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UK UNIVERSITY OF KENTUCKY College of Agriculture

Kentucky Dairy Notes

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"The Little Things" Can Greatly Impact Your Profitability

Donna Amaral-Phillips

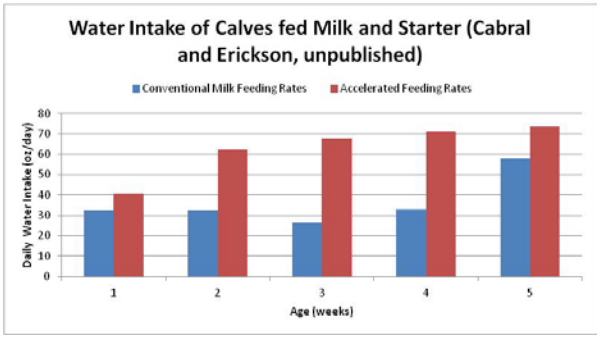
When it comes to managing a dairy operation, properly implementing small details can have a substantial impact on profitability not only today, but also in the future. Small changes can improve milk production or reduce costs that over time can add to larger and more substantial profit. A KY dairy farmer once said, it's not those $20 charges that get you in the wallet, it's how those $20 charges add up over time that end up affecting your bottom line. This article looks at some of these "little things" or management details which can impact your bottom line today and in the future.

 # 1. Baby calf management: Nutrition and management of young calves has been shown to positively impact future first lactation milk yield and/or age of first calving. Some key components which can easily be overlooked include:

- Colostrum management: Holstein calves fed 4 quarts or two, 2-quart bottles of high-quality, cleanly harvested colostrum within 6 hours of birth gave approximately 2500 lbs more milk in their first lactation versus those fed only 2 quarts or 1 bottle of colostrum. Valuing milk at $20/cwt, this is an increase in gross income of $500 in this first lactation. For a 100-cow herd with a third of the cows are first-calf heifers, this is equal to $16,500 more gross income yearly. Not a bad delayed payment for the small additional amount of time and patience to feed that additional bottle of colostrum!!!

  Colostrum provides the calf with immunoglobulins to help fight off diseases and energy to stay warm/cool and for growth. However, colostrum may also have additional benefits which can affect the health and growth of heifers and have long term positive implications in addition to improved future milk production.

- Water and calf starter fed starting at 3 days of age: Water intake improves growth rates of calves pre-weaning and decreases the incidence of scours. As shown in the figure, young calves drink approximately 32 ounces of water daily (equal to a 1 liter bottle of pop) at an early age. Those fed an accelerated milk feeding program may drink more water than those fed the lower or commonly used rate of milk or milk replacer.



Small amounts of starter (a handful at a time) should be

fed starting at 3 days of age and the starter replaced daily. As the calf eats more calf starter, the amount fed should be increased. Calves should be weaned when they are eating at least 2 lbs of calf starter and not by their age. When calves are weaned, the amount of calf starter eaten will increase rapidly. Hay should not be fed until calves are eating at least 5 lbs of calf starter or grain daily after weaning.

- Keep calves growing at weaning time: Weaning time can be very stressful on calves. The source of a calf's nutrition changes from primarily milk to dry feed or calf starter. At weaning, a step-down approach to feeding milk is recommended after calves are consuming at least 2 lbs of calf starter. For example, the amount of milk fed daily is cut in half by feeding calves milk once daily instead of twice for 3 to 7 days before weaning calves off milk completely. This step down approach allows calves to increase their starter intake and thus adjust to the intake of nutrients from grain versus milk. Changes in housing, such as grouping calves in small groups with up to 6 to 8 calves, and changing the grain mix composition should be made after calves have been weaned for at least 5 days. Often times, failing to minimize the stresses around weaning will decrease growth rates and can negatively impact the health of the calf. These effects result in heifers calving into the herd at an older age or smaller than ideal resulting in higher heifer rearing costs or lower production as first-calf heifers. Bred heifers which calve at an older age cost more to feed ($2 to $3/day) and are fed for more days resulting in increased feed costs. Thus, if a heifer calves 30 days later, an additional $60 to $90 has been spent to raise this heifer or $360 to $540 for a group of 6 heifers. Poorly performing heifers during the weaning period can be quite costly and can easily be overlooked since the additional costs do not occur until later.

 # 2. Get cows and heifers rebred in a timely manner: Cows open over 115 days usually give less milk over their lifetime and are more likely to be culled from the herd. The actual cost varies depending on heifer replacement costs, value of cull cows, and the number of days cows are open. One estimate is that it costs producers $4.00 per day for each day a cow is open up to 150 days in milk. For a 100 cow herd, if we could get 5 more cows pregnant before 150 days in milk, this could be worth $20/day in additional revenue. These costs add up quickly and reoccur daily until these cows with longer days open are replaced or become pregnant and calve again.

For those farms using natural service or a clean-up bull, heat stress can increase the number of days cows are open. Besides the negative effects of heat stress on the reproductive performance of the cow herself, heat stress reduces the quality of semen from bulls without much change in libido. A bull's semen quality may not return to normal for 2 months after heat stress events. Thus, lack of adequate heat abatement can increase costs associated with reproductive performance in addition to lost milk production.

 # 3. Harvest and feed high quality forages, test forages for their nutrient content, and balance rations for the milking herd, dry cows and heifers: Feeding high quality forages decreases feed costs, increases milk production, and improves health, especially in fresh and early lactation dairy cows. Thus, harvesting high quality forages has a direct positive effect on income over feed costs and profitability. The key is to harvest forages in a timely manner making the best of weather changes. Besides wet and dry weather conditions, control of mature weeds, e.g. johnsongrass in corn or sorghum, is very important for harvesting high quality forages. Johnsongrass, which has headed out, is high in fiber and low in energy and can lower the energy content of forages when they are harvested in combination. Thus, control is very important.

Testing forages for their nutrient content and using these results to balance rations can reduce feed costs for not only the milking herd, but also dry cows and heifers. Because of sampling variation with corn silage and hay crop silages, a running average of the last 3 samples from a crop year should be used when balancing rations. This means that forages need to be sampled more than once during the feeding period and on an on-going basis. These results then should be used to balance rations and make sure that changes are made when needed.

 # 4. Watch for ways to decrease feed shrink or feed waste: With higher feed costs, more attention is being paid to minimizing feed waste. Areas to evaluate include:

- Milking cows should have at least 2% and preferably 5% of the feed left in the feedbunk at the next feeding. This left-over feed can be fed to other cattle on the farm. With this lower rate of feed left in the feedbunk, the time of feeding may need to be adjusted and feed pushed up more often to ensure optimum feed intake.
- Besides the cost of grain, forage costs have also increased dramatically. Decreasing losses during storage are very important. Properly packing, ensiling at the proper moisture, sizing the silo for removing 6 to 12 inches daily, and covering silos with plastic and tires are very important to minimizing losses. For 1000 tons of silage, if you could reduce storage losses by 5% (15% decreased to 10% storage loss), you would have 50 tons more silage to feed valued at $2250 ($45/ton) or you could feed 4 more cows “free” with the same acreage.
- Minimize spills of grain. For example, spilling 10 lbs of grain daily valued at $300/ton, can increase your grain bill by $1.50 per day, $547 per year, or most of the profit from a cow in your herd. With commodity sheds where commodities are dumped on the outside concrete pad and pushed into the bay, wind losses can be substantial on windy days. Storage losses from wet commodities can also be substantial especially during the summer.
- Pay attention to the little things: Wet tractor tires can track extra feed from commodity sheds. Bumps along the path of loading equipment can result in feed losses. Check scales routinely by estimating how long feed ingredients should last and how long it takes to feed them. If a commodity or grain mix should last 20 days and it is fed out by 15 days, further investigation into feeding rates is needed.
- Birds can consume almost 50% of their weight daily. For a flock of 1,000 starlings, they can consume 62.5 lbs of grain daily (they do not eat the forage component) or more than $9 per day (grain valued at $300/ton). This is almost equal or greater than the daily cost to feed a milking cow.

 # 5. Ensure a smooth transition for cows and heifers into the milking herd: Cows and heifers which smoothly transition back into the herd peak higher in milk production, potentially rebreed quicker, and have less health issues. (Remember each additional pound of milk produced at peak is equal to 200 to 250 lbs more milk over the lactation.) Some have estimated that the lack of or a poorly managed transition program can cost around $2000 per cow. Key components of these programs start with:

- Far-off dry cows (from dry off till 3 weeks before calving)
    - Do not over or underfeed energy to dry cows. Overfeeding energy to dry cows is associated with higher incidence of fresh cow metabolic diseases, such as fatty liver and ketosis.
    - Minimize the effects of heat stress by providing shade, fans, and sprinklers or allowing access to heat abatement for at least an hour daily.

- Cows within 3 weeks of projected calving date:
    - Feed a ration that is balanced properly to prevent milk fever (low in potassium and DCAD), displaced abomasums (maintain rumen fill), and other metabolic disorders.

- House cows in a clean environment that provides an adequate and comfortable resting space. These areas should be designed for the largest number of cows,not the average for the year. Designing these facilities for the average number of cows will result in overcrowding during times where a higher percentage of cows calve and potential problems for transition cows.
- Provide adequate feedbunk and water space. For post and rail feedbunks, 36 inches per cow is recommended and 30 inches for headlocks.
- Heat abatement is very important for this group. Adequate shade, water, fans, and sprinklers are needed.

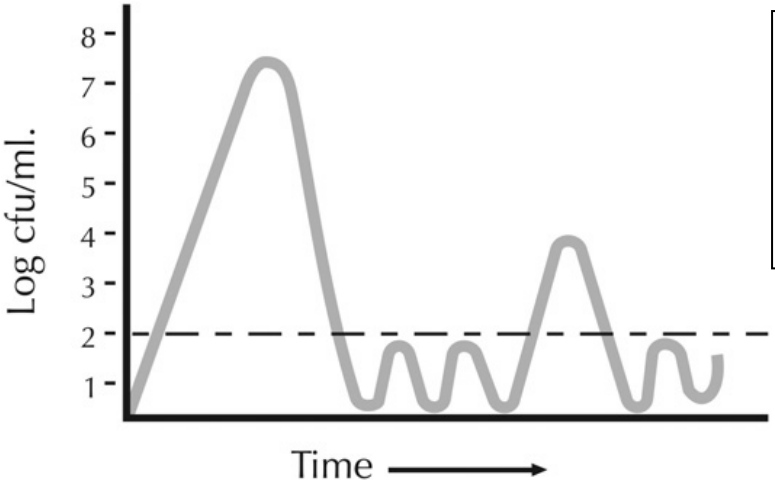
What is the Best Antibiotic Against *Staphylococcus aureus* Mastitis in Lactating Cows?
Michelle Arnold

Every case of mastitis is costly to the dairy producer in terms of decreased milk production, treatment expense, lower milk quality premiums, and possible culling or death of the affected animal. Indirectly it takes extra time during milking to properly identify a treated cow and discard her milk and there is always the risk of a "hot tank of milk" if a treated cow is accidently milked into the tank. One frustrating aspect of mastitis treatment is repeatedly re-treating a cow that relapses with an infection in the same quarter multiple times. These "subclinical" infections result when a producer discontinues antibiotic treatment because the milk looks normal but the hard-to-kill mastitis organisms are still alive in the gland and waiting for their opportunity to attack again. *Staphylococcus aureus* is one of the most prevalent bacterial pathogens worldwide and is often the cause of chronic subclinical infections, high somatic cell counts, and clinical (visibly abnormal milk) cases of mastitis. Recently a systematic review of all of the relevant individual studies performed worldwide was undertaken to help veterinarians and producers choose the best antibiotic therapy to use during lactation against *Staphylococcus aureus*. Based on this review and all available data, the best option was found to be extended intramammary therapy for 5-8 days with Pirlimycin (Pirsue®). There was no evidence to support the use of injectable antibiotics at the same time as intramammary therapy (mastitis tubes used in the quarter) to increase cure rates.

An "extended therapy protocol" or "extended duration of therapy" is defined as administering intramammary treatment (mastitis tubes used in the quarter) for 2 to 8 days consecutively. Only two products on the market (Spectramast® and Pirsue®) are labeled for and demonstrated effective with extended therapy. Both products are prescription only so a valid veterinary/ client/patient relationship must exist to obtain these medications. However, extended therapy is not "extra-label"-in other words, a producer can follow the label directions on the box instead of the veterinarian needing to write special or alternate directions for use.

Pirsue® (pirlimycin hydrochloride) is labeled for clinical and subclinical mastitis associated with Staphylococcus and Streptococcus species including the contagious organisms *Staphylococcus aureus* and *Streptococcus agalactia,* and the environmental organisms *Streptococcus dysgalactiae* and *Streptococcus uberis*. The label directions state to infuse one syringe into each affected quarter and repeat the treatment after 24 hours. Daily treatment may be repeated at 24-hour intervals for up to 8 consecutive days. When Pirsue is used daily for up to 8 days, it is important to use it only in the quarters known to be infected and do not treat uninfected low SCC quarters of the same cow. Pirsue's product insert specifically warns that even with adequate teat end preparation and sanitation, repeatedly infusing the same quarter with antibiotics can sometimes result in elevated somatic cell counts and/or clinical mastitis that is most often due to infection with Gram (-) environmental organisms. If acute clinical mastitis (visibly abnormal milk) or other clinical signs of illness (fever, redness, swelling of the quarter) develop during extended therapy with Pirsue®, discontinue therapy immediately and contact your veterinarian. Milk taken from animals during treatment and for 36 hours after the last treatment must not be used for human food. Pre-slaughter withdrawal is 9 days if infused only twice in a 24-hour interval but is extended to 21 days if extended therapy is used.

It is crucial to work with your veterinarian to first determine what organism is causing mastitis in order to choose the most appropriate drug and duration of antibiotic therapy. Although culture results are rarely available quickly enough to use, those results will definitely help determine what type of mastitis you are dealing with on your farm and help make decisions regarding treatment of future cases of mastitis. A milk culture may be performed to grow and identify the organism in a laboratory and determine the most appropriate antibiotic for treatment. Unfortunately, for the culture to detect a mastitis organism, there must be a minimum number of bacteria present in the sample. Shedding rates vary widely and *Staphylococcus aureus* is one bacteria that frequently shows low or intermittent shedding rates (below the detection limit). A "no growth" laboratory result could mean the cow has recovered or she may be shedding bacteria below the detection limit but still has the disease (see illustration). One tactic to compensate for this problem is simply to repeat the culture, especially in cows with persistently elevated somatic cell counts. Although this may seem like a waste of money and time, ultimately culture results are invaluable to identify the important contagious mastitis organisms including *Staphylococcus aureus, Streptococcus agalactia,* and *Mycoplasma*. Healthy cows must be protected from exposure to contagious mastitis pathogens or they risk new infections, high somatic cell counts, and further spread of disease.



Example of a bacterial shedding pattern from a chronic mastitis cow. The wavy line represents the number of bacteria shed; the dashed line represents the number of bacteria needed in order for the organism to be detected on a routine milk culture.

Figure from Veterinary Clinics of North America Food Animal Practice 28 (2012), 187-202

2013 Kentucky Milk Quality Conference

Conference Dates:	August 28th-August 29th
Location:	Lake Barkley State Resort in Cadiz, KY
Time:	Meeting will begin at 1:00 PM on August 28th and adjourn at 12:00 PM on August 29th
Registration:	$100.00
Sponsorship Opportunity:	If you are interested in being a sponsor, the cost is $200.00 (Includes one free registration, a display table, and an invitation to the Banquet)
Room Rates:	$64.95 plus tax (Call 270-924-1131 to make reservations)
Contact:	For questions regarding this conference, contact Dr. Jeffrey Bewley at 859-257-7543 or by email at jbewley@uky.edu . Lewis Ramsey at 502-564-3340 or by email at Lewis.Ramsey@ky.gov

Cooperative Extension Service

University of Kentucky
Animal and Food Science Dept.
400 W. P. Garrigus Building
Lexington KY 40546-0215

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August 15-18
Kentucky State Fair Dairy Shows

August 28 & 29
2013 Kentucky Milk Quality Conference
Lake Barkley State Resort Park

October 2-5
KDDC Young Dairy Producer Fall Tour
Madison, Wisconsin

October 26
Dare to Dairy
UK Coldstream Dairy
Registration Information Coming Soon