

Colorado Dairy News

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Do Lameness Problems Start at Weaning Time?

Investigating the Impact of Calf Feeding Practices on Rumen and Foot Health

John R. Wenz, Dairy Specialist, ILM, CSU

Lameness is a problem in the dairy industry that brings significant economic loss and animal welfare concerns. Risk factors for common lameness problems in adult dairy cattle are fairly well established and provide a framework for management intervention to reduce on farm lameness. However, what if the way you are feeding your replacement heifers as early as weaning time is setting them up for lameness problems during their first lactation? This was the question raised by CSU dairy extension specialist Bill Wailes that sparked a study getting underway by the Integrated Livestock Management Dairy Team in collaboration with the Department of Animal Science nutritionist Terry Engle.

Subacute ruminal acidosis (SARA) is a common problem associated with the high carbohydrate rations fed to high producing adult dairy cattle. Rumen pH below 5.5 in adult cattle is associated with damage to the rumen wall (rumenitis) allowing bacteria and toxins to enter the bloodstream. These bacteria can result in liver and lung abscesses, infection of the heart as well as subclinical laminitis. Subclinical laminitis refers to inflammation of the laminae of the claw that is not severe enough to make the animal obviously lame; however, it results in poor sole and hoof wall growth that later results in common lameness problems such as sole hemorrhages, sole ulcers, sole abscesses and white line disease. The question is, it if can happen with adults, why not in replacement heifers, especially as we push them for greater, more rapid gains. Around the time of weaning, low fiber, high carbohydrate starter rations are commonly fed that could likely result in low rumen pH in these calves.

To address these questions we have begun a project that will evaluate rumen pH of dairy calves around the time of weaning (when starter consumption is rapidly increasing), the prevalence of sole hemorrhages in the claws (a sign of subclinical laminitis), and the incidence of lameness in animals during their first lactation. These parameters will be evaluated in animals from dairy operations with contrasting replacement feeding programs (eg. Early weaning, low fiber/high carbohydrate ration vs. late weaning, high fiber/ moderate carbohydrate ration).

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Pressed sugar beet pulp for dairy cattle rations

J.C. Dalton and R. Norell
Extension Dairy Specialists,
University of Idaho

Beet pulp is the solid residue after extracting sugar from sugar beets. Although dried beet pulp is a popular component of many dairy rations, the drying process is costly as it consumes large quantities of fossil fuels. As an alternative to drying beet pulp, western sugar processors are evaluating the option to sell pressed pulp to dairy and other livestock producers.

Pressed beet pulp contains 20 - 25% dry matter, limiting the distance it can be transported economically. Nevertheless, pressed beet pulp is a valuable feed—high in energy (85% of the energy value of corn), and low in protein (7 - 10% crude protein). Pressed beet pulp is considered a nonforage fiber source and may be used to partially replace forage in dairy cattle rations at a rate of 10 to 20% of the ration dry matter. Higher levels may reduce dry matter intake. According to Utah State University research, dairy cattle fed a total mixed ration with either pressed beet pulp or dried beet pulp exhibited no difference in milk yield or composition. A recent

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Important Dates:
Mark Your Calendar

November 3-9, 2005: 109th Annual meeting of the United States Animal Health Association

November 29, 2005: Agricultural Law and Order Conference. SW Weld County Service Complex, contact Tom McBride (303)637-8110. Flyer pdf included with CDN.

January 24, 25, & 26, 2006: Colorado Farm Show – Greeley, CO
Contact: kmaxey@co.seld.co.us



**Integrated
Livestock
Management**

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A Message From Your Extension Dairy Specialist.....

October 24, 2005 US Secretary Of Agriculture Mike Johanns conducted a 2007 Farm Bill Listening Session at the Greeley Fair Grounds. Rep. Marilyn Musgrave, R-Colo, also appeared. About 400 people attended the session in which each speaker had 2 minutes to comment on the bill. Estate taxes, the high price of diesel fuel, Japanese beef markets were among the topics discussed.

Meanwhile CSU's Bill Wailes and Frank Garry with 30 Colorado dairy producers are still touring Germany and The Netherlands. Their 2 week tour included farms, cheese factories, and dairy related businesses as well as the standard tourist spots. We will hear about their trip in next months' Colorado Dairy News.

Remember

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(Beet pulp, continued from page 1)

University of Idaho study compared total mixed rations with and without pressed beet pulp on a commercial dairy. Pressed beet pulp replaced corn silage in the test total mixed ration. Milk yield and composition data are currently being analyzed.

After mechanical processing, pressed beet pulp is warm. If stacked in piles, pressed beet pulp quickly begins to ferment unevenly, becoming unstable and unpalatable for livestock. However, pressed beet pulp can be successfully ensiled in silage bags or bunker silos. For best results, French researchers suggest ensiling should be completed within 24 hours of processing, and bunker silos should not be greater than 6.5 ft in height and 26 ft in width.

Why is it necessary to ensile pressed beet pulp quickly after processing? Because warm temperatures (104 to 122 degrees F), coupled with an anaerobic environment, favor the development of lactic acid bacteria. Lactic acid bacteria ferment soluble sugar, resulting in acidification and a decreased pH, thus inhibiting further growth of microorganisms and preserving the silage.

According to French researchers, the dimensions of the bunker silo should allow for sufficient cooling of the silage mass after fermentation, and daily removal of 4–7 inches from the silage face. When bunker silos larger than 6.5 ft in height and 26 ft in width are used, cooling of the pressed pulp is slowed, causing decreased silage quality. Furthermore, crumbling of the face occurs, allowing growth of undesirable bacteria.

The future of pressed beet pulp in dairy rations is promising for some dairy producers, but uncertain for others. The low dry matter of pressed beet pulp limits the distance it can be transported, thus restricting use to dairies in the proximity of sugar beet processing plants. Limited availability of dried beet pulp in the future from western sugar processors may cause significant ration challenges to nutritionists and producers on dairies located long distances from sugar beet processing plants.

Prepare your Dairy for Winter

Mike Gamroth
Professor, Extension Dairy Specialist,
Oregon State University

The short, cold days of winter are just a faded memory, but they will be back. Now is the time to prepare. Insulating a water pipe or trough against frosty temperatures is much easier now than fixing the mess when a pipe bursts. A little gravel placed now can keep you out of the mud this winter. The following checklist of animal care and facilities maintenance will help you prepare your dairy for the shorter, colder, wetter days ahead.

External parasites - Pesky external parasites are seeking shelter as daytime temperatures drop. Fall and winter are the worst times for lice infestations on cattle and calves. Some studies have shown that even light infestations that are difficult to detect will develop into major infestations as cooler weather continues. These minor infestations can cause enough irritation to reduce growth in replacement heifers and milk production in cows. Use approved products to repel or kill these freeloaders before they cause economic damage. Good sanitation with adequate clean bedding can hold down the transmission of parasites within your herd with little or no chemical use.

Hoof health - Most dairies change rations as fall and winter approach. The corn silage has been harvested and is ready to feed. For good production and to keep hooves healthy, it is time to balance rations. Get analyses on forages and other feedstuffs in storage and work with a nutritionist to develop rations that provide all nutrients throughout the winter, including vitamins and minerals. Consider using feed additives that improve hoof health, especially while animals are confined. Keep floors and lots surfaces as clean and dry as possible to prevent hoof problems and make good use of footbaths to prevent hoof disease. Rotate bath chemicals and use only as often as needed for good control. Certain chemicals like copper will accumulate in soils and can cause plant growth problems over time.

Heat detection - Failed estrus detection accounts for losses of approximately \$300 million per year in the U.S. dairy industry. Shorter days and nasty weather contribute to poorer heat detection rates. Provide good lot or barn lighting so animals can be watched easily and accurately. Provide a small sheltered area for cattle observation when weather is bad and dedicate time to observing cow behavior. Employees will spend more time catching cows in heat if they are out of the wind and rain. Poor footing leads to poor heat detection and footing is often more difficult for animals in the winter. Maintain exercise lots and feed alleys so cows will readily ride other cows. If cows are only confined in the winter, develop a group of open cows that are eligible to breed so more cows in the group will continue to cycle.

Somatic cell count - The basis for mastitis control in the winter, or anytime, is milking clean, dry udders. Mastitis is always a menace in the winter, because it is more difficult to keep cows clean and moisture in the environment supports survival and growth of mastitis pathogens. Maintain clean bedding in freestalls and open lots. This means lots must have adequate drainage and that both stalls and lots be filled with adequate base material, like clay, well before the rains fall. Wet holes in freestalls and open lots turn into

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(Calf Health, continue from page 1)

Last year, Dr. Derek Foster, an intern in Food Animal Medicine and Surgery, collected preliminary data from two farms with contrasting feeding programs. Farm A weaned at 45 days, provided no long stem alfalfa and fed a TMR shortly after weaning. Farm B weaned at 90 days, provided long stem alfalfa beginning at 60 days and continued long stem alfalfa and calf starter feeding through 6 months of age. Rumen pH measured at the time of weaning and approximately one month post weaning was significantly lower (and in the "acidotic" range) in calves from Farm A compared with calves from Farm B. Examination of the claws of calves approximately one month after weaning showed lesions consistent with subclinical laminitis in about 3 times as many calves from Farm A versus Farm B. These preliminary data suggest an association between low rumen pH and claw health may also exist in replacement heifers and has encouraged us to continue with a large scale study.

The push for earlier age at first calving seems to make economic sense as replacements start paying back on your investment sooner; however, what if the rations being fed result in increased lameness problems in the first lactation? Those costs which include reduced milk production and more importantly decreased longevity in the herd may outweigh the benefit of calving 30 days earlier.

We are looking for more herds that would be willing to participate in the study. Especially important are excellent records that would allow determination of the incidence of lameness in the milking herd or willingness to set up such records. Financial help is also needed via contributions to the ILM Dairy Research Program. Contributions are tax deductible and support these studies that investigate practical problems.

(Winter, continued from page 3)

mud puddles that get udders filthy and contaminated. Filling and packing the holes when it is dry will save bedding all winter and result in cleaner udders and hind legs. Level and groom bedding in stalls on a regular basis.

Reduced hair on udders means less soil and manure accumulation on the skin and drier udders for milking machine attachment. Fall is the time to trim or flame hair on udders. Keeping this hair trimmed all year round eliminates one more seasonal chore required this time of year.

Fill drives – Not only should lots and stalls be filled, but this is the time to rebuild some of those roads and driveways that get traffic during winter's wet days. Once a gravel road starts to mud up in the rain, it is difficult to get it properly filled and graded until it dries out. Gravel laid on dry roads lasts twice as long as that spread when the road base is soft and mud is beginning to accumulate on the road surface. The best method of renovation is to grade back the existing gravel cover down to the base material. Then lay geotextile fabric on top of the base to separate the soil from the gravel aggregate. This material also helps spread the vehicle load more evenly across the base soil. Finally, course aggregate is spread over the fabric and packed with a roller. A finer finish aggregate is spread and packed over the course rock. Don't forget to take care of drives around silos and other feed storage. If your feeding employee has to slip and slide the loader in and out of the bunker silo, it adds time to load the feed wagon and the employee is more likely to cut corners to get the job done.

Manure – Manure management is risky business anytime, but especially in the winter. Help yourself now. Pump out or haul manure from storages as early in the fall as is possible. Spread manure at agronomic rates on fields before planting winter crops. This is a good time to look for on-farm and off-farm sources of clean water that add to what you have to store in ponds and lagoons. Divert this clean water away from storages using roof gutters and diversion ditches. If the water doesn't get contaminated with manure, you don't want to store it all winter. Often gutters need some simple repairs and cleaning each year before rains settle in. Make sure you have a plan for emergency storage and application of manure. Don't wait until the lagoon is full for an opportunity to spread manure. In many areas, you can spread manure to growing crops throughout most of the year. Just avoid wet soils and imminent rainfall.

It is an excellent idea to take an honest evaluation of your need for additional manure storage. Regulations concerning manure management on dairies will likely become tighter. During winter existing storage facilities may be overwhelmed if manure application is inhibited by inclement weather. Although you may not be able to change to manure handling procedures now it is absolutely necessary to develop a long-term plan to cope with more stringent regulations.

Ventilation – The great outdoors provides lots of fresh air. Changing air in confinement areas reduces ammonia, carbon dioxide, hydrogen sulfide, and moisture, dilutes pathogenic microbes so animals can fight off disease easier, and often will reduce ambient temperature for better animal comfort. When cattle and calves are confined for the winter it is easy to forget it is our job to provide this fresh air. A good rule-of-thumb is that air in a confinement building must be changed once every 15 minutes or 4 times per hour. If your calf barn is 80 feet wide by 120 feet long and 10 feet high, it contains 96,000

cubic feet of air space. You need to exhaust that from the building every 15 minutes or at a steady rate of 6,400 cubic feet each minute. On many open-sided buildings this exchange is not too tough, but with limited air inlets and outlets or with small mechanical fans, the job gets much more difficult. Cold buildings are okay; wet buildings are not. Adequate ventilation helps animal health and reduces building repairs and maintenance. Get help from professional if you notice lots of moisture or ammonia accumulating inside your buildings.

Water supply – A constant supply of water of the appropriate temperature is of utmost importance on a dairy. Frozen lines, burst pipes, inadequately heated water are inefficiencies that can be prevented by annual evaluation of your water supply tanks and lines in the fall. Don't forget to drain unused water lines, like those used for cooling cows. Water settled in low areas of pipes or tubing can freeze and split the material.

There is good reason to size and insulate water pipes anywhere to supply cool drinking water all year round. Insulated water troughs stay clean longer, too.

Now is also the time to test water temperatures coming out of water heaters or boilers. Make sure it is at least 160 degrees and that there is adequate volume to fill wash vats without a significant loss in temperature on colder days. A big surprise will come when you pressurize lines. As outside temperatures drop, it takes more hot water to clean the large milking systems on today's dairies.

Taking a little time to ready the dairy for winter weather will save time and headaches. Like the old oil filter ad used to say, "Pay me now or pay me later."

Law and Order

November 29, 2005

Southwest Weld County Service Complex
Highway 119 & I-25 (See map for directions)



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Limited to 80 Registrants

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Southwest Weld County
Services Complex
4209 Weld County Road 24½
(720) 652-4200

- 8:00 a.m. Registration, Coffee, and Donuts
- 8:30 a.m. Agriculture and CDOT Regulations
Sergeant Mark Savage, Colorado State Patrol Motor Carrier Safety
- 9:00 a.m. Worker Protection
Sandra McDonald, Extension Environment & Pesticide Education Specialist
- 10:00 a.m. Pesticide Applicator Certification
Sandra McDonald
- 10:30 a.m. Break
- 10:45 a.m. Immigration – Nationalization Services
Jeff Tranel,
Extension Agriculture and Business Management Specialist
- 11:15 a.m. Organic Standards and Chemigation Law
Don Gallegos – CDA
Biopharming and GMO Identity Preservation
Mitch Yergent – CDA
- 12:15 p.m. Lunch (Included in Registration Fee)
- 1:00 p.m. Oil and Gas Regulations
Jim Wason, Director of Land
D. J. Basin, Kerr McGee Corporation
- 2:00 p.m. Update on State Weed Law
Kelly Uhing, Adams County Weed Supervisor, and
Tina Booten, Weld County Weed Division Supervisor
- 2:30 p.m. Break
- 2:45 p.m. Agriculture Homeland Security Issues
- 3:15 p.m. Zoonotic Awareness
Dr. John Pape, Colorado State Epidemiologist
- 4:00 p.m. Adjourn

The program has been approved for 2.0 CEUs for CCA under the Pest Management category.

- Registration Contact: Tom McBride
Adams County Cooperative Extension Office
9755 Henderson Road
Brighton, CO 80601-8114
(303) 637-8110
- Registration Fee: \$5.00 per Farming Operation – Limited to 80 Registrants
- Registration Deadline: November 18, 2005
- Late Registration: \$10.00 per Farming Operation

