



## Getting the most out of your home grown forages this spring

Take a moment to smell the hay.

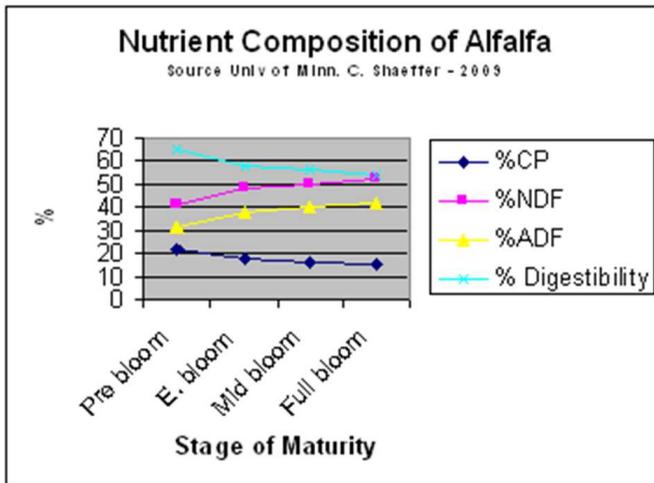
Spring has sprung and frenzied farmers everywhere are racing to get new seedlings and small grains planted. Corn is going in the ground, soon to be followed by soybeans and then comes the race to get post herbicides applied. Sometimes it is an intricate dance between rain showers, although rain seems to be a bit scarce as I write this article.

Finally, just when you might have a few minutes to catch your breath, it is time to take that first cutting of hay. Sometimes you don't even have a few minutes because some years, your hayfields will be ready to harvest before you're done planting.

I can imagine that sweet smell of freshly mown hay...it is one of those "smell memories" that will never leave me. Hopefully, that "fragrance" will be enough to energize weary farmers and encourage them to really pay attention to harvest management practices that will help them optimize the quality of their home grown forages. This is a year and an economy when we really need to pay attention to details and get the biggest bang for our buck!

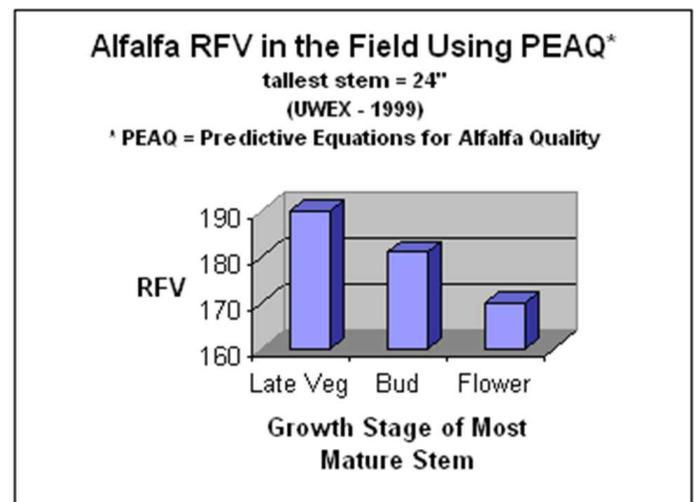
A basic understanding of plant development as it relates to yield, quality AND persistence can help you understand why scheduling harvest based on plant development is the most reliable way to reach your yield and quality goals.

In a nutshell - forage plants accumulate yield rapidly from the vegetative stage until early flowering in legumes or dough stage in grasses. Forage quality is highest when legumes and grasses are in the vegetative (immature) stage and nutrient concentrations and digestibility decline as plants mature. That's because Neutral Detergent Fiber (NDF) increases and Neutral Detergent Fiber Digestibility (NDFD) decreases with advancing maturity.



It's also important to understand that plants store and use carbohydrate reserves in a cyclic pattern; reserves are depleted when regrowth begins then accumulate until flowering or harvest, which ever comes first. Then the cycle begins again. Harvesting forages at a very immature stage may result in the highest quality forage but it may compromise long term persistence because harvest occurred when root reserves were still very low.

What's that mean? Well, for alfalfa that means you should target harvest for early flower bud if you want to capture the best balance of yield and digestibility. Go a bit earlier or later if root reserves are strong or weak or if the logistics of harvesting all of your acres and/or weather demand it. And since first cutting alfalfa does not always flower, there may be some merit to using other methods to schedule first cutting including a) the Calendar - this works well for many people because it allows them to establish the schedule they need to ensure 3, 4 or 5 cuttings each season. B) Scissors cut - this allows farmers to start harvest when quality reaches a benchmark value c) Predictive Equations for Alfalfa Quality (PEAQ) stick - measurements of plant height and growth stage help farmers identify when the standing crop reaches a target RFV.



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PEAQ allows you to go into a field and predict the Relative Feed Value (RFV) of the standing crop based on plant height and maturity in the test area. In this case, if the tallest stem was 24 inches, RFV would be 190 if it was at the late vegetative stage, 181 if it was at bud stage and 170 if it was flowering.

Bad weather often delays harvest, decreasing quality. High temperatures may increase lignification and decrease NDFD, but drought stress may delay maturity & can actually improve quality - a small consolation for the reduced yield that may accompany that improved quality.

Recent research shows that yields of alfalfa can be optimized by cutting it short, say 2" or so, unless it includes grasses like orchard-grass, smooth bromegrass or timothy, that will not tolerate a short cutting height. Of course, if you go too low, you risk picking up excess dirt which will raise the ash content of your forage and reduce its feed value by about 1% TDN per 1% ash. Ash content averages about 7 - 9 % for grass hay or silage and 10 - 11% for legume hay or silage (Dairy One Feed Composition Library). You may want to take a look at your overall management if ash values are higher than that since there are several possible sources of ash, including:

- some equipment may pick up more dirt in the field than other equipment
- lodged plants may become contaminated with soil
- handling during filling & feeding silage may introduce soil into the forage
- sand laden manure applications to forages between cuttings

### WHAT ABOUT WEEDS?

We know that legumes tend to have a higher nutrient concentration and greater intake potential than grasses but what about the weeds. Some weeds are actually OK, but other weeds that are actually quite high in quality and digestibility (curly dock and Canada thistle, for example) just aren't palatable to cows.

<b>Quality and Maturity of Alfalfa and Perennial Weeds Harvested in Early June</b>				
Source: Craig Sheaffer, Univ. of Minnesota <a href="http://www.mda.state.mn.us/protecting/conservation/harvest.htm">www.mda.state.mn.us/protecting/conservation/harvest.htm</a>				
Plant & Growth Stage	% NDF	% CP	% Digestibility	Palatability 1 = no rejection 10 = complete rejection
Alfalfa - bud	42	20	68	3
Smooth Bromegrass - head	63	14	67	5
Quackgrass - boot	54	18	69	4
Curly Dock	33	17	65	10
Canada Thistle	32	19	78	10

### HARVEST TIPS FOR HAY

Lots of spring rain (most years) and the lack of sunshine can make it real tough to make hay but there are a few things we can do to speed things along and keep losses of yield and quality to a minimum;

1. Mow early in the day to allow a full day of drying and reduce the chances of getting rained on. The old adage "Make hay while the sun shines" holds true here in the humid Northeast. Forget about the higher sugar content if you mow in the afternoon because late day mowing will just prolong plant respiration which burns up those sugars & increases your chances of getting rained on. Remember, we are not farming in the arid western states where that strategy might give farmers a real advantage.
2. Form cut hay into a wide swath to increase the drying rate, and reduce the likelihood of getting rained on. This helps get more sunlight to all of the stems which keeps the water moving out of the plants faster resulting in reduced plant respiration and quality losses.
3. Rake at 40 - 50% moisture to speed up drying, reduce leaf loss and reduce the chances of getting rained on.
4. Bale at 18 - 20 % if you don't plan on using a preservative. If you bale wetter than that, you will need a propionic acid preservative to inhibit molds and prevent heating in storage.
5. And finally, store baled hay under cover to protect it from the elements and inhibit molds.

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## **SILAGE GUIDELINES**

For silage, it is important to get the crop out of the field as fast as possible to conserve sugars needed to feed the fermentation bacteria. Other best management practices (BMP's) include;

1. Ensile at the correct moisture (30 - 50% DM) for the storage structure used to optimize fermentation.
2. Chop at 3/8 inch & fill the silo fast, pack it well & seal the silo carefully to minimize exposure to oxygen. This will result in reduced exposure to oxygen, enhanced fermentation and a faster and greater decline in pH.
3. Use a proven inoculant to enhance fermentation and reduce nutrient and energy losses.
4. Leave the silo sealed for at least 2 weeks to allow for a complete fermentation and pH drop.
5. Unload 2 - 6 inches per day and keep a smooth surface to keep feedout losses to a minimum.
6. Do not feed deteriorated silage.

## **SOIL TESTING**

I'd be remiss if I didn't mention that balanced fertility is key to optimum yield and quality of perennial forages. Soil testing provides a road map showing where you are and where you need to go, so DON'T try to save money by cutting out soil testing...you will certainly get lost if you do!

And finally, minimize damage to plants & future regrowth by keeping wheel traffic to a minimum during harvest and apply manure, fertilizer and stubble sprays as quickly as possible after harvest to minimize damage to regrowth.

Of course, there are other things that can have a big impact on forage quality including insects and diseases. There are probably more that I haven't thought of as well.

The take home message is that NDF increases and NDF digestibility decreases with advanced maturity of grasses and legumes so we need to harvest forages at the proper maturity to optimize quality as well as yield. That translates into harvesting grasses at boot stage, legumes at bud to early bloom stage and basing harvest of the mixed stands on the predominant species in the mix. That is really nothing new but it bears repeating because it is a very important concept. So here goes...**WE NEED TO HARVEST FORAGES AT THE PROPER MATURITY TO OPTIMIZE YIELD AND QUALITY.** Just a few days delay can have a significant impact of the quality of grass hay or silage. Legumes may be a bit more forgiving but we really can't afford to waste valuable home grown protein and energy in today's economy.