

# Predicting Gains Of Backgrounding Feeder Calves

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**E**arly October the Eden Shale Experiment station weaned the spring-born calves. During an evening educational meeting, we looked at these calves and the chorus of the Separation ballad was being sung. Several producers will hold calves through the weaning process and precondition them for a period of time before marketing. These calves may be sold in special sales such as the Kentucky Certified Preconditioned for Health program with calves required to be weaned for a minimum of 45 days. This preconditioning is a form of backgrounding and increased revenue is anticipated from a premium for these program calves as well as selling additional pounds. The increased revenue must offset the additional expenses if a net profit is to be realized.

The premium for preconditioning often is greater for lighter weight calves which are at a greater risk of contracting bovine respiratory disease. This premium for the Kentucky CPH program has been close to \$6-\$8/cwt in recent years as reported by Laurent and co-workers in the 2010 Kentucky Beef Research and Extension report. Additionally, this report illustrates that this premium is reduced for heavier feeder steers. This anticipated premium can be utilized in an enterprise budget to aid in making a decision whether to precondition feeders.

The other component is the addition of live weight during the preconditioning period. Since few producers weigh feeder calves at weaning and prior to marketing, this additional weight gained on the farm is often unknown. Perhaps this is not an important factor and that the perception is that all feeders gain at the rate Extension budgets and other publications report. Yet, we all know that there is variability in performance from farm to farm. Big deal, right? Say you used an enterprise budget to help make the decision to background the calves. You used 2.5 lbs per day of gain just as the budget example showed. You market the calves and they end up being 50 pounds lighter than you budgeted. Your net profits are less than you estimated. What happened?

So how can we predict what these calves might gain? is not easy and the ability to accurately estimate the gain of feeder calves during the preconditioning period is difficult. Previous nutrition, the rate of morbidity, the quality of feedstuffs and genetics can all play a factor in post-weaning performance. We'll simply focus on nutrition. In Kentucky and other areas in the southeast, grass hay is likely to comprise 50 percent or more of the backgrounding diet. The balance is often coproducts or a combination of corn and coproducts. The greatest variability will be associated with hay or forage component. As an example, forty-three hay samples submitted for the Eastern Kentucky Hay contest had a range in Total Digestible Nutrient values of 42.5 percent to 60.4 percent with an average of 51 percent.

If a 1:1 mixture of soybean hulls and corn gluten feed were fed at a rate of 1.5 percent of body weight and one assumed that hay was consumed at a level of 1.2 percent of body

weight on a dry matter basis, a predicted rate of gain could be estimated assuming no stress or morbidity. Steers and heifers have different gain efficiencies and we have to consider them separately. A 500 pound beef steer is what we will consider in this example. The maintenance energy requirement is expected to be 4.55 megacalories (mcal). Pull back on the reins and slow this stagecoach down, what should this discussion about mcal be triggering you to consider? The energy content of the feed might be something we need to know in order to predict the gain of these steers. How would one find out about the energy content of feeds? Well, one could look them up in a table which is often the case for feeds like soyhulls and corn gluten feed. One could have feeds sent to a commercial laboratory and have them analyzed which is what you should do for your forages.

Let's estimate the energy content of the diet. We are feeding 0.75 percent soyhulls, 0.75 percent corn gluten feed and 1.2 percent of hay. Summing these the intake is  $0.75\% + 0.75\% + 1.2\% = 2.7\%$  of dry matter intake as a percentage of body weight which is 500 lbs times  $2.7\% / 100 = 14.9$  lbs of dry matter. The percentage of hay in the diet is  $1.2\% / 2.7\% \times 100 = 45\%$  and the 1:1 soyhull:corn gluten feed mix is 55%. Now, let's use the lowest and the highest quality hays from the contest above at 42.5 percent and 60.4 percent TDN which will be referred to as LOW and HIGH hay from here on.

Using the forage test results and table values for the coproducts, one can calculate the energy value for the hay and supplement diet. Next, one needs to determine how much of the diet is required simply to meet maintenance requirements. The maintenance requirement was 4.55 Mcal/d. Feeding the LOW hay diet requires 6.9 lbs of the diet to meet maintenance while the HIGH diet requires 1 lb less feed to meet maintenance energy requirements or 5.9 lbs. The total intake was 14.9 lbs of dry matter. Maintenance alone required 40 percent to 46 percent of the daily intake for HIGH and LOW.

Lastly, if we know the weight required for an animal to reach a given body composition, one can estimate the body composition of gain and predict a daily gain. For the LOW, the feeder calves would have a predicted gain of 1.8 lbs/d while calves receiving HIGH diet are predicted to gain 2.6 lbs/d. After 45 days of preconditioning, the LOW diet calves are projected to weigh 631 lbs while the HIGH calves would be expected to weigh 667 lbs without shrink. The difference in hay quality alone yields an estimated 36 lb difference.

The ability to predict daily gains of feeders is difficult, but not impossible. Having a few inputs one can get a ballpark estimate. A major component of the equation is forage quality. Test your forages and build a supplementation program around it to reach desired rates of gain and obtain better estimates for use in enterprise budgeting. Contact your county extension agent for information on sampling and testing forages as well as using this information to develop feeding programs this fall.  $\Delta$

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