

Can Forage Quality Be Too “Good” for Cows?

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Can forage crop quality be too good for dairy cattle? With very few exceptions the answer is no--or more practically, that it almost never is. In the case of corn silage, quality is never too good as long as dairy rations are properly balanced. Corn silage that has been ensiled for over six months has considerably higher starch degradability than it had a month or two after ensiling, and a case could be made that if high rates of high-energy corn silage are fed, cows could develop acidosis. However, this isn't a case of "too good" corn silage, but of not relying on available technologies such as digestibility analysis, ration balancing, and good old common sense.

Under recommended harvest management, alfalfa and grass quality will almost never approach "too good" levels. Grass harvested in the boot stage and alfalfa harvested in the bud stage will have high forage quality, but not nearly high enough to cause nutritional problems in livestock. I much prefer Relative Forage Quality (RFQ) to Relative Feed Value (RFV) as a numerical rating system for alfalfa, but our farming friends in the Western U.S. don't commonly analyze forages for digestibility, which is necessary to calculate RFQ. Using RFV, alfalfa with a score of 160 or more is rated as top quality. But many dairies in California and other western states routinely feed alfalfa that's 190-200 RFV. One California dairyman told me that they ship their 160-180 RFV alfalfa to dairymen in the Northeast and keep the "good stuff" for themselves! These Western dairymen are doing just fine feeding alfalfa that has more protein and less fibre than about 99% of the forage we harvest and feed.

The one set of conditions that can result in forage that's so low in fibre that it could cause metabolic problems is fall-harvested alfalfa. Alfalfa growing under cool conditions and with decreasing hours of sunlight--in other words, September weather conditions--often never buds up, even with a very long harvest interval. Lignin formation is very slow, stems remain tender, and alfalfa leaflet size is huge compared to the previous crops. Fibre levels increase very slowly, and I often wonder if they change at all. I think some of our late-season alfalfa is similar to that grown in Alaska, which declines to a certain level of digestibility and then flat-lines, with no further decreases. I

recall one crop of fourth cut alfalfa at Miner Institute that had an 8-week harvest interval. Protein was very high--over 25%--and in fact was higher than ADF! NDF was in the low 30s. This alfalfa could cause metabolic problems in dairy cows, but only if fed at fairly high rates and with no rebalancing of the ration. But we seldom see problems with fall-harvested alfalfa, in part because September and October alfalfa yields are usually quite low, so the farmer doesn't have a lot of it to feed. Fed as a small portion of the ration, this forage (at Miner Institute we call it "rocket fuel") shouldn't cause problems. All it takes is a bit of common sense and careful attention to ration balancing including reducing the rate of grain feeding when the herd has access to very high quality forage.

You should always strive to grow and harvest high quality forages, but attempting to manage alfalfa to produce abnormally high quality forage isn't recommended. After harvest, alfalfa relies on stored nutrients for the first couple of weeks of regrowth. Then it starts storing nutrients in its tap root. Harvesting alfalfa pre-bud interrupts this process, and not only considerably reduces yield but can injure the alfalfa. Making sure the plant has high taproot carbohydrate reserves is especially important before the alfalfa heads into one of our long, cold Northern winters.

Don't try to manage alfalfa for protein concentration; focus on ADF and NDF, with your goal about 30% ADF and 40% NDF. Focus on NDF for pure alfalfa and on ADF for any

forage containing grass. That's because while "ideal" quality alfalfa is about 40% NDF, grass with the same milk-producing potential is 52-55% NDF. But both alfalfa and grass are near optimum quality when ADF is about 30%. If you meet these goals crude protein will almost always be in the desired range. For alfalfa, anything in the 18-22% range is ideal; protein levels much above this aren't a plus because the cow doesn't digest super-high protein alfalfa very efficiently.

Finally, a note about forage analysis: I noted that Western dairymen don't use digestibility analysis (NDF digestibility) very often. However, this technology is under-utilized just about everywhere. Digestibility analysis provides a much clearer idea of the actual milk-producing ability of the forage, something a standard forage analysis can't do. For instance, alfalfa grown under flood irrigation has much lower digestibility than alfalfa irrigated with an overhead system that more closely simulates rainfall. The ADF and NDF analysis of the alfalfa grown under these irrigation systems may be identical, but the NDF digestibility of the two forages, and therefore their milk-producing potential, are much different.

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Summer is the Time to Make Low K Hay

Jay Hackney

PICKSEED Vice President Research and Product Development

Double your investment in five weeks – that was the message in the winter 2009 edition of the Forage Informer – in reference to N fertilizer on grass hayfields. The caveat was that this should be applied as early as possible in the spring.

Those of you who didn't follow that practice this spring may have found the grass yields on first cut to be lacking. Whatever the case may be, your concern with those grass hayfields now should be making low K (but high forage quality) hay with them to feed to your pre-fresh cows. I had a discussion with Ev Thomas on this topic in

the July 2008 issue of the Informer. Grass yield in the summer is often pretty modest, but dairy farms don't usually need a lot of low K hay for pre-fresh cows since the pre-fresh period is just a couple of weeks. If you have grass hay on different fields, then choose the field that is likely to be lowest in K fertility. This could mean that it hasn't seen alfalfa for several years (you're usually putting lots of K onto an alfalfa field).

Grasses absorb K very readily, more so when the environment is cooler and wetter – spring weather for the most part. They absorb less K in the hotter and drier times

of the growing season, but of course they yield less too. One way to get lower K grass hay is to harvest very late when forage quality is low and yield is maximized. But what's the point of feeding such low quality. Better to manage K on a field for grass hay so you can combine high forage quality with low K.

It is best to send hay samples to a lab for evaluation of the K content. You're aiming for good quality forage with a K content around 2%.

Making Good Haylage

Jay Hackney

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Swath Width & Drying Time

There's a large successful dairy farm which I pass on my way to work and they've recently made the move to wilting their haylage in wide swaths. The field looks unusual compared to its neighbours because the space between adjacent swaths is only the width of a relatively narrow tractor tire – the swaths cover about 90% or more of the field surface and they're thin. In most fields around here, you can see about as much space between windrows as the windrows are wide – they cover maybe 30-60% of the field and they are thicker and denser. A wide swath is at least 85% the width of the mower.

What we now know about drying time tells us that the wide swath is the way to go. It exposes more forage to the sun and to the air and this makes for faster drying. You want the swath to be basically as wide and thin as you can make it. The University of Wisconsin is preaching the wide swath message and making it part of a "hay in a day" approach. Now I don't think it will be easy to make hay in a day here, but it is pos-

sible to reduce drying time significantly with a wide swath, and that's a sure way to produce better quality, higher sugar content forage and reduce your risk of getting rained on.

University of Wisconsin research (Undersander, 2006. Effect of mowing swath width on forage quality of alfalfa haylage) showed that drying time to 35% DM was 10 hours for a swath width of 75% mower width, from a starting DM of 17%, which meant that forage could be cut and harvested for silage in the same day. Wide swath forage had 2.3% less NDF (neutral detergent fibre) and 1.8% more NFC (non-fibre carbohydrates). RFQ (relative forage quality) was 15 points higher, lactic acid and acetic acid were both higher (which makes for better silage preservation) and ash content was lower for the wide swath.

What about Conditioning?

I'm not sure what this farmer with the wide swaths is doing about conditioning, but if he likes experimenting then he is surely doing trials on whether condition-

ing is required in his operation. The Miner Institute will tell you that you might find that your unconditioned hay dries faster!

The reason for this is that when you condition alfalfa, you are crimping and breaking the stems so that water loss has to happen through the breaks. In unconditioned alfalfa, water loss is by transport through the stem and out the stomata in the leaves, which is actually the fastest way for alfalfa to lose water, at least initially.

That's right – unconditioned alfalfa dries down faster initially than conditioned alfalfa. Unconditioned alfalfa dries to 35% DM (harvest moisture for silage) faster than conditioned. It's easy enough to test this yourself by adjusting the conditioning rollers to a wide enough setting that they aren't doing much crimping. Because there are about 10 times more stomata in alfalfa leaves than grass leaves, the alfalfa loses more moisture through the leaves than grasses do. If you've got lots of grass in your alfalfa, then you should run a trial or two to compare unconditioned versus conditioned.

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Why Make High Quality Forages?

Terry Winslow

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A high quality hay crop will typically test 20% Crude Protein, 30% ADF and 40% NDF. This kind of forage will be gobbled up by cows at rate of over 2.5% of body weight which translates into 30 lbs (14kg) or more of dry matter consumption per cow per day. Compare this to hay made even a week later with just 14% protein and consumption can drop to 20 lbs (9KG), this feed intake has to be replaced somehow or production and/or growth will suffer. High fibre digestibility (DNDF) of 55% or more in combination with the low ADF and high protein values will produce a lot of energy when fed to ruminants; 65%TDN is an attainable value which is actually as high as some commercial feeds!

Feed costs drop by at least 20% between the higher and lower values mentioned above and this is equally true for dairy cattle or growing beef calves. Rates of gain in excess of 2.0 lbs per day have been observed when young cattle have access free choice to this

high energy, highly digestible feed. You only have to look at results of animals on early pasture to see how this concept does work.

Contrary to popular opinion, it is almost impossible to have too high a nutrient value in your forage crop; rations for high producing cows are much easier to balance with as high a concentration of energy as possible within the roughage portion of the diet and you can actually eliminate problems associated with acidosis caused by over-feeding of low fibre grains. It is very important to analyze these crops for NDF digestibility to really use them to their full potential so ask your ration advisor if he or she is confident that these newer forage analyses can be of use in their particular program.

An increase of 5-10% in milk production, a 0.1-0.3% boost in fat test, conception rates going from 65-85% are commonly recorded when cattle are fed maximum amounts of higher quality for-

ages versus even average feed crops. If you do happen to end up with an excess of extra high value hay then it can usually easily be sold for extra value on the open market. One American study found an average difference of \$65 per ton for hay which rated 160 RFV vs. 120.

Producing high quality forage requires the same equipment and virtually the same input costs as lower quality. The key is to be well organized and to start harvesting your crop when it is still in the vegetative (early bud to bud) stage when lots of leaves compared to stems are present. Leaves are 85% digestible compared to 55% for stems. A one week difference in harvesting date can mean 7,000 lbs more milk per acre! Whether you choose legumes or grasses make sure to purchase seed of varieties noted for high milk yield per acre, this index is extremely valuable to help see the combined effects of yield and quality including digestibility.

PICKSEED releases Vision alfalfa

Vision alfalfa was recently registered by PICKSEED. Vision is supported by data from proprietary variety trials operated in Ontario, Québec, Manitoba and Alberta.

Some alfalfa varieties stand out in one or two performance characteristics, like regrowth or yield, or disease resistance

or forage quality.

Vision alfalfa is a balanced combination of all four; it excels under all managements and a wide range of environments. It has a fall dormancy of 4.4, giving it excellent regrowth, but it scores as Extremely Winter Hardy in persis-

tence testing. It is high yielding with fine stems and improved forage quality (a 5 point RFQ advantage over unimproved varieties). Multifoliolate leaf expression is very high and the Disease Resistance Index is 30. For a detailed description and performance data, please see www.pickseed.com

Visit the PICKSEED Web Site:

The PICKSEED web site is up and running at www.pickseed.com. Please visit the site to the technical and product information provided there.

www.pickseed.com



Making Good Haylage

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What is the Alfalfa doing in the Swath?

What it's doing immediately after being cut is that it continues to operate as though it was still uncut – it's doing photosynthesis (using sunlight, water and carbon dioxide to make sugars and oxygen). The stomata in the leaves remain open in the sunlight and water continues to exit the plants - evapotranspiration. The stomata will remain open until the plant has reached 57-65% moisture, which is the right time to make silage. Exposure to light is the key. If you cut and pile into a windrow to cure, many of the plants will no longer be exposed to light, the stomata will close and they will stop losing moisture from the leaves. Using a wide swath ensures that most of the cut plants will lose moisture at the fastest rate possible.

Evapotranspiration is the loss of water – that's good. Respiration also continues after the plant is cut, but respiration which also involves the loss of water, also means the loss of energy. Every hour the silage sits in the field respiring it is losing energy. Respiration continues whether the plants are in the sun or in the shade. In a wide swath, there can be more energy gained by photosynthesis than is lost by respiration – in other words a net gain in energy. In a narrow, dense swath where little forage is exposed to the sun, respira-

tion losses of energy are greater than any gain from photosynthesis – you're producing lower quality forage.

Three hundred pounds of milk per Ton of forage dry matter is the advantage claimed by Cornell University for the wide swath. They estimated the value at \$40/Ton of dry matter. That's milk in the tank and dollars in the bank, just for managing swath width better.

What time of Day to Cut?

Sugars in standing forage increase during the day, which leads some to figure that cutting in the evening, will maximize sugars in silage. This may work in the dry West, but in the humid East, the cut swath tends to stay humid overnight and respiration continues (using up energy) while moisture content declines only slowly. Faster drying, less respiration and less sugar loss occurs with a wide swath cut earlier in the day so that it has time to maximize evapotranspiration. The faster it dries down, the sooner you can get it ensiled, the better it is. Your silage will ferment better (more sugars means more lactic acid production, faster pH drop and more complete fermentation) and ultimate forage quality will be better.

Join the PICKSEED Team

Have you considered a career in selling seed? Why not join the PICKSEED team. PICKSEED has some key areas where we are looking for sales agents in Eastern Canada.

Our current sales agents have a broad range of background and experience and their talent, knowledge and emphasis on customer service combined with the quality and performance of our forage, hybrid corn and turfgrass varieties together makes an excellent recipe for success.

If you are interested, call PICKSEED's provincial Sales Manager for more details. Paul Wight 519-717-2226 (Ontario & Atlantic provinces) or Victor Lefebvre 450-230-0815 (Québec).

About The Forage Informer

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