

LOW COST COW/CALF PROGRAM

The Bulletin For Alumni Of The School

Volume 10

Number 1

When to Mow the Hay

That wasn't much of a problem when growing up. Once the alfalfa was in full bloom, you cut the hay. The goal was tonnage and that was at full bloom. After chores and breakfast, you went to the field for the remainder of the day. Mowing hay was one of the first jobs a kid was allowed to perform with horse-drawn equipment. Once a field was broken into, the team knew and did what was required. About all that was required of the kid was that he had enough lead in his britches to raise the sickle bar about a foot when making the turn at the end of the field. After the excitement of doing your first man's job wore off, you napped on the straight a ways. The hay was flat for at least one full, hot day prior to dragging into windrows with a dump rake—another kid's job. Following another day or so of curing, the dump rake was pulled down the windrows making small piles or shocks. Then the fun began. All the neighbors showed up for pitching, hauling and stacking. Dericks, Jackson forks, the word "dump"¹, canvas water bags and home-cooked fried chicken dinners (lunch) were common terms. Obviously, this was before NEMs, Mcals and non-structural carbohydrates became part of our lexicon.

We've Come a long Way

Most hay is still harvested for tonnage, as indicated by the relatively low energy content when analyzed. Hay marketed into the dairy industry is the exception. It is commonly priced on the basis of crude protein and acid and neutral detergent fibers. Alfalfa is cut pre-bloom. Hay harvested for the beef cattle industry is an entirely different matter. After all, it is cheap so who cares. The universities, along with others, are telling us that there are better ways. Harvesting and feeding hay with a high-energy content (rather than high volume) is the way to go. Most would agree but emotionally it is a hard hill to climb. Not all hay is alfalfa. I am not certain but most hay probably comes from grass. Then

there are different grasses. They are classified broadly as cool and warm season. The differences between the cool-season (C3) and warm-season (C4) grasses make for interesting reading but choice is limited mostly to improved pastures in a controlled environment (irrigation). Plants make sugar by photosynthesis ($\text{CO}_2 + \text{H}_2\text{O} + \text{radiant energy} = \text{sugar}$) during daylight. While temperature plays a part in photosynthesis, it is not a biggy—sunshine is. The first intermediate in the formation of sugar is a 3-carbon acid in C3 plants and a 4-carbon acid in the C4s. Don't let this knowledge stress you out while swathing—sugar is still the end product. After sunset, a process called respiration kicks in. The sugars are converted to cell walls (fibrous material or structural carbohydrates) and other essential plant components. You could call this growth. Because of the numerous enzymes involved, respiration is more temperature-dependent than is photosynthesis. Also, respiration is more moisture-sensitive than is photosynthesis. In the early stages of curing after cutting, forage plants continue to lose sugar (respiration) until the moisture drops below about 40%. Cool, cloudy weather with high humidity does not benefit the hay farmer. A light rain can leach out some of the sugars. Dairy men do not like rained-on hay, even if it is mold free. Protein content of the mown hay is quite stable. It takes a heavy rain to leach out protein.

What Do We Know

The neighbors will be swathing while you're eating breakfast and they will be eating supper when you go out to mow. Try explaining to them that you are harvesting a higher level of nonstructural carbohydrates (NSC). Studies have examined the composition and consumption of sunrise vs. sunset-harvested hays. Hay cut at sunset contained higher levels of NSC and lower levels of the fiber fractions. Further, cattle offered similar quantities of both hays consumed more of the PM-cut hay. This was the case for both grass and alfalfa hays. When sheep and goats were included in the comparisons, the PM-hays were their preference as well. A study with lactating dairy cows, fed a total mixed

ration (TMR) containing 40% alfalfa hay, compared AM vs. PM-harvested hays. You guessed it; the cows on the TMR with the evening-cut hay ate 10% more of the total diet. This resulted in about 10% more milk produced in a 10-week lactation study. We said that respiration is sensitive to moisture. With a lack of sufficient moisture at night, sugars will accumulate in the plant. This fact helps to explain why it is often observed that cattle perform quite well during the first year of a drought.

Buying Hay

While you can tell a good bit about hay quality just by looking at it, a laboratory analysis can be extremely valuable. The seller commonly provides a protein value but as we said, protein can hang-in-there while other goodies tank. In the School, we insist on the use of TDN. This is not the simple TDN calculated as an inverse function of ADF that many laboratories perform. We want TDN based upon crude protein, neutral detergent fiber, acid detergent insoluble crude protein, neutral detergent insoluble crude protein, fat, lignin and ash. NSC is derived mathematically from these same values. Ask your lab how it calculates TDN.

Rumors

If you have looked at our Website recently, you have seen some meaningless banners on several pages. You also may have seen the Laboratory Page. These are in preparation to provide laboratories the opportunity to advertise on our Website. Please feel free to pass this information on to the lab of your choice.

Schools In 2005

Morgantown, WV April 4 -- 7
Pierre, SD August 15 -- 18

Dick Diven

Agri-Concepts, Inc.
11098 N Desert Flower Dr-Tucson, AZ 85737
800.575.0864 or 520.544.0864
www.lowcostcowcalf.com

¹
<http://www.geocities.com/~cowpokinfun/photo2.htm>