

Strategies for Coping with High Supplemental Protein Prices

by Larry Tranel and Dr. Randy Shaver, University of Wisconsin-Extension

In times of high supplemental protein prices, various strategies can be considered. 1) most importantly, formulate dietary protein to requirements 2) then, limit the overfeeding of protein supplements 3) alter grouping strategies to target crude protein to groups properly 4) balance rations for non-structural carbohydrates (NSC) @ 35-40% of diet dry matter, feed and process grain properly to maximize production of rumen microbial protein 5) look for lower cost alternative protein sources 6) consider non-protein nitrogen (NPN) supplements 7) harvest high quality forage.

Protein requirements for dairy cattle vary with stage of lactation. The following requirements are for crude protein (CP as % dry matter) and undegradable intake protein (UIP) as a % of CP.

- 1) Early - 17-19% CP; 35-40% UIP
- 2) Mid - 15-17% CP; 33-35% UIP
- 3) Late - 13-15% CP; 30-35% UIP

Alternative Protein Ingredients have varying feeding limits and current break-even prices.

The following break-even prices are from UW-Extension's **FEEDVAL4** using the following referee feeds: Blood Meal @\$650/ton, Urea @\$300/ton, Corn @\$3/bu, Tallow @ \$.25/lb, Limestone @\$7/cwt, and DiCal @\$22.50/cwt. The feeding levels listed for each ingredient are **upper** feeding limits not to be confused with the recommended level. Break-even prices are a good buy at or below the price listed.

Brewers Grains, dry, 5-10 lb. DMI, \$173/ton
Brewers Grains, wet, 20-40 lb as fed, \$40/ton
Canola Meal, 5-8 lb. DMI, \$159/ton
Corn Gluten Meal 60 - 2-3 lb DMI \$376/ton
Whole Cotton Seed - 6-7 lb. DMI, \$188/ton
Cottonseed Meal - no limits, \$227/ton
Distillers Grain - 5-10 lb. DMI, \$212/ton
Feather Meal - 1-1.5 lb., \$566/ton
Fish Meal - 1-1.5 lb., \$512/ton
Linseed Meal - no limits, \$179/ton
Malt Sprouts - 5-10 lb. DMI, \$126/ton
Meat&Bone Meal - 1-2 lb., \$473/ton
Soybeans, Heated - 6-7 lb. DMI, \$291/ton
Soybeans, Raw 3-4 lb. DMI, \$200/ton
Expeller Soy Meal - no limits, \$290/ton
Processed Soy Meal - no limits, \$326/ton
Sunflower Meal 40 - no limits, \$154/ton

If additional degradable intake protein (DIP) is useful, **NPN Guidelines** use an upper limit of .4 lb urea/cow/day. A common level is .25 lb urea/cow/day. This level would replace 1.6 pounds of soybean meal which reduces feed costs 20 cents per cow per day with soybean meal at \$300/ton.

Feed with UIP supplements and watch dietary soluble intake protein (SIP) and degradable intake protein (DIP) levels.

Dairy Cows require amino acids which are contained in the true protein fraction of feed. NPN compounds, such as urea or ammonia are considered to have a crude protein value but supply no amino acids directly. Rumen microbes convert nitrogen from NPN sources into microbial protein.¹

Urea works best with rations containing corn silage and high levels of NSC. **Avoid weighing and mixing errors that could result in ammonia toxicity.** Be careful with raw soybean and urea mixtures due to the urease enzyme contained in the raw beans. This is not a concern with heated soybeans. Supplement sulfur to provide a minimum N:S ratio of 12:1. Urea has a crude protein equivalent of 2.87 (46%N x 6.25). Example **NPN** calculations using urea guidelines from alternative sources are:

1) Feeding 8 lb/cow/day of a 40% CP dry supplement containing 10% CP from NPN
 $10 - 2.87 = 3.5\% \text{ urea} \times 8 = .28 \text{ lb urea/cow}$

2) Feeding 2 lb/cow/day of a 40% CP liquid supplement containing 35% CP from NPN
 $35 - 2.97 = 12\% \text{ urea eq.} \times 2 = .24 \text{ lb urea /cow}$

3) Feeding 20 lb/cow/day of a 16% CP grain mix containing 3.5% CP from NPN
 $3.5 - 2.87 = 1.2\% \text{ CP-NPN} \times 20 = .24 \text{ lb urea/cow}$

4) Feeding 20 lb dry matter/cow/day of 12% CP ammoniated corn silage (rather than 8% CP).
 $12\% - 8\% = 4\% \text{ CP-NPN} - 2.87 = 1.4\% \text{ urea eq.}$
 $\times 20 = .28 \text{ lb. urea/cow/day}$

These examples provide around .25 pounds of urea per cow per day. Crude protein from true plant and animal protein sources high in UIP should make up the remainder of the supplemental protein to balance the ration for UIP and DIP.

Thus, there are strategies to deal with high protein supplement prices. Since purchased feed costs represent a major expense on dairy farms, make feed buying decisions with a sharp pencil. All feeds have a feed value based primarily on the nutrients found on the tag.

¹Feeding the Dairy Herd, North Central Regional Extension Publication 346, revised 1995, p.8. This publication is available from UW-Extension. It is a great reference for feeding information.

Analyze the feed tags for product composition and compare nutrients on a **dry matter basis** or a **common moisture level** on an as fed basis.

Adjusted w

$$\text{Adjusted w} = \frac{\text{Weight (as fed)} \times \% \text{ dry matter (as fed)}}{\% \text{ Dry Matter Adjusting to}}$$

May 16, 1997

Tom Parslow
Assistant Ag Program Leader
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Dear Tom:

I wanted to share with you a few of my thoughts. I appreciate it that UW-Extension wants to stand up for the truth of this matter. Randy Shaver shared with me materials from his presentation to the Western District Agents. This protein issue is very timely and Randy's information is very useful for producers. I also would like to do my job as I would whether or not Mr. Ken Berg agrees with it.

So, I have a newsletter going out around June 1st and I put this article together for inclusion. It is not uncommon for my newsletters to have a FEEDVAL printout in them. Since Ken may see this as a positive or a negative (anyone's guess) I thought I would share it with you first. Randy has reviewed it once prior to several small changes I made and I will send it to both him and Larry Satter for their final review prior to sending it out via newsletter.

If any of the parties involved are concerned or would advise otherwise, please let me know. Please consider the final comment on "buyer beware" which can be deleted rather easily. I have nothing against Ken and do not feel I need to prove anything to him but do feel it is very appropriate for producers.

Sincerely,

Larry F. Tranel
Extension Agriculture Agent

cc:
Dick Pederson
Vince Limmex
Randy Shaver
Larry Satter