and the program will calculate the approximate return on investment of using sexed semen. From this, a producer can view various economic scenarios for the use of sexed semen and determine if the technology will be effective.
 2. Producers who now take a bull to ST for the collection of sexed semen can purchase a sorted straw for between \$14.00 and \$28.00 each plus boarding fee. Sorted semen for ET is done through a custom order and contains more sperm cells per straw.
 3. New R&D has improved the technology of freezing IVF produced embryos and pregnancy rate are improving.
 4. Previously frozen semen is routinely thawed, then sorted and used for IVF embryo production...a process known as "reversed sort."
 5. Ova from donor cows can now be collected at various sites in the USA and shipped overnight to ST for IVF embryo production. Resulting embryos can then be returned "fresh" to the producers for transfer to recipients.
 6. Sexed semen used in heifers is often resulting in a pregnancy rate only about 5% less than that obtained from conventional semen.
- ❖ Genex offers a product, "GenChoice 90," that will achieve 90% of the desired sex ratio. In one herd, 50 straws of female sorted semen produced 34 heifer calves and 2 bull calves for a 72% conception rate.
- ❖ At CGI, we continue to use more sexed semen for embryo production. Speak to us about product, AI technique and results.

ID AND TRACEABILITY

- ❖ We now have a number of clients that are using an electronic identification (EID) system in their herds to assist in managing production and marketing parameters available to the industry today by providing traceability of their cattle and products. According to Dr. Gary Smith of Colorado State University, "...traceability in the US is sort of treading water." Whether the concept is workable, or cost effective, in an individual herd or not, the following ideas, suggestions and examples have surfaced during the past year.
 1. As recently as February 5, 2010, USDA announced plans to drop the program to trace livestock through the NAIS. It appears it could take up to two years to form new federal laws, in cooperation with individual states, that will apply only to animals being moved interstate.
 2. A recently introduced Senate bill would prohibit the sale of any food not certified (by the producer) to be pathogen free and require ground beef labels to specifically name every cut of meat in the product.
 3. Congress is considering trace back regulations that would require a history of recalled foods to be obtained in no longer than two business days!
 4. Dr. Gary Smith, states that "life-cycle traceability" is now available to many global consumers. As an example in South Korea, he points out that a consumer at the meat counter can know, "...where the animal was born, its sire's name, the farmer's name, the packing plant name, etc." (Beef Magazine, December 2009).
 5. Dr. Richard Brown of the United Kingdom (UK), during a presentation at the International Livestock Congress, gave an example of a large UK retail chain that has recently said they will no longer take beef from South America (better for us possibly) because of consumer demand for food security issues.
 6. Mr. Roger Koberstein, a CGI client, has done years of experimenting with electronic ID systems on his seedstock/commercial cattle operation. He has developed what we believe are some unique and phenomenal uses for a system he now uses. You can learn more in the December 2009 issue of Beef Magazine.

GENOMIC TESTING AND SELECTION

- ❖ At a breakfast meeting during the National Western Stock Show in January, Pfizer announced that their new HD 50K SNP test for Angus cattle is now commercially available. Other breeds are compiling data. This technology certainly exceeds the 56 marker testing in the past (although it is included in the 50K test) and the new predictions of more traits are delivered as molecular value prediction (MVP) that are more reliable due to the result of using more DNA markers. An introductory pricing offer is good through March 31, 2010. Currently, there is an insufficient amount of DNA in an embryo biopsied sample for testing purposes, but DNA amplification procedures are being investigated.
- ❖ Dr. Christian Vigneault of Canada recently presented a paper to the American Embryo Transfer Association (AETA) about the current and future status of genomic testing. In

part, he indicates that worldwide genomic testing is increasing rapidly and future R&D will undoubtedly develop larger DNA panels (up to 600,000 markers) that will continue to refine data available for traits like reproduction, longevity, health, feed efficiency, etc.

ODDS AND ENDS

- ❖ Check Drovers, December 2009 issue for an easily made syringe caddy to keep medicine and vaccines at the proper temperature during use at chute side.
- ❖ Drovers, October 2009, illustrates an easily make portable mineral feeder.

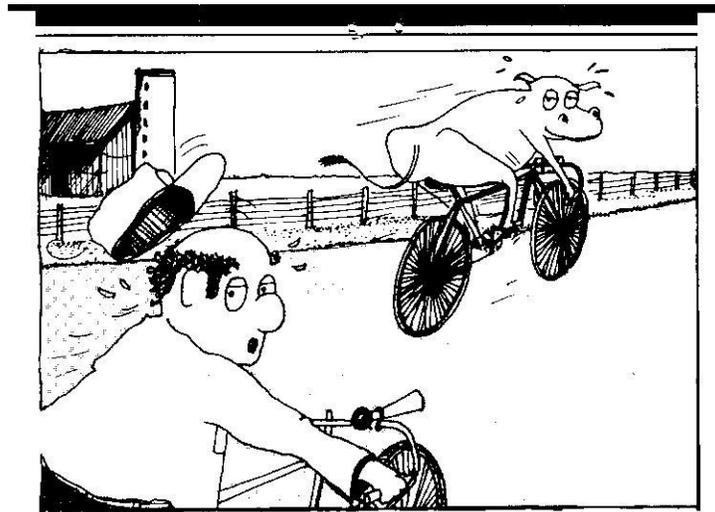
EMBRYO TRANSFER

- ❖ Remember, the genetic value of your frozen embryos tends to decrease with time --- consider transferring or selling your frozen inventory this Spring.
- ❖ Donors should be fed to optimize the supply of nutrients to meet needs. However, manipulating energy intake and protein content of donor rations, particularly moderate underfeeding in non-lactating cows, may further optimize superovulation responses --- DO NOT ALLOW DONORS TO BE FAT!
- ❖ Modified live virus (MLV) vaccines need to be given at least 30 days prior to breeding donors or transferring embryos. This is also true for all breeding females in the herd.
- ❖ Embryo Transfer - Protocols are available for both heifers and cows to produce embryos for your own purebred herd or to sell domestically and internationally.
- ❖ Recipients - We currently have located breeders with recipients available that can be utilized for your embryo program if needed to increase your ET calf production. Recipients can either be purchased as pregnancies or be used to raise a calf that will enter your herd at weaning.
- ❖ AI Programs - Many synchronized protocols are now available ... at varied costs ... to allow AI combined with heat detection, heat detection plus timed AI (TAI) or simply using TAI to breed all the females on one day. We have proven programs for cows and a couple of new ones for virgin heifers that have recently been showing very acceptable results. If you plan on breeding larger groups (50-200 head) on TAI, Deb and I can assist you in semen thawing, breeding and record keeping.
- ❖ Ultrasound - Clients are increasingly using our ultrasound technology services to detect early pregnancies at 26-40 days, determining pregnancies from AI versus clean-up bull breeding at 50-80 days and sexing fetuses between 70 and 85 days of pregnancy. Also included is diagnosing freemartin heifers, cystic cows, dead fetuses (that can quickly be aborted to allow re-breeding), uterine infections, non-cycling females and other reproductive anomalies.
- ❖ We are presently working with new protocols and new hormonal drugs now available for both our donor and recipient programs. You will notice the changes on the new forms we will now be sending to you for donor superovulation and recipient synchronization.
- ❖ The international export of embryos continues to be a growing part of our business. If you have personal contacts in other countries or inquires to buy embryos, we will

certainly assist you planning, producing the embryos, meeting foreign requirements and shipping your embryos.

REMEMBER

- ❖ Always use proper semen thawing and AI procedure techniques.
- ❖ Remember, semen quality (morphology) is a factor most associated with embryo quality ...excellent to good = 59% #1 embryos, fair = 53% #1 embryos and poor semen morphology = 29% #1 embryos. Contact us for assistance in getting semen quality reports, such as post-thaw evaluations, before using newly acquired semen for AI or ET.
- ❖ Clean Cito cutters and scissors periodically to avoid bacterial contamination that may grow from semen and extender medium residues.
- ❖ Regularly check your thaw box temperature with a glass thermometer as they do vary with time! For proper semen thawing at 95°F for a period of 30-45 seconds. Always completely immerse the straw in the thaw water as you want **all** of the semen to thaw at the same time. Also, remember to clean the thaw unit often, every few days if used regularly, and refill with clean water.



SOMETIMES IT'S VERY DIFFICULT
TO CATCH A CYCLING COW !

Coming together is a beginning; keeping together is progress; working together is success."

Henry Ford