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Knowledge to Go Places

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Developing a Plan for Treating Mastitis

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Mastitis is both the most common and costly disease of dairy cows. The costs associated with clinical mastitis result from the milk that is discarded because it is either abnormal or withheld from sale due to antibiotic residue; lost future production of the cow; the cost of treatment/labor; and culling or death of affected cows. The incidence of clinical mastitis varies greatly between herds with some dry lot dairies having an incidence in excess of 100 cases per 100 cows per lactation. It is obvious that the preferred strategy for dealing with mastitis is to prevent the occurrence of mastitis in the first place. However, even with the best efforts in place for the prevention of mastitis, there is still a need to deal with cases of clinical mastitis. From the dairyman's perspective, the first objective of treatment of clinical mastitis would be to return the cow to having saleable milk. To accomplish this, milk needs to be normal in appearance and free from antibiotic residue.

As dairies become larger in size and hired labor becomes responsible for treating clinical cases of mastitis, it becomes more important for management to develop standardized treatment protocols. There are five things that a dairy producer should consider in developing treatment protocols for clinical mastitis.

1) Identify causative bacteria. In the ideal situation, the dairy producer would know what bacteria are causing the case of clinical mastitis before treatment is initiated. Since, we aren't able to identify the organisms causing the clinical mastitis until sometime after the onset of the case, the next best thing is to know what bacteria typically are responsible for causing clinical mastitis in a given herd.

2) Grade the severity of mastitis. A simple system of grading the severity of mastitis into three categories of mild, moderate and severe will help to further refine treatment protocols.

3) Develop cost effective treatment protocols. A cost-effective treatment protocol needs to consider not only the cost of the drugs in the treatment protocol, but the amount of milk discarded, and the success in achieving bacteriological cures, reducing somatic cell counts, and preventing future relapses.

4) Establish treatment objective. The objective of treatment is to not only establish a clinical cure but a bacteriological cure as well.

5) Develop a record system. If the dairy producer is going to truly manage mastitis, the outcomes of cases following treatment must be monitored.

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Carcass Disposal

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A plan for euthanasia of sick or suffering animals and disposal of carcasses is a necessary component of managing any animal livestock unit. In the November 2000 issue of Colorado Dairy News Dr Frank Garry reviewed practical means of euthanizing cattle and calves. This information may be found at www.cvmbs.colostate.edu/ilm.

Disposal of carcasses has recently become a challenge on farms because of the gradual disappearance of commercial rendering companies. Costs to pick up and render a dead animal have changed. Prior to 1985, many commercial rendering companies would pay to pick up a dead animal. Today charges vary from $15 to $100 per animal. The change in economics reflects the demand for carcass by-products and the cost of animal disposal. If commercial rendering services are available in your area, it is important to **completely** cover a carcass. This is not only law but will prevent embarassing incidents with the general public.

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Important Dates: Mark Your Calendar

March 4, 2002: Dr. David Kohl speaking at the Greeley Guest House with Ag-Lenders and Financial Consultants Noon-3:30 pm.; Dairy producers and consultants 6 pm-9:30 pm.

March 5, 2002: 11:30 am-3:00 pm. **Dr. David Kohl** speaking at the Greeley Guest House with Dairy producers and consultants. For more information contact Chris Van Anne, 970/282-8060 or Teena Barnett, 303/255-4563.

March 22, 2002: Colorado Whole Farm Nutrient Management Conference, Best Western Regency Inn, Greeley, Colorado. Speakers include Henry Tyrell, USDA, Mary Beth Hall, U of Florida, Elliott Block, Church & Dwight, & Don Johnson, CSU. For more information contact Rich Hergert, Hergert Nutritional Services, 970-352-1821.

Integrated Livestock Management

Colorado Dairy News

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

Colorado Voluntary Bovine Johne's Disease Control Program.

Soon dairy producers in Colorado will be able to participate in the voluntary Johne's Disease Control Program. The program has three elements.

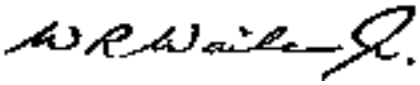
1. Education: The first level of participation involves producer education. Producers become certified that they are familiar with information concerning Johne's Disease, management strategies for controling and eliminating the disease, and aspects of the state's programs.

2. Management: Following participation in the education component of the program, the producers can participate in the management component which recognizes producers who have instituted management practices to eliminate and prevent Johne's Disease in their herds. Testing at this stage is optional and is not monitored as part of the program.

3. Classification: At this stage of involvement the producer opts for herd testing and classification. The classification scheme is based on identification of cows that test positive for Johne's Disease by serum and/or fecal testing. The purpose of this element of the program is to publically recognize producers who have reduced the occurence of Johne's Disease in their herds and to distinguish test-negative, from test-positive, and low-risk herds.

For those of you who are involved in this program, I commend you. Colorado is making a tremendous effort to employ and endorse this program for the good of the dairy industry. If you have not considered involvement in the voluntary Johne's Disease Control program, I would like you to consider it.

Also please note that we have included the Spanish translation of Dr Page Dinsmore's article on Milk Sample Collection that was originally published in the September 2001 Colorado Dairy News.

Sincerely, 

William R. Wailes, Colorado Extension Dairy Specialist

Commodity Price Quotes

By-Product Feeds	Price/Ton Spot Loads	Price/Ton February/March
Bakery Waste	$92.00	$92.00
Blood Meal	$340.00	$340.00
Corn Gluten Feed	$92.00	$83.00 (March-June)
Corn Gluten Meal	$260.00	$260.00
Corn Hominy	$88.00	$88.00
Flaked Corn	$98.00	$99.50
Whole Corn	$83.00	$84.50
Cottonseed Meal	$160.00	$160.00
Whole Cottonseed	$153.00	$155.00
Distillers Grains	$98.00	$95.00 (march-June)
Pork - Meat & Bone Meal	$195.00	$195.00
Tallow	$0.135	$0.135
SBM - 48%	$171.00	$170.00
Wheat Middlings	$77.00	$77.00
Soybean Hulls	$85.00	$83.00
Canola Meal	$138.00	$138.00

These price quotes are delivery at Greeley, Co

New Website Aids On-Farm Disease Diagnosis

Julie Severidt, CVMBS, Class of 2004
CSU-ILM

Over the past few years' dairy producers have learned a tremendous amount about management of dairy cattle. With this knowledge, has come better nutrition and milking practices. However, the practice of recognizing disease in the herd has taken the back burner. Many diseases have similar signs and may respond to the same treatment; thus, the producer may never know exactly what diseases are affecting the herd.

A necropsy is an examination of an animal's internal organs after death in order to determine the cause of death. Well executed necropsies are an important aspect of your herd health plan because it allows one to identify more specifically the diseases and their causative organisms in the herd. With this knowledge the effectiveness of herd health management schemes may be reevaluated and further refined. Veterinarians are trained to do necropsies but they may not always be available near or at the time of death when tissues are best evaluated. On-farm personnel can be trained to do necropsies, make observations, and take samples.

Dr Frank Garry and myself, both part of the Integrated Livestock Management program at CSU, have created a dairy cow necropsy manual for producers available on-line. The manual includes information on what a necropsy is, where to properly perform a necropsy, as well as how to perform the necropsy. To better illustrate the technique, the manual includes digital photographs and short video clips. Information about disinfectants, euthanasia, whole carcass composting, and sample collecting is also included. To enable the producer to gain a better understanding of what diseased tissues look like, there is a section for each major organ system showing common lesions. Linked to these sections is what normal tissues should look like. Right now there are only a few organ systems that contain information about common lesions, but information is continuously being added. In the future we hope to have a book version of the manual that will include a short video on a CD or VHS tape that will show a necropsy from beginning to end.

It is our hope that the information in this manual will enable the dairy producer to work more closely with his/her veterinarian. It is not our intention to make the producer a veterinarian or diagnostician, but to put them in a position to collect samples correctly for a veterinarian to analyze and make a diagnosis. With the information the veterinarian can obtain from the necropsy samples, the producer and the veterinarian will be able to evaluate the operations' herd health program and make informed decisions concerning the herd's overall health.

The manual can be accessed through the Integrated Livestock Management website at www.cvmbs.colostate.edu/ilm/necropsy/_notes/index.html It works best on newer computers with at least a 56 K modem and QuickTime. If you do not have a newer computer or have a slower modem, a CD will soon be available.

For more information on this resource, contact Julie Severidt at jseverid@lamar.colostate.edu or Dr. Frank Garry at fgarry@lamar.colostate.edu

(Carcass, continue from page 1)

The cause of death will determine the method of disposal. Animals with infectious diseases such Foot and Mouth Disease or anthrax are disposed of in a different manner than animals that die of pneumonia or toxic mastitis. Death of animals exposed to a toxic substance such as PCP's need to be handled to prevent toxic ingestion by free roaming predators. When large numbers of animals are involved, the State Department of Agriculture, the Office of the State Veterinarian, and, in some instances, the Offices of Public Health or Environmental Protection Agency must be consulted.

On-farm disposal of carcasses is a viable alternative to use of commercial rendering pick-up but must be achieved without causing environmental contamination or health risk to workers, and preventing consumption toxicity by predators when euthanasia solutions are used. Composting barns are similar to commodity sheds in size and height but not as deep. A composting barn does not have complete walls on three sides, in order to allow sufficient air flow to dry the composting sawdust. Composting will occur by the natural bacteria of the animal's intestinal tract. Decay of the soft tissue may take as long as two months after which time, the sawdust and non-composted material is generally moved to a new bay to allow air to circulate and complete composting of bone. At the end of a full four-month composting period, some bone material will need to be ground into smaller pieces or disposed of in another acceptable method.

Use of on-farm composting barns necessitates a commitment of capital for initial investment in a facility and labor to operate and monitor the process. During the process decomposing tissue in the sawdust bedding of the composting barn will give off odors and acids that are not pleasant to smell. Finally, the composted sawdust and tissue will have to be disposed. In most instances, it is returned to crop fields.

See this month's insert: Whole Body Composting by Dr Mike Looper of New Mexico State University.

(Mastitis Plan, continue from page 1)

Figure 1 shows the distribution of bacterial isolates from 4414 cases of clinical mastitis reported from three trials, one in California, one in Canada, and one in the U.K. Twenty eight percent of the samples had no bacterial growth. Yet, at the time the milk sample was taken from these cows for culture, the cows had a case of clinical mastitis. So what happened? These are cases in which the cows most likely had a clinical coliform mastitis but by the time sample was collected, the cow's white blood cells had been enlisted to fight the mastitis-causing organism and had actually succeeded in eliminating the infection. The sooner a sample of milk is taken following the recognition of the clinical mastitis, the more likely that a coliform organism will be isolated. With a delay in time between the onset of mastitis and sample collection, more of these cows will have eliminated the bacteria and the samples will have no growth. Hence, in the majority of cases where there was no growth, the mastitis was initially a clinical case of coliform mastitis but the cow has succeeded in eliminating the coliform organism. Therefore, the proportion of clinical cases of coliform mastitis is really the sum of cases from which coliform organisms were isolated and cases from which there was no growth. This means that across large populations of cows, approximately 50% of the cases of clinical mastitis are caused by the combination of coliform organisms and gram-negative bacteria. From a practical standpoint, there aren't any commercial intra-mammary antibiotic tubes that are truly effective for the treatment of coliform mastitis. Hence, we are primarily dependent upon the cow's immune system for elimination of coliform organism from the mammary gland and resolution of the mastitis. From a management perspective, we can reduce the severity of coliform mastitis through the use gram-negative core antigen vaccines.

Approximately 25% of the cases of clinical mastitis are caused by environmental streptococci. Thus, about 75% of the cases of clinical mastitis are caused by the combination of environmental bacteria, the streps and coliform bacteria.

Approximately 15% of the clinical cases of mastitis are caused by the combination of *Staphylococcus aureus* and coagulation negative staph (CNS) in most herds. The staphs and streps are gram-positive bacteria and are potentially susceptible to the antibiotics in commercial intra-mammary antibiotic tubes. Although *Staphylococcus aureus* may be susceptible to the antibiotics in commercial tubes, *Staphylococcus aureus* mastitis cases are frequently refractory to intra-mammary treatment because of the nature of the infection. Hence the infections that are most likely to benefit from the use of commercial intra-mammary antibiotic tubes are cases caused by environmental strep and the CNS bacteria and represent about one third of the cases of clinical mastitis.

There are several important lessons in this data set and they all emphasize the importance of identifying the causes of clinical mastitis for each dairy.

1) Although we know the proportions of bacteria that are responsible for clinical mastitis in large populations of cows, it is important to culture samples from every clinical case of mastitis to develop a profile of the mastitis causing-organisms for your dairy. If we are going to pass judgment of the effectiveness of mastitis treatments, we must know which cases of mastitis are treatable with intra-mammary therapy.

2) From large surveys of clinical mastitis, only one third of the cases of clinical mastitis would likely benefit from intra-mammary therapy.

3) Culturing clinical cases of mastitis is also a valuable tool for the early identification of mycoplasma mastitis infections in a herd.

4) Profiling the cause of clinical mastitis cases provides information on where the appropriate measures should be implemented for the prevention of mastitis.

5) Samples from clinical cases should be collected aseptically when the cow is first pulled from the milking string and the sample identified and frozen. These samples can be submitted to a laboratory for culture on a weekly, bi-weekly or monthly bases.