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National Johne's Disease Demonstration Herd Project

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Johne's disease, or more correctly MAP infection, is a chronic disease with clinical signs of disease usually not apparent until years after initial infection. This lag time between infection and clinical disease and the fact that clinical disease is not always observed in infected (test positive) animals makes JD a difficult problem for dairy producers and scientific investigators. Producers may not realize that they have JD in their herd or appreciate the impact the disease has on productivity. Scientific projects designed to answer the practical questions concerning JD must be conducted over several years, are expensive, and do not always offer concrete conclusions. Recently, the National Johne's Working Group which is comprised of veterinarians, researchers and industry representatives convened a committee to define specific goals to guide the direction of the Control Program and also define necessary research topics.

Congress allocated approximately $18 million to support Johne's disease activities in 2003. A portion of these funds was then used to start the demonstration herd project. Some states, such as Minnesota and Wisconsin have had demonstration herds for the past few years where they have been monitoring herds for changes in disease prevalence and management practices. Although many management practices, such as not feeding pooled colostrum, have been advocated to reduce the prevalence of infection, there have been no published studies that have evaluated which practices are most critical in preventing infection.

There are currently 18 states, including Colorado participating in the demonstration herd project nationwide. States chosen to participate in the project represent the major dairy states in the US. There are approximately 60 dairy and 15 beef operations enrolled, with the potential of adding 30-40 more dairy herds in 2005. Although this doesn't sound like many operations, the amount of personnel, laboratory and monetary resources required is substantial and the current budget is approximately $1.5 million.

The demonstration herd project is a 5-7 year project where farms are monitored over this period for changes in management practices and prevalence of MAP infection. One huge obstacle to overcome in researching this infection is the long time between exposure and subsequent clinical disease. This is the reason for monitoring farms over multiple years. The bottom line is that prevalence of infection in the herd today is a result of management practices in place over the last 3-5 years.

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WDPA News

Fast-Food Chains Add Single-Serve Milk

America's dairy producers, through their checkoff program, have helped introduce reduced fat and lowfat white and chocolate milk in fun packaging as part kids' meal choices at McDonald's and Wendy's. In June McDonald's began offering Milk Jugs, kid-friendly, colorful, re-sealable, 8-ounce plastic containers lowfat (1 percent) white or chocolate milk, as part McDonald's new Happy Meal menu choices in more than 13,500 stores..In July Wendy's began offering reduced fat (2 percent) white and lowfat chocolate milk in plastic containers featuring the 3-A-Day logo as a choice in Wendy's Kids' Meals. Wendy's is the first quick-service restaurant to introduce 3-A-Day of Dairy and carry the logo.

Dairy producers' investment in research to make milk more available to kids led directly to the new packaging in fast food restaurants. Dairy Management Inc. conducted a year-long School Milk Pilot Test of more than 100,000 elementary and secondary school students and found that children consumed more milk when it was offered cold and in different flavors, and was in fun, grab-and-go containers. McDonald's and Wendy's then conducted their own pilot tests. Results were so positive both chains decided to introduce the single-serve milk nationally.

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Important Dates: Mark Your Calendar

August 18th and 19th: Dairying in Colorado Seminar & Tour. Contact Jennifer Yamada @ Agpro (970) 535-9318

August 26th – 28th: Colorado State Fair, Dairy (open & junior) show. Contact CSF at www.colostatefair.com

September 26-27, 2004: 2nd International Forum for Women in Dairying. Madison, WI. Contact RLChaney at (301) 271-2732 or chaneyswalkabout @aol.com.

September 28th - October 2nd: World Dairy Expo. Madison, WI. Contact WDE at www.world-dairy-expo.com

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

CWT - Cooperatives Working Together: Dairy producers from the 1940's to the early 1980's survived in the dairy industry mainly through parity pricing of milk. In the current market of supply and demand, we depend on balancing markets to drive price and cover our cost of production plus profit. Government programs, such as "milk diversion and the herd buyout" did not provide long-term solutions to periods of very low milk prices. In fact these short-term solutions have resulted in a variety of failures to produce market stability and many misunderstandings by our consumers.

The CWT is a huge milestone in the dairy industry because dairy producers are working together to take control of their destiny. The flexibility and decision making of this program will produce long-term solutions and is in the control of dairy producers who are directly affected by the market quirks that exist today with our commodity "milk". Just last week dairy producers benefited from the CWT Board by raising the price at which CWT will support cheese removal from the market.

This program works for all producers, large and small. Dairy producers need to communicate to our leadership that they need to work diligently to have 100 % participation of our producers. With the opportunities higher prices provide, dairy producers need to continue to build this fund to protect themselves against inevitable future market downturns. Please encourage dairy leadership to continue their great support of this program and encourage all producers to participate.

William R. Wailes, Colorado Extension Dairy Specialist

Commodity Price Quotes

By-Product Feeds	Price/Ton Spot Loads	Price/Ton OND/Clock
Bakery Waste	$115.00	NQ
Blood Meal	$1125.00 Porcine $ 630.00 Ruminant	NQ
Corn Gluten Feed	$105.00	$105.00 OND
Corn Hominy	$116.00	$115.00 OND
Flaked Corn	$128.50	$115.00 OND
Whole Corn	$113.50	$100.00 OND
Whole Cottonseed	$225.00	$170.00 OND; $180.00 Clock
Distillers Grains	$118.00	$125.00 OND
Pork - Meat & Bone Meal	$390.00	NQ
Tallow	$0.215 /lb.	NQ
SBM - 48%	$280.00	$210.00 OND
Wheat Middlings	$86.00	$96.00 OND
Soybean Hulls	$112.00	$110.00
Canola	$200.00	$165.00 OND
Canola Meal	$375.00	NQ

These price quotes are delivery at Greeley, Co

The Effect of Algae and Bacterial Additions to a CAFO Lagoon On the Conversion from Anaerobic to Aerobic Fermentation

Tim L. Stanton, Professor, Department of Animal Sciences, Colorado State University

Livestock operations have always been willing to protect the natural resources associated with their operations. The philosophy behind regulations on commercial operations have evolved over the years from simply protecting natural resources to preventing perceived nuisance conditions. Regulatory agencies have responded to complaints by making rules that: (1) mandate separation distances between livestock facilities and property lines, (2) control timing of manure and wastewater applications and (3) control nuisance conditions through best management practices.

The swine industry has been plagued by the problem of offensive manure odors for many years. Of the treatment strategies developed by the swine industry, aeration appears to be the most effective way to remedy the odor problem. Among specific strategies evaluated, surface aeration has proven the least expensive and has the potential to be the most effective odor control for open manure storage. Regretfully, energy expense still precludes widespread adoption of surface aeration for odor control.

Last year a study was designed to help a Colorado dairy deal with the odor problem associated with their open lagoon system. The goal was to evaluate the conversion of an anaerobic livestock lagoon to an aerobic lagoon by the addition of algae and bacteria plus mixing. Theortically, this conversion would be beneficial for two reasons. First, the conversion should reduce odor due to the biochemistry of aerobic digestion compared to anaerobic digestion. Secondly, the rate of digestion should be increased with aerobic digestion compared to anaerobic digestion.

The study was conducted at a dairy in northeast Colorado that has 1500 milking cows on 60 acres. This dairy is located near a small but rapidly growing town and was at risk of being closed due to odor concerns. Their manure disposal system involves a flushing system that circulates 250,000 – 400,000 gallons of water per day through their barns into a leaky dam system that separates solids (which are collected for composting) and then collects in an 8-acre lagoon that is approximately 12.5 feet deep and contains approximately 31 million gallons of wastewater. Approximately 30,000-40,000 gallons of fresh water were added daily. One of the challenges with this system was that the primary water loss was through evaporation. The lagoon was approximately two years old prior to the start of this study and had not yet been cleaned.

Algae addition was made possible by construction of a 12 x 72 foot green house to grow the algae (AgSmart Inc., Strasburg, CO[1]). The green house was completed in May 2003 and the algae were added to the lagoon on June 2nd, 2003. The green house contained six 1000-gallon tanks to grow the algae (patent pending). The algae solution was added 24 hrs/day to the lagoon through a flushing system of PVC piping system that distributed the algae on the lagoon bottom in six locations. In addition to the algae, a micro-diffuser system was installed (Keeton Industries, Inc., Wellington, Colorado[2]). This system used 28 micro diffusers (10" Keeton EPDM fine bubble Duraplate™) on the bottom of the lagoon. Air was pumped from two 2 hp compressors through half inch delivery tubing to each micro diffuser. In addition to growing and

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There are three main goals of the demonstration herd project. The first goal is to measure the incidence of clinical disease within a herd. Previous studies suggest that as infection rate in a herd decreases, the number of clinical cases observed will also decrease. Incidence of clinical disease along with whole herd or partial herd testing allows a good estimate of herd prevalence of infection. This is a critical parameter to measure since the overall goal of the demonstration herds is to show that proper management practices will decrease the prevalence of disease over time.

The second goal is to determine the percentage of animals that are removed from a herd based on test results without any evidence of clinical disease. This measure allows us to evaluate how producers manage using test results and also can be used, along with incidence of clinical disease, to determine if infected animals are more likely to be removed from the herd compared to test negative cattle. Some research has shown that test positive cattle are more likely to be removed, but it is unclear whether this is based on test status, or progression of the clinical disease and subsequent removal.

The last goal, which may be the most difficult to reach, is to measure the risk of spreading the infection to other animals in the herd. Presently, this requires a risk assessment which is based on basic research information but not been confirmed by field based studies. A potential outcome from the demonstration herd project is to determine the most critical management practices associated with decreased prevalence of infection. Ultimately, veterinarians may be able to prioritize management practices based on current herd practices and those that have been proven to decrease prevalence in other operations. Hopefully, with increased producer participation in the voluntary control program and using the data generated from the demonstration herd project, we can work together to stop this epidemic.

(Lagoon, continued from page 3)

adding algae, multi-inoculums of microbes were also added to the lagoon (Keeton Industries, Inc.). The purpose of the microbial additions was to improve sludge digestion and nitrogen conversion.

To test the effects of these additions and the mixing protocol, lagoon measurements were made at a depth of 6' below the lagoon surface with an YSI 556 Multiprobe (Ted D. Miller Associates, Inc., Lakewood, Colorado 80227). Lagoon temperature increased significantly from June 4 through September 12, peaking on August 12th. Total dissolved salts (TDS) increased significantly compared to the first reading and remained higher over the observation period. The elevation in TDS was probably due to the vertical mixing of the pond via the micro-diffuser mixing system. The increase and then leveling off of TDS indicated that the micro-diffuser system was doing a good job of mixing the lagoon.

Biological oxygen demand measured over a five-day period (BOD_5) was high initially (13,113 mg/L-average of four surface samples) in June and got higher in September (16,372 mg/L) with mixing. March 2004 sampling indicated an average BOD_5 of 8698 mg/L, a 34% reduction from initial BOD levels and a 47% reduction from the highest level recorded. Dissolved oxygen was significantly higher at the July 10 reading compared to the high of 0.61 mg/L on December 5th. Colder water has the ability to increase retention of initial observation and increased to higher levels of dissolved oxygen, which may in part explain the spike upward in DO in December.

Hydrogen sulfide was measured on April 6, 2004 at 11 a.m. at seven sites on the lagoon perimeter.H_2S averaged 1.6 ppb and ranged from 0-5 ppb (Jerome 631-X, Arizona Instruments, Corp.). Phosphorus was 164 ppm initially (average of four surface samples), increased to 554 ppm in September due to mixing of the lagoon and declined to 458 ppm in March 2004. The 17% reduction of phosphorus from September to March may have been due to the demand for phosphorus for algae growth.

In August of 2002, there were six written complaints from neighbors about odor. Adjectives use to describe the odor included "horrific odor", "stench unbearable", and " another round of smelling the stench". When this project was started, the odor coming from the lagoon was overwhelming. Odor intensity was diminished in late July (two months after the start of algae addition), when DO levels averaged above 0.2 mg/L. When data was recorded on Oct.8, 2003, there was very little odor coming from the lagoon. No new written neighbor complaints about odor were received in 2003. This system has potential to reduce odors as well as provide an aerobic fermentation.

In general the cost of this system per cow delines as the size of the dairy increases. Using a1000 cow dairy as an illustration, the initial cost is about $40-60 per cow during the first year. This investment includes the greenhouse, tanks and micro-diffuser system plus the algae food and bacterial addition for the first year. After the first year, the cost is expected to decline to between 50 and 75 cents per cow per month. The system cost is based on a number of factors, such as the biological oxygen demand (BOD) loading rate, the volume of the waste stream, and the depth of the sludge layer in the bottom of the lagoon.

[1] AgSmart, PO Box 329, Strasburg, CO 80136
[2] Keeton Industries, Inc., PO Box 249, 13751 NCR 11, Wellington, CO 80549

Udder Hair Removal

Larry Fox, DVM
Washington State University

The Pasteurized Milk Ordinance clearly states that udders should be routinely clipped to keep udder hair short. Logic dictates that keeping udder hair short can lead to reduced exposure to bacteria, improved milk somatic cell counts, a decrease in udder preparation time, an increase in milking speed, a decrease in bacterial counts of milk, improved teat disinfection function, help improve cleanliness of milker's hands and milking units, improved milk sediment scores and a reduction in the number of towels needed to wash and dry udders.

The Washington State University mastitis research group designed experiments to test the hypotheses concerning udder hair. For 11 months 218 cows were sampled monthly to determine mastitis infections. Each cow served as its own control. Teat skin swabbing solutions were also collected to determine the bacterial contamination of the teat skin. The number of new intramammary infections and the bacterial counts on the teat skin were almost the same for both udder halves; indicating no real benefit to udder hair removal. The trials examining the milk bacterial counts following udder hair removal was tested in 40 cows. The differences in bacterial counts between treatment groups were very small and not significant. The results of both trials do not support the contention that removal of udder hair will improve milk quality and reduce mastitis.

It could be argued that because the herd had excellent housing management, keeping cows clean and dry, and excellent milking technique, that udder hair removal was not necessary. However, it should be noted that because udder hair removal is stipulated by the PMO, it should be done as required. THe PMO is revised every two years. Perhaps the requirement to remove udder hair is unnecessary and should be part of some revised PMO in the future.