

## **MANAGEMENT STRATEGIES: THE NUTRITION PROGRAM**

*J. R. Dunham*

### **Summary**

Reduced milk prices and greater feed costs dictate that dairy farmers carefully manage their nutrition program in order to maintain profitable milk production. Reducing feed cost by feeding less will result in lower milk production and less income over feed cost. Some by-product feeds are less expensive than traditional grain mixes and can be fed to reduce feed cost and maintain greater income over feed cost. Poorer quality hay is less expensive than better quality hay, but income over feed cost will be reduced when low quality hay is purchased and fed.

(Key Words: Nutrition Management, Income Over Feed Cost, By-Products, Dry Matter Intake.)

### **Introduction**

When the economics of dairying get tighter because of reduced milk prices and(or) greater feed costs, dairy farmers need to evaluate carefully their nutritional management to avoid making decisions that might result in less income over feed cost.

Too often, the decision is made to feed less grain mix as feed ingredient prices increase. This action almost always results in less milk production and reduced income over feed cost, because cows produce more milk per pound of dry matter intake as production increases. Because the same amount of feed is required for maintenance in all cows with the same body weight, reducing the amount of grain mix fed will proportionally decrease milk production.

Poorer quality hay usually costs less than better quality hay. Selecting a poorer quality hay will reduce income over feed cost, because milk production declines as dry matter intake

decreases when poorer quality hay and forages are fed.

Dairy farmers in Kansas can reduce feed cost by replacing some of the traditional ingredients in the grain mix with some by-product feeds. The decision to use these feeds requires proper management.

This report will illustrate the basis for making nutritional management decisions when trying to maintain profitable milk production in a tight dairy economy.

### **Production Level vs Income Over Feed Cost**

All things being equal, there is a better opportunity for higher producing herds to be profitable than lower producing herds. Body size, not production level, determines the maintenance requirement. Therefore, the maintenance requirement is a smaller portion of the total nutrient requirement for high-producing than for lower-producing cows.

Table 1 shows that the maintenance cost for all levels of milk production is \$1.11 per cow per day, assuming that the cows are the same size and using the feed prices indicated. This cost has to be paid regardless of how much milk is produced.

Table 1 also illustrates that income over feed cost is increased from \$715 for the lowest to \$1531 (214% increase) for the highest production group, even though the daily feed cost increased from \$2.23 to \$3.73 (167% increase) for the high production level.

Obviously, the decision to feed less in order to save on feed cost is not a good management decision.

## **Culling**

When dairy profitability is marginal, culling becomes an even more important management decision. Because higher-yielding cows produce milk more efficiently than lower-yielding cows, culling low producers and feeding the remaining cows for higher production can result in more income over feed cost. But culling 17% of the lowest producers and feeding the remaining cows for higher production results in the same income over feed cost as before culling. Example: a herd with a 17,000-lb average would have the same income over feed cost after culling 17% of the cows for production and feeding the remaining cows for 20,100 lb of milk.

## **Dry Matter Intake**

Because today's dairy cows have a tremendous ability to produce milk, maximizing dry matter intake should be the goal of every nutrition program. Dry matter intake is increased by feeding grain mixes, but the maximum amount of grain mix that can be fed is about 60% of the total ration dry matter. Higher levels can cause digestive upsets.

Relative Feed Value (RFV) of forages, in most cases, is the most limiting factor for dry matter intake. Table 2 illustrates the influence of RFV of alfalfa hay on dry matter intake, milk production, and income over feed cost. Income over feed cost increased as the RFV of hay increased, because dry matter intake and milk production was higher. Lower prices were assigned to the lower RFV hay, which resulted in lower daily feed costs, yet income over feed cost was higher with the higher RFV hay.

Dry cow feeding is also an important consideration in nutritional management of a dairy herd. Dry cows should be fed enough nutrients to obtain a body condition score of 3.5 to 4.0 by calving time. Because it is more efficient to increase body condition of cows during lactation, providing more dry matter for thinner cows during the last 2 to 3 months of lactation is warranted before they are dried off. Adjusting the rumen microbes to the lactating cows' ration 2 to 3 weeks before calving also will improve productivity.

Other factors affecting dry matter intake include: total mixed ration (TMR), number of daily feedings, and moisture content of the ration. Total mixed rations tend to increase dry matter intake because fewer digestive upsets are apparent when cows consume grain mixed with forage. Feeding more than once per day will increase dry matter intake, because the feed remains fresher and more palatable.

During hot weather, adjusting the moisture content of a TMR can increase DMI, because cows can consume the ration at a faster rate. Many dairy farmers are adding water to the TMR mix before feeding to adjust the moisture content to 45 to 50%.

## **By-Products**

Selecting by-products can be an important nutritional management decision. These feeds can lower feed costs and/or provide critical nutrients. Most are readily available and competitively priced in Kansas.

Table 3 lists some by-product feeds. Table 4 shows the break-even price of by-product feeds when compared to current prices of traditional feeds.

When a by-product is priced lower than the break-even price, feed costs will be reduced. Example: if wheat midds are priced lower than \$6.28/cwt, feed cost will be reduced.

Tallow is a by-product that usually costs more than the break-even value. However, tallow is selected for many rations to increase energy density.

## **Conclusions**

When milk price is suppressed and feed cost increases, the management strategy for the nutrition program should be to maximize production.

**Table 1. Comparison of Rolling Herd Average to Income Over Feed Cost**

Rolling herd average	Maintenance cost per day	Daily feed cost <sup>1</sup>	Income over feed cost per year
-- lb --	-----	\$ -----	
13,900	1.11	2.23	715
17,000	1.11	2.58	928
20,100	1.11	3.00	1,116
23,200	1.11	3.37	1,322
26,300	1.11	3.73	1,531

<sup>1</sup>Feed prices per ton: Alfalfa \$110.00, corn silage \$25.00, cottonseeds \$140.00, soybean meal \$200.00, corn \$115.00, vitamin-minerals \$270.00.

**Table 2. Effects of Alfalfa Quality on Dry Matter Intake**

Alfalfa RFV <sup>1</sup>	Alfalfa dry matter intake	Estimated milk	Feed cost (cwt milk)	Income over feed cost/cow
	- lb -	- lb -	- \$ -	- \$ -
160	32.6	68.0	5.73	3.58
149	31.0	64.6	5.78	3.37
138	29.5	61.4	5.84	3.17
129	28.2	58.6	5.90	2.99
107	27.0	56.1	5.96	2.83

<sup>1</sup>Alfalfa prices: RFV 160 = \$120.00, RFV 149 = \$115.00, RFV 138 = \$110.00, RFV 129 = \$105.00, RFV 107 = \$100.00.

**Table 3. By-Product Feeds Available in Kansas**

By-Product	Purpose	Comments
Cottonseeds	Increases energy and fiber density	Limit to 6 lb
Distiller grain	Increases UIP <sup>1</sup>	May be an inexpensive source of protein
Hominy	Substitutes for grain	Does not flow well
Meat-bone meal	Increases UIP; good source of phosphorus	Limit to 2 lb
Tallow	Increases energy density	Limit to 1.25 lb
Soy hulls	Increases fiber density	Limit to 5 lb
Wheat midds	Substitutes for grain and protein supplement	Limit to 12 lb

<sup>1</sup>UIP = undegradable intake protein

**Table 4. Estimated Value of By-Products**

By-product	Estimated value (cwt)
	---- \$ ----
Cottonseeds	8.08
Distillers grain	7.86
Hominy	6.84
Meat-bone meal	16.75
Tallow	14.64
Soy hulls	5.44
Wheat midds	6.28

<sup>1</sup>Prices of other feeds used in the comparison: Alfalfa hay = \$5.75, corn = \$5.75, soybean meal = \$10.00.