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Comfortable Dairy Cows Are More Profitable for Their Owners

by Donna M. Amaral-Phillips

Comfortable dairy cows give more milk and, consequently, make more profit for their owners. As profit margins are stretched thinner with higher feed, fuel, and fertilizer costs, small changes in management practices that improve the comfort of a cow's environment can help improve your bottom line. Often times, improvements in managing cow comfort involve little or no capital outlay but result in improved profits for the dairy operation.

Reduce Heat Stress:

First and foremost, your facilities need to be managed to decrease the effects of heat stress. Cattle are most comfortable when temperatures outside are between 40 and 70 degrees F. With afternoon spring time temperatures getting in the middle 70's, we need to realize that these cows are under mild heat stress. If we do not intervene, these cows will eat less and this can result in a less milk production. Before leaving to complete other chores in the morning, fans in the freestall barns should be turned on to help cattle cope with this increased heat load.

As the temperature and humidity outside increase, the use of intermittent sprinklers to completely wet the hair coat of cows combined with sufficient air movement from fans can help cool cows. These systems allow for evaporative cooling of cows and should be used at the feed bunk and in the holding pen. In addition, sufficient fans should be located throughout the barn (over freestalls) for adequate air movement. Uncovered holding pens should be covered with 80% shade cloth to decrease the heat load of cows while they are waiting to be milked. Placing smaller groups of cows at a time in the holding pen also can help decrease heat stress on cows since they spend less time waiting to be milked. Additional management practices such as feeding cows in the cooler parts of the day, feeding

more feed at night versus during the day, and mixing feed at least twice daily to prevent feed from heating in the feedbunk can help cows better cope with higher temperatures and humidity.

Besides adapting management practices to decrease heat stress on the milking herd, we can not forget the dry cows, heifers and baby calves. Heat stress on dry cows can decrease milk production and reproductive performance in the upcoming lactation. Bringing dry cows into the barn and cooling them with the evaporative cooling system once a day can decrease heat stress. In addition, calf hutches should be shaded either by trees or with shade cloth. Research studies have shown that calves raised in shaded hutches have better immunity and can better fight off common calf diseases.

Freestall Maintenance

High producing dairy cows spend over 12 hours a day laying down and resting. Part of this time is spent ruminating. Rumination or cud chewing is important in buffering the rumen contents and helps improve the efficient production of nutrients the cow uses to make milk. Freestall maintenance is important to ensure cows spend an adequate amount of time resting and thus “making milk”. Also, increased the amount of time cows rest versus perching (rear legs in alley behind the stall with front legs in the stall) can decrease the incidence of lameness. Maintaining a comfortable surface in freestalls should always be a high priority. Adequate and clean bedding should be maintained in stalls to encourage cows to lie down and prevent hock and leg sores and lameness. Mattresses should be bedded with a couple of inches of sawdust or other bedding material.

By spending a few minutes to improve cow comfort, your cows will be healthier, produce more milk, and potentially generate more profit for you, their owners.

Don't Kill Your Cash Cow While Trying to Cut Feed Costs

by Jeffrey Bewley

Unchartered territory. That phrase definitely describes the current dairy industry situation. Although 2008 milk prices are lower than 2007, all 2008 milk price forecasts remain at levels that would have historically been considered quite high. Unfortunately, dairy producers cannot fully take advantage of these high milk prices because of increased input costs. Corn, soybean, hay, cottonseed, and diesel prices have all reached record (or near record) high levels during the last few months. This shift in input prices has motivated many dairy producers to cut feed costs. Without a doubt, all dairy producers should be evaluating their rations to make sure they are feeding best cost rations. Notice that I used the term “best cost” rather than “least cost.” The two terms do not necessarily mean the same thing. From an economic perspective, the objective in feeding dairy cows should be to get the most “bang for your buck” by finding a balance between milk yield and feed costs.

Income over feed costs (IOFC) is a good indicator of nutritional economic efficiency. It's easily calculated by subtracting daily per cow feed costs from daily per cow milk income. For example, if the average cow in your herd is producing 70 pounds of milk daily and consuming \$6 of feed with a \$15/cwt milk price, IOFC would be \$4.50 per cow per day ($70 \text{ lbs} \times \$0.15/\text{lb} - \$6 = \4.50). Nutritionally, a dairy producer's goal should be to maximize IOFC rather than either maximizing milk yield or minimizing feed costs.

Examples. Let's take a look at what happens to IOFC as milk prices, feed costs, and milk yields change (Figures 1-3). First, let's point out the obvious. At all three milk prices (\$10, \$15, and \$20), as feed costs increase IOFC decreases. Something that might not be quite as obvious is the fact that no matter what milk price is, IOFC increases steadily as milk production increases from 50 to 100 pounds. Similarly, even when feed costs are high, IOFC also increases steadily as milk production increases from 50 to 100 pounds. For a dairy with average daily milk production of 80 pounds with a \$20/cwt. milk price and a high

Figure 1. Income over Feed Cost with Milk Price of \$10/cwt. at Varying Milk Yields

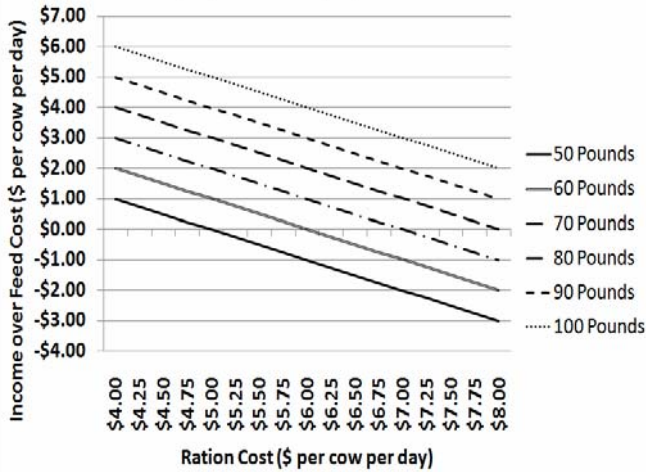


Figure 2. Income over Feed Cost with Milk Price of \$15/cwt. at Varying Milk Yields

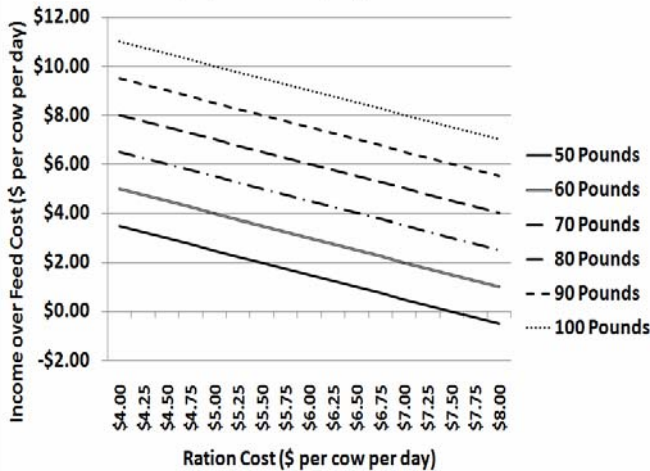
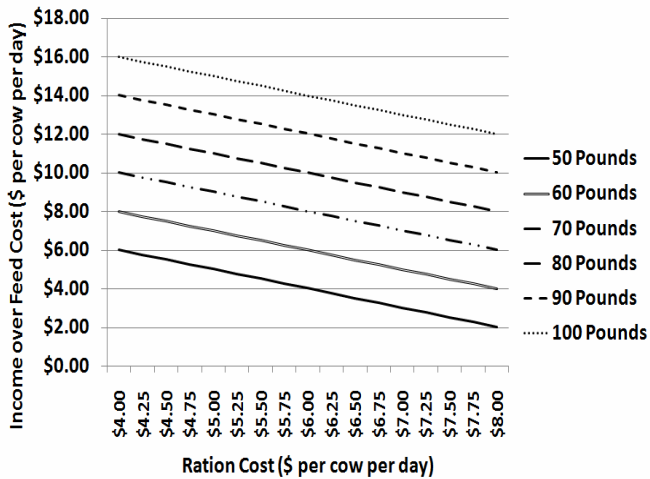


Figure 3. Income over Feed Cost with Milk Price of \$20/cwt. at Varying Milk Yields



feed cost of \$8 per cow per day, IOFC is still respectable at \$8. In contrast, with average daily milk production at 50 pounds under the same conditions, IOFC drops to \$2. If milk price drops to \$14 per/cwt. for this lower production herd and feed costs remain high, the dairy can't even cover feed costs with IOFC at -\$1.

More milk. The take home message is that, generally speaking, it makes sense to get more milk out of cows regardless of current milk or feed prices. Of course, IOFC does not consider all the costs of producing milk. Thus, IOFC is not a perfect indicator of either profitability or cash flow. However, the increased IOFC associated with increased milk production takes into account most of the costs of increasing production. Once all the costs of maintaining the cow, facilities, labor, etc. are paid for, the primary measurable cost of increased milk production is the cost of the feed required to support the new production level. Increasing production will improve farm profit potential because margins are elevated at higher production levels given that fixed costs have already been paid.

Table 1. Ration Scenarios

	1. Current Ration	2. Reduced Cost/Reduced Production	3. Reduced Cost/Same Production	4. Increased Cost/Increased Production
Ration Costs (per cow per day)	\$8.00	\$7.50	\$7.50	\$8.50
Milk Price (\$/cwt)	\$20.00	\$20.00	\$20.00	\$20.00
Milk Yield	70	64	70	75
Income over Feed Cost	\$6.00	\$5.30	\$6.50	\$6.50
# Cows	150	150	150	150
Total Herd IOFC (Daily)	\$900.00	\$795.00	\$975.00	\$975.00
Total Herd IOFC (Annually)	\$328,500.00	\$290,175.00	\$355,875.00	\$355,875.00
Change in Annual IOFC compared to Current Ration	\$0.00	-\$38,325.00	\$27,375.00	\$27,375.00

Cash cow. The cash cow on a dairy farm is milk production. As dairy producers rebalance rations to ease the pain of high feed prices, some may be tempted to cut ration costs without regard to the effects on milk production. But, you don't want to kill your cash cow while trying to cut feed costs. It's possible to do more harm than good when cutting feed costs. Let's take a look at four different

scenarios given today's extreme conditions (Table 1). Scenario 1 represents current conditions for an example dairy farm. In scenario 2, ration costs are reduced; however, this comes at a high cost as milk yield drops due to an inferior ration. In fact, the annual whole-herd IOFC for this ration is \$38,325 less than for the current scenario. Scenarios 3 and 4 represent the best options for this dairy. In scenario 3, the nutritionist works with the producer to reduce ration costs without affecting production resulting in an increased annual whole-herd IOFC of \$27,375. In scenario 4, the cost of the new ration actually increases but this increase is accompanied by increased milk production also resulting in an increased annual whole-herd IOFC of \$27,375. IOFC can be increased through reducing feed costs or increasing milk production even in today's economic climate. Dairy producers should be cautious when reducing feed costs by ensuring that such reductions will not lead to reduced milk production.

Feeding Decisions and Management Can Impact Your Bottom Line by Donna M. Amaral-Phillips

As feed, fuel, and fertilizer costs skyrocket, cost containment is front and center on everyone's mind. As explained in the previous article, *improving income over expenses not just decreasing expenses* should be your goal when looking for ways to improve or maintain profitability. This concept is very important when it comes to decisions related to your feeding and management practices. In addition, feeding programs should positively impact the health and longevity of cows. Outlined below are areas that relate to your feeding management program that can directly impact your profitability. Please take a few minutes to see if you can improve upon these low or no cost management areas to improve your profitability.

1. Take Care of the Money Makers– Early Lactation Cows: Early lactation cows are generally the most profitable cows in a dairy operation. During early lactation, these cows have the highest efficiency of converting feed into milk. This feed dollars and management time needs to be directed toward getting this group of cows to milk to their potential and ensuring they get pregnant. Adequate feedbunk space, frequent feed delivery and constant access to fresh feed, properly balanced rations, feeding high-quality forages and easy access to clean, cool water are the hallmarks of a well-executed feeding and management program. Grouping early lactation and high producing cows together may also allow the use of more expensive feed additives and ingredients in those needing these products. Regrouping cows works as long as frequently pen movements do not disturb the social structure of the group and result in lower milk production.

2. Harvest or Purchase High Quality Forages: Bottom line– Feeding high quality forages allow rations to be balanced with less grain (savings in feed costs) and these higher digestible forages support the production of more milk. Thus, quality forages have a direct impact on the profitability of your operation. If 5 lbs of alfalfa hay is fed, you could pay \$80 more per ton for alfalfa hay and have the same income over feed costs if milk production increased by just 1 pound (assumes milk price is \$20/cwt milk). (At \$15/cwt milk, this break even number is \$60 more per ton.) So, if you get 2 lbs more milk, you can pay \$160 more per ton with identical income over feed costs. In addition, the grain mix may be able to be changed reducing feed costs even more. Take home message: Sometimes paying a little more for a higher quality forage will make you more money even though you spend a little more for the forage itself.

3. Milk Cow Diets Need to Contain Some Corn or other starch sources: Rations for milking cows need to be balanced to provide adequate amounts of starch (24-26% starch, 3-5% sugars). Ruminally

degraded starch (abbreviated RDS), commonly found in corn and other grains, provides energy for rumen bacteria to make microbial protein, the primary source of protein for the cow herself. When inadequate amounts of starch are provided in diets for early lactation cows, milk production is reduced because microbial protein synthesis is reduced. Bottom line: make sure you work closely with your nutritionist to get a well balanced ration for your herd.

4. Review feeding programs: Formulating rations start by analyzing the forages you are feeding currently. These results are then used to balance rations for the milking herd, dry cows and heifers based on current production and amounts of forages available to be fed. Rations should be rebalanced at least quarterly if not monthly.

5. Purchase feed ingredients in bulk with neighbor(s): By purchasing feed ingredients in tractor trailer loads, feed costs should be lower.

6. Get Cows Rebred: Cows need to be rebred in a reasonable time frame for them to be a part of the profitable dairy operation. This reasonable time frame is influenced by the production level of a particular cow. Higher producing cows can take longer to get bred than lower producing cows. The prudent use of heat synchronization, routine pregnancy checks via a veterinarian, and properly implemented and up-to-date vaccination program can help you get more cows rebred in a reasonable time frame. The goal here is to maximize the amount of time cows spend at the higher production versus lower production levels and thus, higher profitability times of a lactation curve.

7. Improve Cow Comfort: Reductions in heat stress on not only the milking herd but also dry cows, baby calves, and heifers can improve these animal's immunity, feed intake, and thus profitability now and into the fall. Comfortable stalls that are well bedded and properly sized allow for cows to rest and "make milk".

8. Strive for Milk Quality Bonuses: Proper milking practices, routine milking equipment maintenance, and housing cows in a clean environment are important parts of producing higher quality milk. Feed additives can help improve the immunity of cows but can not fix management problems leading to high cell counts.

9. Dry and Transition Cows: Feeding and management programs for dry and transition cows directly impact production, breeding potential, health, and thus profitability after calving. Dry cow rations need to be properly balanced such that they maintain body condition and transition cow diets need to prevent metabolic diseases, such as ketosis and milk fever. Overfeeding energy to dry cows (ie large quantities of corn silage in unbalanced rations) can waste feed resources and compromise the health of these cows after calving. Remember to work with a well trained nutritionist to balance rations for your dry cows which not only utilize your forages but meet not exceed the nutrient needs of these cows especially for energy.

10. Calve heifers at 24 months of age: Calving heifers over 24 months of age increases heifer rearing costs and increases the time she is an income-utilizing versus an income-generating asset. Older heifers are less efficient at using feed for growth and consequently cost more to maintain. A survey conducted in 2007 with Wisconsin dairies or custom heifer raisers calculated that feed costs accounted for 52% of the total cost (\$1.06/heifer/day) to raise a heifer until freshening. Remember these costs were calculated before the large spike in corn and soybean meal prices. Thus, these costs are probably closer to \$1.20 or more/heifer/day today. Reviewing your heifer management program can help decrease costs associated with raising heifers.

Setting Priorities for the Dairy Farm Business by Jack McAllister

Setting priorities is a critical part of the planning function of management and it should be an ongoing part of the management of the dairy farm business. In his book “The Seven Habits of Highly Effective People”, Steven Covey offers insight into setting priorities. He suggests that setting priorities for our activities should be based on the **IMPORTANCE** and **URGENCY** of those activities. In determining how to categorize those activities, a determination needs to be made as to whether the activity is *IMPORTANT* or *NOT IMPORTANT* and whether it is *URGENT* or *NOT URGENT*. Thus, activities can fall into one of four categories: **IMPORTANT and URGENT**, **IMPORTANT and NOT URGENT**, **NOT IMPORTANT and URGENT** and **NOT IMPORTANT and NOT URGENT**. Covey gives the following guidelines for priority setting: 1) Most (perhaps up to 2/3) of and **NOT IMPORTANT and NOT URGENT** our time should be spent on **IMPORTANT and NOT URGENT** activities, 2) The next greatest portion of our time should be spent on **IMPORTANT and URGENT** activities, The least part of our time should be spent on **NOT IMPORTANT and NOT URGENT** activities.

How can this suggestion for priority setting be applied to the dairy farm business? What are the **IMPORTANT** activities of the dairy farm? Broadly, these would be the ones associated with income and expenses from the dairy farm business. The major source of income on most dairy farms is milk income. What activities could contribute to greater milk income given the current price of milk? These could include anything that could increase milk production without increasing the cost of producing it such as improved forage quality of the ration. Another could be increasing milk quality to permit receiving milk quality bonuses. Improved cow comfort may positively to increased milk

production. Using milk futures as a hedge against projected lower milk prices may be an option. Finally, having surplus heifer replacements to sell or selling low producers in the herd and replacing them with superior heifers could generate extra income.

On the cost side, obviously feed cost is the major cost of milk production. Is there anything which can be done to reduce feed cost while maintaining the same level of milk production in the herd or perhaps increasing feed cost in such a way that an even greater return is generated. Forward contracting of feed can lock in prices for feed ingredients if prices are expected to increase. Use of lower cost by-product feeds and commodities may also be an option. Here again forage quality can be a positive contributing factor. Cropping costs are on the rise and the cropping program to provide feed for the dairy herd should be examined to see if changes may need to be made to maximize nutrient production at the least cost. Examining all input costs would be useful. Saving nickels and dimes are important along with saving dollars.

Setting priorities provides focus and requires determination. This will be needed to avoid the temptation to participate in too many **NOT IMPORTANT** activities.

There are many decisions to be made in managing the dairy farm business. Setting priorities and following through with the activities which match them will likely produce the most desired outcomes.

How to Recognize and Prevent *Neospora Caninum* Infections

by Patty Scharko, UK Extension Ruminant Veterinarian

Neospora caninum is a major cause of abortions in cattle. First recognized in 1988 and linked to dogs in 1998, this parasite causes abortions in cattle between three and nine months of gestation. The disease, neosporosis has the potential to become a

devastating disease for both the dairy and beef cattle industries.

What signs may be seen in your herd? A number of things may happen to the infected fetus: they may be aborted, be reabsorbed, become mummies, be stillborn, or they may be born alive but diseased. Infected calves may be born underweight, unable to rise, or have their eyes affected. There are some calves that are born diseased but look normal; these will be chronically infected and may abort as first calf heifers.

How do cattle get Neospora? The transmission of this disease follows one of two routes. In the first route, canids, primarily dogs or coyotes, are involved in transmission. An aborted fetus will have a large number of infective *Neospora* in its brain, nervous tissue and other parts of the body. If a canid consumes the fetus, it becomes infected and a carrier of the disease. The dog or coyote will shed the oocysts in the feces.

Dogs may have signs of infection, but most importantly to the cattle industry, they will pass the *Neospora* in their feces. If the dog feces contaminate feed, forages or water, cattle can ingest this protozoa. When consumed, *Neospora* moves through the cow to the uterus where it infects the placenta and fetus. When the placenta is compromised enough, the fetus is aborted.

The second route of infection is through an infected cow or heifer. Neosporosis may be transmitted from an infected cow or heifer during pregnancy through the placenta to her fetus. If the calf survives, it will be infected for life, and is likely to abort subsequent calves.

How to diagnose the disease? You need to have your veterinarian submit the aborted fetus and/or blood from the cow to a diagnostic lab. Once infected, the cow will develop antibodies against the disease which can be tested for.

How to prevent?

1. Prevent dogs and wild canines from defecating in or near feed and water sources for cattle through the use of good fences around feed storage areas.
2. Reduce the number of wild canids.
3. Properly dispose of placentas, aborted fetuses and stillborn calves so that dogs and wild canines cannot feed on them. You should either send the fetus to the diagnostic lab or bury or burn all aborted materials.
4. Purchase only females that test negative for neospora.
5. Reduce the number of carrier cows in the herd through blood testing. For a purebred herd using embryo transfer, the best option is to use only test negative recipient females. There is no need, however, to cull infected donor cows. Their embryos are safe to use.
6. Vaccination may be an additional option in the future.

Inefficient Heat Detection Is Devastating by George Heersche, Jr.

Inefficient heat detection is still the number one nemesis of efficient dairy herd reproductive performance and the successful use of artificial insemination. Assume a dairy farmer starts to breed cows 60 days after calving and the herd has a 50% conception rate. What level of reproductive performance can be expected in this herd with low heat detection efficiency? With 20% heats detected, 21% of a herd will not have been seen in heat and 48% will not be pregnant by 200 days after calving. Yes, you read it right . . . by 200 days after calving 21% of the herd will not be seen in heat (even once!) and 48% of the cows will not be pregnant! At 30% heat detection, 32% of the cows will not be pregnant by 200 days after calving. The

bottom line is that low heat detection efficiency can single handedly devastate the reproductive performance of a dairy herd. The response to this situation in too many Kentucky dairy herds is to turn in the bull so cows will get pregnant. The view from my seat in the “Ivory Tower” shows that this adds insult to injury, but is necessary to avoid financial disaster.

Kentucky dairy farmers need to increase the percentage of cows and heifers bred to superior AI sires. Of course, there is no free lunch. The successful use of AI requires a commitment of time and management skill toward efficient detection of estrus.

What is Dairy Husbandry? by
Roy Fogwell, Dept of Animal Sciences,
Michigan State University

Effective and successful dairy husbandry depends on a positive attitude and caring attentiveness of people toward their cattle. **Firstly, there must be willingness, skill, and actual effort to observe animals.** This means a visual inspection of individual animals so you are informed about: well-being and welfare; health; appetite; and social behavior and status.

Secondly, to practice good husbandry people must be knowledgeable about the biology and behavior of cattle. Observation and experience are valuable teachers and will build a perception based on trial and error. However, observational knowledge is not objective and can be a very expensive basis to adopt or to reject different practices for dairy cattle. There should be informed understanding of why certain methods are successful and should be performed or why some methods fail and should be avoided. A purpose of controlled and replicated scientific research is to provide confidence for the information and practices that you use. However, in addition to informed opinions, successful husbandry must also include your experienced skills to perform tasks and

to observe animals. You should be certain that your opinions and the information that you use in your herd are objective and maximally credible.

For all types and styles of dairy management, your husbandry should make your cows maximally responsive to your management. To achieve this, your management should be a positive combination of art, experience, and science. In addition, a consistent characteristic of people who are progressive and highly effective dairy managers is that their favorite activity is to work with cattle. The passion and commitment of these people to animal husbandry are evident through the care that they extend to their cattle.

What are some features of managers who practice effective basic husbandry?

1. They are informed and attentive to the appearance and behavior of animals. This will allow people to determine that the animals are thriving or to determine that adjustments are needed.
2. They are very diligent in their attention to the comfort and well-being of their animals.
3. They do no harm! Compared to if you did nothing, the status of animals should not be worse because of your efforts.
4. They walk before they run. The complexity and size of your enterprise should stay within your comfort zone so that you have proactive control and actually manage most events. However, if you are panicked frequently or reacting to uncontrolled events, husbandry in your herd probably is not ideal.
5. They make thoughtful decisions with full consideration to animals. Are your decisions made primarily for your cattle or primarily for people?
6. Good husbandry is based on objective knowledge that has been tested in research. In contrast, trial and error and uninformed opinions are not a solid foundation for husbandry or for management:

Developments on progressive dairy farms need not distract or compete against husbandry. For example:

- ✓ always observe your animals closely to assess welfare, even when you are performing other chores;
- ✓ teach and encourage husbandry to all employees; and
- ✓ use results of current research to reinforce and to direct husbandry in the future.

(Excerpted from “Husbandry: The Foundation for Dairy Management”, Michigan Dairy Review, October 2001)