



Debt Reduction and Energy Independence – Econ for a Dairy Farm by Larry Hawkins,
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Debt reduction and energy independence are two hot topics in our country as I write this **article. I have about given up that our president and congress will ever get this figured out.** However, I am going to make an attempt to explain debt reduction (or purchased input reduction) and energy independence as it applies to your livestock operation.

Just a little context adjustment to get us started. As I started in the dairy nutrition business (ages ago) carbohydrates were in the backseat compared to the consideration given to protein. There were some rather obvious reasons why. If we shorted a cow or herd on protein, little was available in reserve and the cow (steer, heifer) had less production (gain) almost immediately. If energy was shorted, at least in the case of milk production, a cow could use fat off her back to produce to her genetic potential at least for a little while. If we had used the term at that time, she would appear to have a high Dairy Efficiency (#'s Fat Corrected Milk divided by #'s actually eaten). Of course, that would be a false victory. As time went on, we fiddled with bypass protein (BP), often adding too much BP (if a little is a good thing...) and then lowering the rumen production of almost perfect microbial protein. Currently, we have made huge gains in protein nutrition as we are now predicting (because we don't actually know for sure) the delivery of a balance of essential amino acids from the rumen to the lower gut which mirrors her exact needs. We are now balancing high production rations with as little as 16% CP since we are meeting the essential amino acid needs of the cow with fewer excesses.

At some point in this journey, we started to realize three important facts: 1) Carbohydrates are approximately 70% of almost any ration (or feed test) or about four times greater than CP, 2) Energy takes up far more room in a ration than does any other portion and 3) Maybe these two facts need to be given a lot more consideration. Let's look at the five parts of a feed ration that provide all the elements of nutrition for the cow. 1) Fat – a small portion of a feed ration (3 to 5%) and cannot be fed much higher without negative results. It does contain the highest level of energy ($\approx 3X$ shelled corn), however, we cannot solve energy shortages by simply adding more and more fat. 2) Ash or minerals – this portion of a ration has no energy. 3) Protein – inefficient when used for energy source. 4) Non Fiber Carbohydrates (NFC) – a very important energy source (starch, sugar, pectins), but there is also a limit to how much NFC we can feed to a cow and keep her healthy (acidosis, lameness, low butterfat). 5) Neutral Detergent Fiber (NDF) – the other carbohydrate portion, mainly sourced from forage. The greatest chance to feed cows to higher production and still keep them healthy is by feeding higher energy forages. It is the only one of these five that can be increased with positive results (production and health) even if it is only to get the same FCM, but higher herd health.

The key to feeding more forage without getting less milk is to have higher-digestible forages, i.e. more of the forage becomes milk or meat and less becomes manure. Remember, more digestibility means higher energy. Dr. Steve Woodford published an article in the June Wisconsin Assn. of Professional Ag Consultants (WAPAC) June newsletter putting a dollar value on the use of high energy forage compared to using higher protein forages. He concluded that feeding alfalfa haylage (HP) with 1% higher protein, but the same NDF and digestibility increases its value by only \$2.50 more per ton in a ration compared to a FeedVal calculation of



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\$5.00/ton. This is due to the increased corn and its high cost relative to protein needed when feeding the HP haylage and maintain the same fiber levels. When a haylage is more digestible (25 points higher Relative Forage Quality (RFQ)), but with the same protein, the forage is worth \$50/ton more in a ration due the fact that both corn and protein could be removed from the ration and the Forage/Concentrate Ratio is increased. There would be some costs for the extra forage, however it will be minor compared to the cost of the corn, protein and/or byproducts that could be removed from the ration.

So what is the best way to increase digestibility in haylage? Add modern late-heading European grasses. These grasses are normally 20 to 50 or more percentage units higher in NDF-D than alfalfa and comparable to or higher than corn silage. Because of the grasses' higher but digestible NDF, rations can become healthier while still supplying the requisite energy. This type of ration also supports higher butterfat production and better rumen health (higher pH)

Probably, the biggest resistance to adding grasses to high producing dairy rations comes from nutritionists who have as their model ration one that is very high in corn silage, 50 to 60#'s and even more, complimented with the balance of early-cut alfalfa. This type of ration many times requires feeding straw to maintain a modicum of herd health. It can be like walking a tightrope. These nutritionists will ask, how can we give up the highly soluble protein in alfalfa to feed grass? Here is where a paradigm shift comes to play. They should not trade alfalfa for grass, they will be trading grass for corn, corn silage, byproducts (or straw) and protein! Grass will always be higher in protein than corn and corn silage. If there is one take-home lesson to this article, this is it!

The second question then becomes, how can I give up the yield of corn silage for haylage? Here is what actually happens. When grass is added to your alfalfa fields, yield goes up. There will be more haylage to feed. Most of our clients have found at least one ton dry matter (DM) increase in yield and most times, even more. Therefore, you can feed the same amount of alfalfa, plus the grass. Also, pure tall fescue fields used for nutrient management can have the same high yields as alfalfa/grass, but with a possible 20% crude protein due to the heavy nutrient application.

This article won't help our government sort out their mess although if they would ask me, I would tell them! However, using high-energy grasses in your forage program can reduce your dependence on corn and so you can either buy less or as some have discovered there is actually a market out there for corn! As far as debt reduction (or purchased-input reduction), grasses, properly formulated in your ration can go a long way toward this goal.