

# Colorado Dairy News

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## *The Cows Are Always Right!* *Evaluating Rations*

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## **Manure Management and Antibiotic Contamination**

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Much of the focus on ration evaluation has been on herd production and health records and feed analyses. These are very valuable tools, but you cannot properly evaluate rations without getting out among the cows that are eating them. An important part of evaluating a ration is actually assessing the feeds, management, and interaction of the cows and what they are fed. This involves looking at cow behavior, bunk management, manure evaluation, water availability, rumination, cow appearance, body condition, cow comfort, feed availability, feed quality, and on. As you walk the herd, keep your senses open so you notice what is going on, and pick up on things that are normal and out of the ordinary. Use the information you gather in the barn to build a case: do the variety of pieces of information point the same direction, suggesting what should be changed or not changed in the ration, feeds, and management? Staying in the milk house or office won't give you all the information you need. In this article we will discuss evaluation of housing. Cow behavior, manure evaluation and feed evaluation are equally as important but will be discussed in other articles.

*The Barn And Laneways:* Go out to the barn. Take the route the cows have to go from the parlor to the barn or paddock. Take the time to be quiet and watch and listen:

*Do the cows appear to have comfortable, non-skid footing?*

*Many rocks in the laneways? How deep is the mud?*

*How far do the cows have to walk from the parlor to their barn/corral?*

*Is ventilation in the barn good?*

*Are the cows using the stalls comfortably?*

*Is the barn comfortable / are fans and cooling systems working?*

*How many hours a day are the cows in the barn?*

If cows can't breathe, rest, or walk, they are likely to milk less. A comfortable cow can put her energy towards making milk, rather than surviving her environment. Slick surfaces that make cows do a four-footed shuffle, rough surfaces that have them tip-toeing on sore feet, or deep mud that could suck the boots off of an unwary extension specialist make it more likely that the cows will make fewer trips to the bunk. Rocks in the laneways make for bruised feet and lameness. If you can't reasonably traverse the path from the parlor to pen, the cows are being asked to expend more energy than they  
(Please continue on page 3, under Evaluation)

Low levels of antibiotics have recently been detected in surface water bodies, such as rivers and lakes, around the country. Is this going to become an environmental crisis for the American dairy industry? The answer will depend in part on whether dairy antibiotic use contributes to this contamination. There are actions that dairy producers can take to minimize this hazard. The purpose of this article is to inform producers about this area of concern and to provide some suggestions for how to avoid potential problems with antibiotic contamination of the environment.

At this point, the sources of the antibiotics detected in these studies have not been identified. They could have either human, urban sources and/or veterinary, agricultural sources. Could dairies be a source of antibiotics in surface water? Colorado State University recently sampled seven dairy lagoons and seven dairy manure stockpiles and analyzed them for several antibiotic classes. The lagoon samples ranged from non-detectable levels to 17,  
(Continue on page 3, under Manure)

### **Table of Contents**

**Commodity Price Quotes** 2  
**Inoculation Safety** Insert

**Important Dates:**  
**Mark Your Calendar**

**January 25, 2005:** The Colorado Dairy Nutrition Conference – Greeley, CO  
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**January 26 & 27, 2005:** Colorado Dairy Days – Greeley, CO  
Contact: [kmaxey@co.seld.co.us](mailto:kmaxey@co.seld.co.us)

**March 8-11, 2005:** Western Herd Management Conference Reno, NV  
Contact: <http://www.wdmc.org/> or [w.wailes@colostate.edu](mailto:w.wailes@colostate.edu)



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

**Cash Cheese Market:** As I write this column the hemorrhaging of the cash cheese market has started. These prices are now below the psychological floor of \$1.40, sending futures sharply lower. Hopefully, producers had some production locked in to protect the uncertainty of this market.

**Central Federal Order:** USDA has announced it will hold a Central Federal Order hearing to consider amendments that would tighten pooling provisions. This would modify performance standards for supply plants, adjust diversion limits and **limit the amount of milk that could be pooled that was not pooled the previous month.** This will greatly improve the PPD fluctuations of the Central Federal Order.

**CWT:** Cooperatives Working Together bids are due at the end of October. Herd retirement will be the largest percent for the program this year. Hopefully, more dairy farmers will participate in the check off part of the program as it begins to mature and becomes a great model for agriculture. This current program is targeted to remove 870 million pounds of milk, which will equal around 49,000 cows.

This month the Colorado Dairy News celebrates its tenth birthday! Please remember that this newsletter is produced for you. If you have suggestions for topics that need to be more carefully covered, please contact me or the editor, Ragan Adams. We enjoy working with you and for you.

*William R. Wailes, Colorado Extension Dairy Specialist*

***Commodity Price Quotes***

<b>By-Product Feeds</b>	<b>Price/Ton Spot Loads</b>	<b>Price/Ton OND/Clock</b>
Bakery Waste	\$98.00	NQ
Blood Meal (Porcine)	\$400.00	NQ
Corn Gluten Feed	NQ	\$100-Clock
Corn Hominy	\$93.00	\$93.00
Flaked Corn	\$110.00	NQ
Whole Corn	\$93.00	NQ
Whole Cottonseed	\$180-200.00	\$160.00 OND; \$170.00 Clock
Distillers Grains	\$115.00	\$115.00 Clock
Pork - Meat & Bone Meal	\$295.00	NQ
Tallow	\$0.20 /lb.	NQ
SBM - 48%	NQ	\$185.00
Wheat Middlings	NQ	\$90.00 OND
Soybean Hulls	NQ	\$97.00-Clock
Canola	\$145.00	\$145.00
Canola Meal	\$295.00	NQ

These price quotes are delivery at Greeley, Co

*(Evaluation, continued from page 1)*

should. Watch the cows as they move: they will tell you what's comfortable. The distance from the milking parlor to where the cows rest and eat determines how much additional energy they have to devote to walking over and above the base level included in maintenance requirements. That must be subtracted from the energy available for milk production. Cows don't appear to be as sensitive to ammonia as people are, but the humidity and odor can give an indication of whether the air exchanges are adequate.

Giving a cow a comfortable place to lie down, get off her feet, ruminate, and rest is crucial to keeping healthy, productive cattle. If cows are not using the stalls, if they are lying half in – half out of stalls, if they just stand in the stalls, reassess whether the stall design and dimensions are what they should be.

Heat-stressed cows are more prone to ruminal acidosis, sorting their feed, and slug feeding. Just think: at the very least, if cows are panting or breathing heavily, they are not chewing their cuds, and this does not help rumen health. Keeping fans and sprinklers in good working order is the only good way to deal with heat stress. We do recommend that heat stress rations contain more potassium, sodium, and magnesium, and as much if not more forage, but any ration changes to deal with heat stress are just band-aids – you need to cool the cows. About forage and heat stress: feeding more concentrate during heat stress is a bad idea. There is no research information to support it. Since heat stress makes cows more susceptible to rumen acidosis, feeding them adequate fiber, more and more palatable forage, and possibly less starch can keep them healthier, they won't lose more milk than they would normally, but they'll be better prepared to perform when cooler weather comes.

If cows spend much time away from the barn, they have that much more time where they can't eat, drink or rest. Generally, the suggestion is that cows be grouped so that they spend no more than 2 hours per milking away from their barn. Anecdotally, the more time cows spend standing on concrete with no chance to lie down, the greater the chance of hoof problems.

*Waterers near the exit to the parlor?*

*Are the waterers working, filling adequately, clean?*

Milk is 87% water. No water, no milk. Cows are lazy. The more convenient we can make it for them to have good, fresh water and feed when they want it, the better they will produce. Water intake can be affected by level of production, feed, sodium, and protein intake, and environmental temperature, not to mention the base amount of water that cows need for maintenance. Cows require about 0.36 gallons of water per pound of milk (NRC, 2001). That water can come from feed or drinking water. Water intakes under heat stress can increase by more than half, as temperature increases.

*Is there feed in the bunk? Is it well mixed? Particle size?  
Does the feed in the bunk look like the formulation on paper?*

*Has the feed heated? Is it musty? Apparently palatable?*

*Are there clumps of spoiled silage in the bunk?*

*Is there adequate bunk space?*

*Do cows have fresh feed available when they come back from the parlor?*

*Is feed pushed up several times a day?*

Ideally, having 3-5% of the feed leftover that looks and smells like the feed you originally fed will help to assure that the cows get the feed they need to

*(Please continue on page 4, under Evaluation)*

*(Manure, from page 1)*

17, and 19 parts per billion for the tetracyclines, sulfonamides, and macrolides. The solid manure samples also ranged from non-detectable levels to 5130, 46, and 5 parts per billion of tetracyclines, sulfonamides, and macrolides. Although results demonstrate the presence of antibiotics in dairy manure and lagoons, these antibiotic levels are quite low, less than 50 parts per billion, with the exception of one high measurement of tetracyclines in solid manure.

Knowing that antibiotics have been found in water bodies and in dairy manure sources, the question remains: can antibiotics be transported from dairy manure and wastewater storage areas to water bodies? We have begun transport studies to evaluate runoff and leaching of antibiotics, but at this point there are many unanswered questions. There are many potential sources including pharmaceutical production facilities, wastewater treatment plants, feed mills, seepage from wastewater lagoons, or runoff from livestock operations or manured fields.

In addition to identifying contamination sources, we need to know whether the antibiotic levels measured in water bodies are high enough to have negative environmental impacts. In general, most measured concentrations have been well below (ten times lower) the levels that have been shown to be toxic to standard testing organisms. There are some exceptions to this general observation, but these are mostly related to antibiotics in manure itself and in soil where manure is applied, rather than in water sources.

In addition to direct toxicity effects, antibiotics in the environment could lead to the development of antibiotic resistance, a critical concern as it relates to the efficacy of antibiotics

*(Continue on page 4, under Manure)*

*(Manure, continued from page 3)*

in the treatment of disease. This is not a new issue; in 1989, the National Academy of Sciences concluded that the use of antibiotics in animal feeding operations was seriously undermining the ability of antibiotics to protect human health. The World Health Organization called for a ban on routine feeding of antibiotics to livestock in 1997. Scientists are researching this area to determine whether antibiotic resistance develops in surface water bodies where antibiotic concentrations have been documented.

If dairies and other livestock operations are indeed a source of antibiotic contamination of water bodies, then it will be important to know what manure management decisions can be made to hasten the degradation of antibiotics and limit their potential negative impacts. Scientists are currently evaluating treatments such as composting, lagoon aeration, and phytoremediation in order to be prepared to give producers solid recommendations about management options to limit the spread of antibiotics in the environment.

Antibiotics that are commonly used in livestock production have been found in surface water bodies. What are the sources of contamination? Are the concentrations high enough to cause harm to humans or ecosystems? If the sources include dairies or other livestock operations, what can be done to prevent further contamination?

As scientists seek answers to these questions, what can dairies do in the meantime? Following Best Management Practices (BMPs) for manure nutrients will also reduce the potential for contamination of water bodies with antibiotics. Ask yourself these questions to be sure you are following BMPs:

1. Is all of the runoff from your dairy (except for clean roof runoff) contained in your runoff storage pond? Or does some leave your property and enter ditches or creeks?
2. Are your wastewater lagoons designed, built, and maintained properly?
3. Are your lagoons lined to prevent seepage?
4. Do you inspect the lagoon berms regularly to look for cracks, rodent burrows, bulges, or sink holes that may be signs of a damaged liner?
5. Do you keep the lagoon water level below the marker (identified with a staff gauge) so that it can hold runoff from a 25-yr, 24-hr storm at all times?
6. If you furrow irrigate with wastewater, do you collect the tailwater?
7. If you sprinkle irrigate with wastewater, do you apply at a rate that the soil can soak in to avoid runoff?

By following these runoff and lagoon management practices, dairies can reduce the risk of antibiotic runoff into surface waters.

### **Reader Survey Results.....**

CDN would like to thank those readers who returned the survey evaluating the content of the Colorado Dairy News. Some of you wished to have the newsletter sent to you electronically. If so, please email [radams@colostate.edu](mailto:radams@colostate.edu) with your address and an electronic newsletter mailing list will be generated. Many of you were not aware of our website which contains archives of the Colorado Dairy News. The website address is ([www.cvmb.colostate.edu/ilm](http://www.cvmb.colostate.edu/ilm)). Please feel free to contact the editor Ragan Adams at [radams@colostate.edu](mailto:radams@colostate.edu) for other pertinent comments.

*(Evaluation, continued from page 3)*

make milk, grow, breed, and gain body condition. TMRs should be well mixed, or what's the point? If the particle size is too fine, the animals may not get enough effective (chewable) fiber to keep their rums functioning well, too coarse, and they will sort feed. Cows are sorting feed, if they nudge feed back and forth with their muzzles and then dive towards the floor. They are usually pushing forage out of the way and eating grain. Moistening the feed with water or a liquid feed (molasses? wet brewers' grains?) so it holds together, and making sure most of the forage is cut 1 – 2 inches long will help to prevent sorting. The feed in the bunk should resemble the formulation on paper. Check mixer weights and feed dry matters against the formulation.

If the feed has problems with heating or mustiness, examine the individual feeds to find the source of the problem. If the feed is unpalatable, the cows will eat less of it. If it contains molds, problems from mycotoxins may result. The clumps of spoiled silage that make it to the bunk, from not cleaning the spoiled material from the silo, can cause occasional cows to develop diarrhea, as not all cows consume the spoilage.

If feed bunk space is limited, your cows may slug feed, eating large meals in short periods resulting in ruminal acidosis, or lower feed efficiency. Making sure that fresh feed is available in the bunk each time the cows come back from milking, and pushing up at least once between feedings can help increase and even out the intakes. When a cow comes back to the barn, if there is feed, she'll likely stand there and eat, if not, she'll probably go lie down. Once she lies down, it takes active effort for her to get up and eat once the fresh feed is delivered – she may not do it. If possible, adjust cow numbers per pen to increase bunk space per cow.