

# CALVING EASE

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## HOW MUCH IS ENOUGH?

One of the more frustrating things in life is to find out that what you are doing is not “enough.” In the dairy farming business, we are constantly faced with too few resources to accomplish what we often think of as even the basics. I sometimes have the problem of having excessively high aspirations, as well.

### **How should we set a goal?**

“Enough” is always defined in relationship to a goal. If we are talking about calf mortality, then the goal might be to have a death rate at four months among live births of heifer calves of not greater than five percent.

Unfortunately, there is no one “right” place from which a goal like this might come. Maybe we read that figure in a national dairy magazine – an external source. Maybe we calculated last year’s mortality rate (seven percent) and want to do better in 2005 – an internal source. Maybe we just decided that five was a good number – an arbitrary value set independently of experience. Or, the goal may come from a non-biological reference point – what is the economically sound minimum mortality rate for this dairy? While not applicable in this illustration, another source of goals are scientifically and/or clinically defined values such as the minimum inhibitory concentration of a drug in the blood.

### **Scientific Criteria**

All approve veterinary drugs for dairy cattle have study data to show the blood concentrations needed to be effective in treating one or more diseases. The level below which the drug is no longer effective is called the “minimum inhibitory concentration” or MIC. The prescribed dose and duration of a drug comes from those data as well as the clinical experience of the prescribing veterinarian.

If we expect our medication protocols to work, we must adopt the goal of achieving a rapid MIC of the drug in the treated calf’s blood. And, our goal should include sustaining that MIC long enough for the calves own immune system to take over controlling the infection. So, how much is enough? “Enough” in this case is defined by the MIC. Too little will not get up to the MIC and the infection is likely to drag on selecting out the most resistant pathogens. Not good. Too much drug simply raises the drug level above the MIC. The calf does not get better sooner. All we have done is waste money on unnecessary medication.

## Economic Criteria

The economic law of diminishing returns tells us that at some point when we invest resources in a process, the amount of return will begin to decrease compared to the investment. For example, all of us have heard about high production of corn per acre or milk per cow. At extremely high production levels (for example, a corn contest, a prize cow) the cost per unit of production is prohibitively high. The cost per bushel or pound of milk is above its value on the market.

If we identify the cost of inputs for a calf enterprise, we might find that eliminating the very last percent of mortality or morbidity is much higher than the value of the calf. Or, we may be encouraged to eliminate pathogens from calf environments. That is, get rid of all the pathogens. Biologically, that is not easy. Economically, we ask, “How many of the pathogens can we afford to get rid of?” How low should the bacteria count be in colostrum? How many Staph species and Strep species bacteria can calves live with without significant diarrhea problems?

## Clinical Experience and Economic Criteria Blended

For example, clinical experience and economics come together to suggest that while calves can live with relatively high Staph species and Strep species contamination of their food supply (e.g., 100,000 cfu/ml), relatively low levels of fecal coliforms (e.g., over 5,000 cfu/ml) may increase the number of clinical scours cases. Thus, while it is economically sound to get coliform counts very low, it is not equally profitable to try to suppress Staph and Strep count to the same low levels.

In the area of colostrum management, we know that calf health is a result of balancing pathogen exposure with passive immunity derived from colostrum consumption. Given a constantly variable pathogen exposure level that is very difficult and expensive to measure, we often just try to cover ourselves by setting a goal for high passive immunity levels. But, many times we set our goals too low or we don't monitor performance. Our calves end up with too little immunity. We treat too many sick calves. That is economically unsound.

Equally unsound is setting the wrong goal. For example, rather than just aim at having our average blood serum total protein at 5.5, maybe we need to set the goal of not having more than one, or two, or five percent of our calves with blood protein levels below 4.5. **That is, identify the places where the expenses are high and the costs of prevention are low. If with preventive measures we can avoid the high expenses, then it is very profitable to invest in getting high compliance rates for these preventive protocols.**

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