In the last five years soaring grain prices have forced dairy producers to scrutinize on farm practices, crack down on inefficiencies, striving to recuperate profitability. With feed costs representing approximately fifty percent of the cost to produce milk (Grexton, 2012), some dairy managers have seized the opportunity and implemented various measures of evaluating profitability.

As expected, lots of changes are happening in rations as producers, nutritionists and formulators attempt to keep prices as low as possible. A key measure when evaluating feeding changes is the impact on profitability (Hutjens, 2010). Some measurements used include: feed cost per cow per day, feed cost per kilogram of dry matter, feed cost per 45kg of milk, income over feed costs, marginal milk response and cost per unit of nutrient. Each tool with its own advantages and disadvantages. Feed efficiency, defined as kilograms of fat corrected or energy corrected milk produced per kg of dry matter intake consumed, or more simply but less accurately considered as kg of milk per kg of dry matter intake, can be measured on farm. Tools like computer software programs, spreadsheets (using detailed measurements and herd data), automated feed systems to track actual feed intake, or calculating an adjusted feed efficiency with a simplified approach can be used. Feed efficiency can be affected by many factors, some of which include: changes in maintenance requirements, feed digestibility, dry matter intake, sick cows, days in milk and limiting nutrients (Hall, 2003). Creating a benchmark for your herd is critical to evaluating and improving feed efficiencies.

Feed efficiency, although not historically a common standard for monitoring profitability in the dairy industry, is gaining momentum as a tool. Escalating production, increased demands on the lactating cow, rising feed costs and environmental pressures are all contributing factors in the focus on feed efficiency. Pulling ingredients out, at the risk of losing milk and affecting long term productivity, should be reconsidered; exchanging or adding ingredients can help producers maintain and improve productivity with less, more efficient cows.

Many ingredients or nutrients, such as trace minerals, fat soluble vitamins (A, D and E) and B vitamins (choline, folic acid and B12) are essential nutrients that have an impact on overall metabolism and feed efficiency, even if they are required in very small quantities. The majority of the expenses represent the macro nutrients: high quality forages, cereals, proteins and fat supplements. This represents more than 90% of the total investments per day in a high producing cow. Microminerals and vitamins are required for ruminal production of macronutrients; absorbed post ruminally and metabolized in the liver, mammary gland and uterus. They play a vital role in making nutrients available for hoof health, mammary gland production and efficient reproduction. These micronutrients become even more important under situations of stress, high temperatures, and will optimize nutrient use during feed changes.

Current research has emerged to support B vitamins as important nutrients to consider. Collaborative University research and commercial dairy farm research on individual and combined B vitamins has shown an increase in metabolic efficiency. B vitamins are required as cofactors in numerous metabolic cycles. (Girard and Matte, 2005) B vitamin supplementation research, initially in non-ruminant species, suggested improvements in growth are associated with improved feed efficiency rather than increased DM intake (Stahly et al, 2007).

University of California Davis researchers indicated a clear general increase in lactational performance in the absence of a change in DM intake, after supplementing a combination B vitamin product (Sacadura et al, 2008). Subsequent research indicated a reduction of DM intake with no impact on yield of milk or milk components through 180 DIM (Juchem et al, 2012). Graulet et al (2007) reported that the utilization of combined B vitamins increased, and that metabolic efficiency improved in early lactation cows. And most recently, after the participation of 15 commercial dairy herds used in a study, it was reported that supplementary B vitamins lessened the negative energy balance in early lactation as a result of improved energy metabolism (Duplessis et al, 2012).

Table 1: Impact of B vitamins on feed efficiency and production costs for 45kg of milk

<table>
<thead>
<tr>
<th>Early Lactation</th>
<th>Control</th>
<th>Protected B Vitamins</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMI, kg/day*</td>
<td>23.0</td>
<td>22.3</td>
</tr>
<tr>
<td>3.5% ECM</td>
<td>38.6</td>
<td>40.2</td>
</tr>
<tr>
<td>Feed Efficiency</td>
<td>1.68</td>
<td>1.80</td>
</tr>
<tr>
<td>Feed Cost / kg DM ($)</td>
<td>$ 0.348</td>
<td>$ 0.352</td>
</tr>
<tr>
<td>Cost to produce 45kg milk ($)</td>
<td>$ 9.52</td>
<td>$ 8.80</td>
</tr>
<tr>
<td>Difference / cow / day</td>
<td>$ 0.52</td>
<td></td>
</tr>
</tbody>
</table>

Price per MT of feed is the daunting value that producers recognize with increasing ingredient costs. A jump in feed price causes producers to act quickly in trying to lower that number. The important factor to consider is that by increasing your feed efficiency you will reduce the cost of feeding. Sacadura et al. (2008) found that the inclusion of a B vitamin combination product improved energetic efficiency by 2-3%. That improvement can then be considered to reduce the cost of feeding by 2-3%. If the average cost is $8/cow/day, the savings equals $0.16-0.24/cow/day. To be profitable, savings should meet or exceed new ingredient price. Additional responses to the product linked to an economic impact should also be considered.

Feed efficiency values can be established for your farm to reflect productivity. Once a benchmark is established, changes in feed, management and environment can be evaluated economically.

For more informations on B vitamins, contact us at info@jefo.ca or visit our website at www.jefo.ca.

REFERENCES


Grexton, B. 2012. CanWest DHI Profit Profiler Results.


