VETERINARY NEWSLETTER

EXTENSION
Utah State University
Logan, UT 84322-4900
Utah State University, Utah Counties and the U.S. Department of Agriculture Cooperating

Beef

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2005 RESEARCH UPDATE AVAILABLE

The new Range Livestock Research Update is now available. You can download it from www.ars.usda.gov/npa/ftkeogh, send a request to reprint@larrl.ars.usda.gov or call at 406-874-8200. New results from research conducted at Fort Keogh Livestock and Range Research Laboratory between 2003 and May 2005 are reported along with a list of publications produced by the laboratory's scientists during the same period. Papers are organized by research disciplines at Fort Keogh: genetics, physiology, nutrition, and rangeland research. A description of the history and resources of Fort Keogh, a list of cooperating authors, and a personnel directory are included.

SANDHILLS UPDATE

When researchers at the University of Nebraska (NU) released their data on the revolutionary Sandhills calving method and how it eliminated scours, the benefits to commercial cow-calf operations were obvious. Cutting calf mortality from one-tenth of their crop to zero seemed like enough incentive for any beef producer.

With more data released to substantiate NU's original findings, David Smith, the research scientist who directed his university's original studies, has already seen the adoption of the system by large-scale calf producers who experienced heavy losses to scours on a regular basis and had tried almost everything else.

"These producers can be losing 10% or more of their annual calf crop," he says. "Even at today's prices, you can't keep doing that forever."

What he finds exciting is that once the system is implemented, scours remain under control as long as the Sandhills principles are followed. Scours-plagued herds that began the regimen in 2000 are still scours-free.

Smith adds that not all producers incur the kinds of losses that justify a change.

"If you don't have a problem with scours, then whatever calving system you are using is probably fine," he says. "We are just offering another way for those who do have problems."

The Sandhills system uses physical separation to prevent the spread of bacteria and viruses that are responsible for calf scours. Cow-calf pairs are grouped by calf age to keep older and younger animals in separate pastures. Cows that have not calved yet are regularly rotated into new pastures so newborns are not exposed to the germs spread by older calves.

"By keeping the younger calves away from older calves, we prevent transmission of germs," Smith explains. "Also, by moving pregnant cows to new calving areas, calves are not born in polluted areas."

"The later calves were more likely to get scours than the earlier ones," Smith says, adding that this phenomenon was a strong indication that an actual buildup of pathogens was occurring. "We concluded that segregating calves by age was the only way to break that cycle."

He notes that for the system to work properly, the age difference between calves in the same grouping should not exceed a week. This requires eight separate pastures. Cows are turned into the first calving pasture when the first calves are born. After a week, cows that haven't calved are moved into a second pasture, with cow-calf pairs remaining behind. After a week of calving in the second pasture, the cow-calf pairs stay, and pregnant cows are moved to a third pasture.

This system continues each week. The result is that each pasture contains calves that are born within one week of each other. Once the youngest calf is 4 weeks old, cattle from all pastures can be combined.

A three-year study on a 900-cow ranch documented the first large-scale use of this system and the subsequent elimination of scours in years 2 and 3. Before adopting the calving system, the ranch typically lost 7%-14% of its calves to scours.

Mart McNutt, is a calf producer who manages more than 1,000 Angus cows in Tryon, Neb. He says that as the size of his operation grew, so did the cases of scours in his herd.

"When we had 300 or 400 head, we didn't have much of a scours problem," he says. "But, by the time we had increased our herd above 600, it got bad."

McNutt recalls that his losses due to scours climbed to 15% the year before he modified his calving routine. The year after, his incidence of scours dropped to zero.

"It was like turning off a switch," he says.

In retrospect, McNutt admits, despite the losses to scours before turning to the Sandhills method, he had reservations. "In this country, weather was and still is our greatest fear," McNutt says, adding that his old calving pasture was a single, 20-acre site next to his house where he could monitor his animals, watch for any possible difficulties and get them behind some shelter if a March storm hit.

Now, with his new system, cows calve on eight to 10 pastures ranging from 100 to 640 acres. All are at least 10 miles away from his residence. Because of the distance, McNutt limits the contact with his animals to once a day.

"We try and keep a close watch on the weather and get them behind some trees when we get a blizzard," he says.

To reduce the likelihood of getting caught by a late winter blizzard, McNutt is moving his calving dates from the middle of March to the end of March. He says preliminary observations indicate that the difference in weights at marketing between the earlier and later calves have had little or no effect on his bottom line.

What surprises McNutt most about moving his animals to more remote areas is how self-sufficient his cows can be when they are left to their own resources. He admits it has changed his whole philosophy about ranching.

"I have gone from thinking cows were something you take care of to looking at them as my hired help," he says. "Leave them alone, let them do their job and, if they don't get rid of them."

E. Haag

Angus Beef Bulletin, January 2006, p 110-111

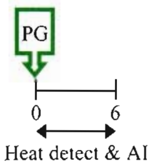
EFFECTS OF COOKED MOLASSES BLOCKS AND FERMENTATION EXTRACT OR BROWN SEAWEED MEAL INCLUSION ON INTAKE, DIGESTION, AND MICROBIAL EFFICIENCY IN STEERS FED LOW-QUALITY HAY

Five ruminally, duodenally, and ileally cannulated steers (376 ± 8.1 kg of initial BW) were used in a 5 x 5 Latin square to evaluate effects of cooked molasses block supplementation and inclusion of fermentation extract (*Aspergillus oryzae*) or brown seaweed meal (*Ascophyllum nodosum*) on intake, site of digestion, and microbial efficiency. Diets consisted of switchgrass hay (6.0% CP; DM basis) offered ad libitum, free access to water, and one of three molasses blocks (0.341 kg of DM/d; one-half at 0600 and one-half at 1800). Treatments were no block (control), block with no additive (40.5% CP; POS), block plus fermentation extract bolused directly into the rumen via gelatin capsules (2.0 g/d; FS), fermentation extract included in the block (2.0 g/d; FB), and seaweed meal included in the block (10 g/d; SB). Steers were adapted to diets for 14 d followed by a 7-d collection period. Overall treatment effect on hay OM intake tended (8.1 vs. 7.6 ± 0.5 kg/d; *P* = 0.14) to increase with block supplementation. Total OM intake (8.4 vs. 7.6 ± 0.5 kg/d; *P* = 0.01) increased in steers consuming block compared with control. Apparent and true ruminal OM digestibility increased (*P* = 0.05) with block consumption. Steers fed SB had greater (*P* = 0.10) true ruminal OM digestibility compared with steers fed POS (61.0 vs. 57.9 ± 1.6%). True ruminal CP digestibility increased (*P* = 0.01) with block supplementation compared with control (37.5 vs. 23.6 ± 3.7%). Addition of fermentation extract did not affect intake or digestion. Treatments did not alter ruminal pH, total VFA, or individual VFA proportions; however, ruminal ammonia increased (*P* = 0.01) with block supplementation. In situ disappearance rates of hay DM (3.14 ± 0.44 %/h), NDF (3.18 ±

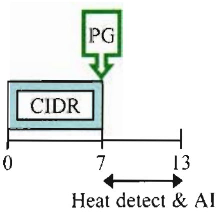
Heifer Protocols

Heat Detection

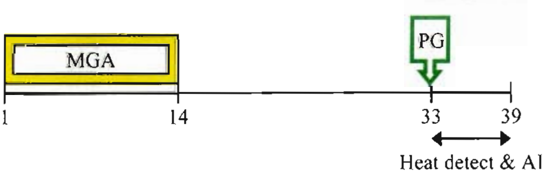
1 Shot PG



CIDR-PG



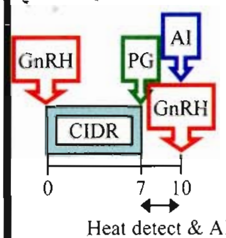
MGA-PG



Estrus AI + Cleanup AI

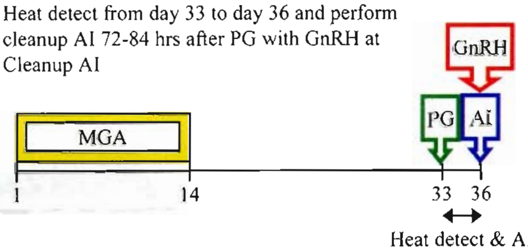
Select Synch + CIDR + Cleanup AI

Heat detect from day 7 to day 10 and perform cleanup AI 72-84 hrs after PG with GnRH at cleanup AI



MGA-PG + Cleanup AI

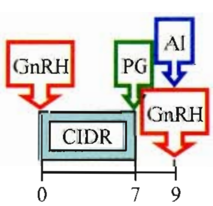
Heat detect from day 33 to day 36 and perform cleanup AI 72-84 hrs after PG with GnRH at Cleanup AI



Fixed-Time AI

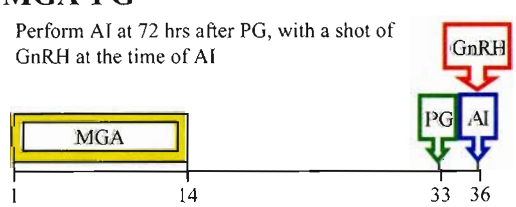
CO-Synch + CIDR

Perform AI at 54 hrs after PG, with a shot of GnRH at the time of AI



MGA-PG

Perform AI at 72 hrs after PG, with a shot of GnRH at the time of AI



Comparison of Protocols for Heifers

Heat Detection	Cost	Labor
1 Shot PG	Low	High
CIDR-PG	Medium	Medium
MGA-PG	Low	Low/Medium
Estrus AI + Cleanup AI		
Select Synch + CIDR (Cleanup AI 72-84 hr after PG)	High	Medium
MGA-PG (Cleanup AI 72-84 hr after PG)	Medium	Medium
Fixed-Time AI		
CO-Synch + CIDR (TAI at 54 hr after PG with GnRH at AI)	High	Medium
MGA-PG (TAI at 72 hr after PG with GnRH at AI)	Medium	Medium

Cystorelin®, Factrel®, Fertagyl®, Ovacyst®

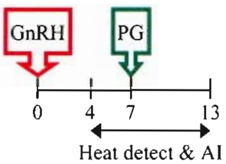
Estrumate®, Insynch®, Lutalyse®, Prostamate®

D.J. Schafer and D. J. Patterson
Department of Animal Sciences - Univeristy of Missouri – Columbia
These protocols are recommended by the North Central Region Bovine Extension Task Force

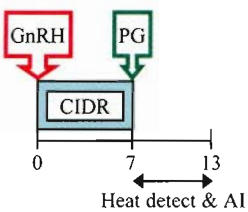
Cow Protocols

Heat Detection

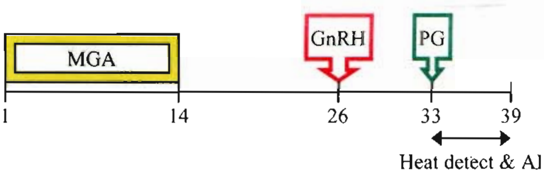
Select Synch



Select Synch + CIDR



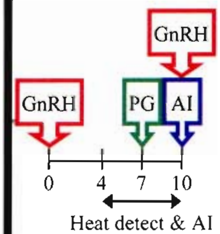
MGA Select



Estrus AI + Cleanup AI

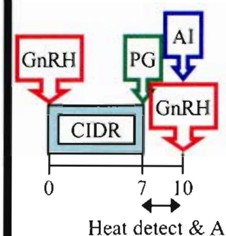
Select Synch + Cleanup AI

Heat detect from day 4 to day 10 and perform cleanup AI 72-84 hrs after PG



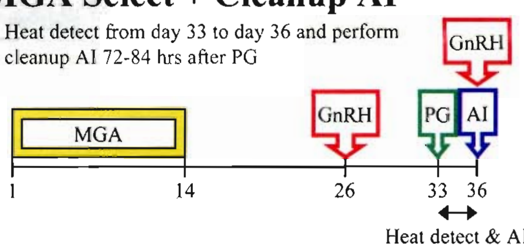
Select Synch + CIDR + Cleanup AI

Heat detect from day 7 to day 10 and perform cleanup AI 72-84 hrs after PG



MGA Select + Cleanup AI

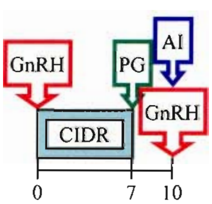
Heat detect from day 33 to day 36 and perform cleanup AI 72-84 hrs after PG



Fixed-Time AI

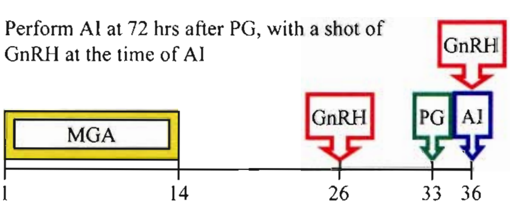
CO-Synch + CIDR

Perform AI at 66 hrs after PG, with a shot of GnRH at the time of AI



MGA Select

Perform AI at 72 hrs after PG, with a shot of GnRH at the time of AI



Comparison of Protocols for Cows

Heat Detection	Cost	Labor
Select Synch	Low	Medium/High
Select Synch + CIDR	High	Medium
MGA Select	Medium	Medium/High
Estrus AI + Cleanup AI		
Select Synch (Cleanup AI 72-84 hr after PG)	Low	Medium/High
Select Synch + CIDR (Cleanup AI 72-84 hr after PG)	High	Medium
MGA Select (Cleanup AI 72-84 hr after PG)	Medium	Medium/High
Fixed-Time AI		
CO-Synch + CIDR (TAI at 66 hr after PG with GnRH at AI)	High	Medium
MGA Select (TAI at 72 hr after PG with GnRH at AI)	Medium	High

GnRH: Cystorelin®, Factrel®, Fertagyl®, Ovacyst®

PG: Estrumate®, Insynch®, Lutalyse®, Prostamate®

D.J. Schafer and D. J. Patterson
Department of Animal Sciences - University of Missouri – Columbia
These protocols are recommended for use by the North Central Region Bovine Reproduction Task Force.

0.47 %/h), and ADF (3.02 ± 0.57 %/h) were not altered by treatment. Seaweed block increased (P = 0.01) slowly degraded CP fraction compared with POS (39.5 vs. 34.0 ± 2.07%). Similarly, SB increased (P = 0.01) the extent of CP degradability (74.2 vs. 68.9 ± 1.81%). No treatment effects (P = 0.24) were observed for microbial efficiency. Block supplementation increased intake, and use of brown seaweed meal seemed to have beneficial effects on forage digestibility in low-quality forage diets. In summary, supplementation of low-quality hay with cooked molasses blocks increased OM intake and digestion of OM, CP, NDF, and ADF. In addition cooked molasses blocks tended to increase hay intake. These observations indicate potential production and management benefits from using cooked molasses blocks. Cooked molasses blocks also increased ruminal ammonia concentrations compared with the non-supplemented controls. Inclusion of fermentation extract resulted in no improvement over control blocks. Inclusion of seaweed meal in the blocks increased total tract digestion of OM and CP. Cooked molasses blocks are suitable as a protein source for cattle consuming low-quality forages.

J. Leupp, J. Caton, S. Soto-Navarro and G. Lardy
J. Ani. Sci., Dec 05, Vol.83, No.12, pp2938-2945.

STUDYING NEEDLE-FREE TECHNOLOGY

One needle-free system that has recently emerged in both the pork and beef industries is the Pulse Needle-Free Injection System.

Powered by compressed air, CO^2, or nitrogen and a variable pneumatic amplifier, the Pulse 250 system propels a variable dose of medication directly through the animal's skin and into the subcutaneous or intramuscular layer of tissue. According to its manufacturer, it creates an entry point about one-seventh the size of an 18-gauge needle.

At the request of veterinary consultants, AgriLabs recently evaluated *Titanium* in this needle-free technology.

AgriLabs collaborated with researchers at Iowa State University (ISU) for this study. They evaluated the humoral and cell-mediated immune response in cattle vaccinated with Pulse 250 versus cattle vaccinated with a conventional needle.

The researchers sought answers to these questions:

1. Will the vaccine-virus-replicate in the cells?
2. Will the vaccine stimulate the humoral immune system?
3. Will the vaccine stimulate the cell-mediated system?

The researchers wanted to be sure the cell-mediated response in animals that were injected with the vaccine needle-free was at least equal to vaccine administered with a conventional needle.

"When we looked at antibody response, we didn't see any significant differences between the two delivery systems," Terhaar reports. "The cell-mediated response indicated that there are some differences between the Pulse and a conventional needle delivery system and these differences generally favor the needle-free system."

Bottom line: "They're fairly equal with a slight advantage to the Pulse," Terhaar says. Therefore, veterinarians and producers can use *Titanium* with confidence via either delivery system, conventional or needle-free.

"It's a novel way of getting vaccine into animals," Terhaar says of the Pulse system. "There may be some advantages because we are giving that gradient to dermal, subQ (subcutaneious), and IM," he says. "There certainly weren't any disadvantages," he adds.

"One thing that is intriguing is we don't have to poke an animal and cause a blemish in the carcass. We are presenting antigen (vaccine) to a different set of cells that we don't usually get to because these cells are found in the outer layer of the skin." This outer layer, the epidermis, is closer to the surface than the layer in which a subQ shot is given. The epidermis is the same layer in which tuberculosis tests are done on humans, Terhaar explains. "These are cells in there that gather foreign antigens and present them to the immune system and do a very good job of it," he says.

Pulse 250 injections are administered by holding down the safety lever, placing the nozzle against the animal's skin, and applying pressure. The pressure against the animal releases the vaccine. The vaccine is administered subQ or IM depending on how the operator sets the pressure. Either way, it deposits a gradient of vaccine from the skin into the target tissue.

Bovine Health Watch, Sum 05 p12 & 15.

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ABOUT THE PULSE 250 NEEDLE-FREE SYSTEM

The Pulse 250 is a variable dose needle-free injection system for cattle. Basically it works by converting air pressure to hydraulic pressure, explains Pulse Needle-Free Systems' Dave Cook. When the pressure propels a vaccine or pharmaceutical through a tiny orifice, it makes a hole in the skin.

The Pulse 250 can be adjusted to deliver a ½mL to 2.5mL injection, in 1/2mL increments. For a 5mL injection, the unit is discharged twice. It recycles in about 1.5 seconds, and the feedlot model can be powered by CO^2, nitrogen, or by a portable or permanently installed air compressor.

Pulse technology is well-established in the swine industry where it has been extensively tested and in use longer compared to the cattle industry.

To learn more about the Pulse system, contact Cook at Pulse Needle-Free Systems, (913) 599-1590, ext. 113, dcook@pulse-nfs.com, or www.pulse-nfs.com.

Bovine Health Watch, Sum 05 p15.

Clell Bagley, DVM
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