Colorado State University

March 2001

Colorado Dairy News

Cooperative Extension, Colorado State University, Fort Collins, Colorado 80523 Volume 7, Number 2
a publication from Integrated Livestock Management (www.cvmbs.colostate.edu/ilm/)

Mycoplasma Mastitis: Learn Before You Get Burned

Heather L. Hirst, DVM, Dairy Specialist, ILM

Mycoplasma mastitis is one of the latest negative consequences of the recent trend of dairy herd expansion in Colorado.In the absence of proper biosecurity protocols, many mycoplasma epidemics coincide with or closely follow the purchase of herd replacements. The purchase of cattle that carry mycoplasma is probably the most significant mode of introducing this organism to a previously uninfected herd.

Mycoplasma mastitis is unresponsive to treatment and has the potential to cause severe losses in milk production. Because infected cows are highly contagious, early identification of infected cows is preferred. For herds that do not have a problem with mastitis-causing mycoplasma species, monthly bulk tank milk cultures are recommended. However, herds with a history of mycoplasma mastitis should be monitored more closely by culturing milk samples from the bulk tank, hospital pen, and fresh cow pen once a month. In both types of herds, every cow entering the lactating herd should be cultured to screen for mycoplasma organisms.

The Organism

Antibiotic treatment does not effectively eliminate the organism from an infected cow. Mycoplasma attaches itself to cells within the udder, leading to chronic infections with intermittent shedding that persist for the life of the cow. There are many species of mycoplasma but the one most commonly isolated from the udders of dairy cows is *Mycoplasma bovis (M. bovis)*. *M. californicum* and *M. bovigenitalium* are two other common causes. It is extremely important to learn the type of mycoplasma isolated from cows on your dairy before initiating extensive culturing protocols. One single positive bulk tank is not definitive evidence of cows with mycoplasma mastitis, since there are many types of mycoplasma that can be found on dairies that do not routinely infect udders.

Clinical signs

Cows typically do not show systemic signs of disease such as fever or loss of appetite, even though milk production may be severely affected. Milk is usually brown to tan with a flaky or "sandy" sediment that settles out in a watery fluid. However, milk appearance will vary between cows and through the course of the infection. The signs of the active infection may last days or weeks. Cows may even be released from the hospital only to return within 24-48 hours. Often multiple quarters are affected, with

(Please continue on page 4, under Mycoplasma)

Foot and Mouth Disease Precautions

The Colorado Department of Agriculture is urging European travelers and Colorado veterinarians to take precautions to prevent the spread of foot and mouth disease.

Although the U.S. has had no confirmed cases of the disease since 1929, it's important for the public to be aware of the possible dangers, especially with the current situation in Europe.

Foot and mouth disease (FMD) is a viral ailment that causes physical damage, sometimes resulting in death. It can be spread in many ways, ranging from wind currents to clothing. All cloven-hoofed animals, such as cattle, sheep, swine, deer and bison, are susceptible. Horses are not susceptible to the disease.

FMD is easily transmissible and would be devastating to our livestock industry," says Colorado Assistant State Veterinarian Ron Ackerman. "We want people to take precautions to ensure the safety of the animals in Colorado."

The precautions published by the State Veterinarian are enclosed in this issue. Please post them in your dairy.

Table of Contents

Commodity Pricing 2
The 100 Day Contract 3
Mycoplasma Mastitis Insert

Important Dates: Mark Your Calendar

April 5-6, 2001: Western Dairy Management Conference.The Venetian, Las Vegas, NV. Contact WR Wailes, CSU Dairy Specialist; 970/491-5390.

April 18-19, 2001: Meetings with Dr David Kohl, Virginia Polytech, Blacksburg, Va. Contact Teena Barnett of Pharmacia/Upjohn (303/255-4563) or Chris Van Anne of Monsanto (970/ 282-8060) for reservations.
4/18: noon-3:30 pm Dairy Ag Lenders
4/18: 6:00-9:30 pm Colorado Producer Tour Group
4/19: noon-3:30 pm Veterinarians and Consultants
4/19: 6:00-9:30 pm Producer Meeting

Integrated Livestock Management

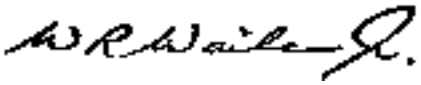
Colorado Dairy News
is published bimonthly as a service to those people interested in the health and welfare of the Colorado dairy industry.
Past issues are available on the ILM website (www.cvmbs.colostate.edu/ilm)

For further information, contact Dr. Ragan Adams, Editor, ILM, CSU-VTH 300 West Drake Rd Ft Collins, CO 80523 (970)491-0371; radams@vth.colostate.edu

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

The recent outbreak of Foot and Mouth Disease in the United Kingdom and Europe serve to remind us that infectious disease outbreaks in our country and all over the world heavily impact dairy producers in two ways. Obviously, there is the threat of the disease infecting herds, loss of production and subsequent loss of livelihood. This impact may be minimized with close attention to biosecurity protocols, herd health, and appropriate herd vaccination programs. Periodic review of these management programs by your veterinarian and pharmaceutical veterinary consultant is very important. Technical assistance from your pharmaceutical company is a resource that should not be overlooked. These consultants' salaries are supported by dairy dollars that you produce on your farms! Less obvous but important to consider is consumers' attitudes toward food consumption in the wake of reports about infectious diseases in livestock. This impact is less directly in our hands but we can encourage our industry to be pro-active about issues that concern consumers. Once lost, consumer confidence is difficult to rekindle.

An expert you should hear: Dr. David Kohl PhD, Professor of Agricultural Finance and Small Business Management and Entrepreneurship, Department of Agricultural and Applied Economics, at Virginia Polytecnic Institute and State University, Blacksburg, VA will be coming to speak in Greeley, Colorado April 18th and 19th. Four meetings targeted to specific audiences are scheduled (see calendar). Please try to attend one of Dr Kohl's presentations. He'll touch on a number of important topics: "Financial Benchmarks He Uses and Why", "Ten Golden Financial Rules", "Ten Ways to Identify If Your Business is Headed South", "Transition Management to the Next Generation", "Troubleshooting Financial Decisions", and "How Much Debt Can a Cow Service?" See you there!



Commodity Price Quotes

By-Product Feeds	Price/Ton Spot Loads	Price/Ton Feb-Mar
Bakery Waste	$80.00	NQ
Blood Meal	$470.00	$470.00
Corn Gluten Feed	$87.00	$82.00
Corn Gluten Meal	$305.00	$305.00
Corn Hominy	$76.00	$76.00
Flaked Corn	$107.00	$108.00
Whole Corn	$87.00	$88.00
Cotton Seed Meal	$185.00	$175.00
Whole Cotton Seed	$167.00	$167.00
Distillers Grains	$130.00	$106.00
Pork - Meat & Bone Meal	$208.00	NQ
Tallow	$0.125/ lb	NQ
SBM - 48%	$176.00	$176.00
Wheat Middlings	$82.00	$72.00
Soybean Hulls; Meals/Pellets	$83.00/92.00	$83.00/80.00
Canola Meal	$153.00	$153.00

These price quotes are delivery, Greeley, Co

Do You Have Too Many Pregnant Cows?

Teena Barnett and Jerry Olson, DVM, Technical Services, Pharmacia Animal Health

Have you ever dreamed what you would do if you had too many pregnant cows? To realize more pregnant cows, you must freshen cows that are healthy and that remain healthy following calving. In turn these cows will have higher fertility rates with fewer days open and are less likely to be culled for reproductive reasons.

Today's dairy cow is amazing. She delivers a 100-pound calf, her uterus involutes by 50% in the first few hours after calving, and she manufactures colostrum for the protection of her calf. The first colostrum she produces contains about 25 grams of calcium, which is ten times the amount of calcium circulating in her blood. She must also adapt to a new high-energy ration in an attempt to support the high levels of milk she is producing. Many cows are producing more than 100 pounds of milk per day by the end of the first week post-calving. At this rate she is producing about 13 pounds of edible dry matter. To do this, she has to manufacture 7.2 pounds of glucose since she can't absorb it from her gut! In comparison, a steer which gains at the rate of 3.5 lbs per day only produces 1.15 lbs of edible dry matter.

Given these factors it is easy to see that these cows are actually high performance metabolic athletes. They deserve specialized care. There is a management tool called the 100-Day Contract that you can implement on your farm to keep these animals working at their highest level of performance. The program can be broken down into four areas: the dry period, the fresh period, re-breeding, and measurements and feedback.

Phase One: The dry period:

1) Reduce the incidence of clinical mastitis post-calving by using an effective dry-cow mastitis product on all cows at dry-off. An effective dry-cow product cures existing infections and prevents new infections from occurring in the early dry period. The number of clinical environmental mastitis cases can be effectively reduced through the use of an effective gram-negative core antigen vaccine.
2) Set a goal for body condition scores. Ideally, cows should score between 3.0-3.5 both at dry off and at calving. Establishing a system to record body scores condition at dry-off, freshening, and at 30 to 45 days post-calving will help. Cows that do lose more than one unit of body condition or are less than 2.5 at the time of insemination are less fertile.
3) Consult with your nutritionist to maximize dry matter intake through the late dry period and into early lactation. Adequate dry matter intake decreases many fresh cow health problems.

Phase Two: Fresh cow monitoring.

The goal is to keep cows on feed by early identification and treatment of medical problems (metritis, mastitis, etc).
1) Record daily temperatures for the first 10 days to identify medical problems when they are most responsive to treatment. Sick cows will often spike a fever one day before they go off feed.
2) ECP (estrogen therapy) to cows with difficult calvings, stillbirths, retained fetal membranes, twins, and milk fever will keep the uterus sensitive to oxytocin and assist in expelling uterine fluids. Additionally, leuteolizing prostaglandin should be given between day 14-21.

(Please continue on page 4, under 100 Day Contract)

NAHMS Dairy 2002 Study

The National Animal Health Monitoring System (NAHMS) is a nonregulatory unit of The United States Department of Agriculture designed to help meet animal health information needs. In 1991-1992 NAHMS conducted the National Dairy Heifer Evaluation Project that provided the first national baseline information on the health and management of dairy cattle in the U.S. Information on producer vaccinations, biosecurity practices, and prevalence of infectious diseases, collected in this study has been invaluable when disease outbreaks occur. It is used by public officials to assess risk of disease spread, target educational efforts, define research needs and evaluate public health risks. NAHMS also conducted Dairy '96 in which information on antibiotic usage, Johne's disease, bovine leukosis virus (BLV), digital dermatitis and potential food borne pathogens was collected.

NAHMS is seeking input from dairy producers to identify information priorities on which to base a national study in 2002. Dr Brian McClusky of NAHMS says, " We ask those allied with the dairy industry to help us identify critical information gaps. Results of this needs assessment will also help us evaluate topics that would be appropriate for ongoing monitoring or more focused projects to be conducted during or after Dairy 2002."

You may provide your input via an 800 telephone number or an Internet access. Telephone (800) 545-USDA from any touchtone telephone in the United States or log onto the Internet at **http://www.aphis.usda.gov/vs/ceah/cahm (click on Dairy Cattle)** from March 1 through April 15, 2001.

NAHMS' dairy information is available by request via (970/ 490-8000) or at www.aphis.usda.gov/vs/ceah/cahm.

(Mycoplasma, continue from page 1)

different quarters exhibiting milk of varying consistency. Some cows will develop fibrosis within the affected quarter(s)while the udders of other cows are edematous and firm. Somatic cell count (SCC) is elevated in individual mycoplasma cows, and may lead to elevation of bulk tank SCC if enough subclinical cows are being milked in lactating strings. The percentage of cows that recover from the clinical signs of mycoplasma mastitis and return to normal production will vary from herd to herd, but permanent damage to the mammary tissue is unusual.

Mycoplasma mastitis should be suspected when cows are not responding to therapy or where multiple quarters are involved.

Sources of Infection

The most common source of mastitis-causing mycoplasma is the udder of infected cows. Infected cows intermittently shed the organism throughout the current and subsequent lactations. Clinical mastitis cows shed billions of mycoplasma organisms in just a few squirts of milk, and pose an enormous threat to healthy cows in the herd. Cows in which the milk returns to normal following mycoplasma mastitis typically shed fewer organisms, and at varying intervals. These recovered cows are known as subclinical shedders. In addition, some cows can become infected with mycoplasma, shed organisms, but never show clinical signs of mastitis.

There are other less common sources of infection. A mycoplasma mastitis outbreak may be started when a mastitis-causing mycoplasma species infecting the respiratory tract, reproductive tract, or arthritic joints of a cow spreads to the mammary gland through the blood. Feeding mycoplasma mastitis milk to calves has been linked to outbreaks of pneumonia, ear infections, eye disease, and arthritis in these animals. Heifer calves may also act as a reservoir of mycoplasma on dairies, maintaining the infection until they enter the lactating herd and infect other cows. Because mycoplasma can survive in the environment for long periods, recycling water to flush alleys in freestalls could serve as a potential source of new infections.

Transmission

New infections that occur in milking strings are a result of poor milking technique. Mycoplasma is extremely contagious and can be carried between cows on milkers' hands, aprons and sleeves, or on equipment and towels. Proper milking technique and teat coverage with a high quality, 1.0% iodine post milking teat dip will help prevent new infections if subclinical mycoplasma cows exist within a herd.

Epidemics in the hospital string can occur when one recently infected mycoplasma cow joins the string and proper precautions are not taken: Milkers that strip out mycoplasma cows will contaminate the surrounding area, including their clothing and any nearby equipment or cows in reach of splashing milk droplets. A few squirts of mycoplasma milk are enough to carry the infection to every cow in the hospital if milkers are not trained in proper milking technique, or are not using a high quality iodine post milking teat dip. Improper infusion technique and use of contaminated equipment (especially milking machines and mastitis tubes) in the hospital may also allow a mycoplasma epidemic.

Less commonly, Mycoplasma may spread when infectious respiratory secretions or uterine discharges contact udders or calves are fed mycoplasma-containing hospital milk.

See insert for more information on monitoring and preventing mycoplasma mastitis

(100 Day Contract, cont from page 3)

3) Develop standard operating procedures that determine personnel responsible for daily rectal temperatures and medically sound treatment protocols.

Phase Three: Breeding

A systematic breeding program ensures that all cows are given the opportunity to get pregnant as soon as possible. Synchronize cow groups and either breed all you find in heat followed by timed AI **or** AI all of them. This will drive heat detection to a service rate of 100% raising your pregnancy rate to 35% on the first cycle (compared with the national average of 14%).

Phase Four: Feedback and measurement

Develop a scheme to monitor the results of your management program. These results help evaluate successes and identify correctable problems.

The "100 day contract" works best when begun with the dry and fresh cows. Cows healthy from the dry period will respond better to a systematic breeding program.

Choose an advisory team that consists of yourself, herdsman, employees, your veterinarian, appropriate consultants and an impartial facilitator to keep your meetings on track. Pharmacia Animal Health representatives have been trained as facilitators and this service is offered to you at no charge. The goal of this group is to ensure your success through the use of written mission statements and standard operating procedures.

Once the 100-Day Contract is in place, you can better assess and improve your herd's performance.By taking impeccable care of your bovine athletes through preventing health problems, identifying and treating problems early, and optimizing dry matter intake, you will improve your reproductive efficiency. More milk production and more calves will also ultimately lead to more profits for your dairy. So, now, I ask you again. Do you have too many pregnant cows?