

NPFA UPDATE

SUMMER '24

A QUARTERLY NEWSLETTER FROM THE
NORTHERN PLAINS FORAGE ASSOCIATION

WHO ARE WE?

NPFA is a grassroots association open to forage growers, buyers, industry partners, and anyone with an interest in forages. We are creating a networking and education group focused on annual forages/cover crops, alfalfa, silage, grazing systems, and more!

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WHERE TO FIND US



@npforage

Email: npforage@gmail.com

Membership Sign-Up:

<https://sdstate.questionpro.com/NPFA>



CONSERVING ROUND BALES

By Sara Bauder, SDSU Extension Forage Field Specialist

As hay season has begun, we often get caught up in the things the managing spring and early summer crops comes with: insects, weeds, diseases, cutting schedules and more! Although raising and harvesting forages is an important and often challenging job, storage can become just as important to forage value as growing the crop.

Quality losses that occur during hay storage are typically a result of water that has entered the bale and becomes entrapped and unable to evaporate, resulting in spoilage. Round bales, in particular, have characteristics that help limit storage losses. The round shape allows for a dense, well-made bale in which the outer thatch will help to shed precipitation, minimizing water penetration and spoilage loss. The water shedding capability of the forage leaf blade is also important to note. Grass has a broad, flat leaf and makes excellent thatch. Alfalfa has much smaller leaf area that does not form as nice of thatch as grass does. Most modern balers are capable of making bales that can conserve value if good storage practices are followed.

In 2019, Dr. Kevin Shinnars, Tracey Erickson, and I put together a bale stacking demonstration at the Southeast Research Farm. The bales in this study experienced 20 inches of precipitation from Feb. 1 to July 31, 2019, but there was just 0.06 inches of rain the week before sampling. An electronic moisture probe was used to estimate moisture at 50 locations throughout each sampled bale. Data was used to create spatial maps of moisture within the bale, courtesy of Dr. Kevin Shinnars and his crew. Check out the publication with moisture maps at <https://extension.sdstate.edu/> and search 'round bale conservation'.

FORAGE FIELD DAY AUGUST 6!

NPFA, UNL Extension, SDSU Extension, and I-29 Moo University will once again be hosting a Forage Field Day this year!

Join us at the Haskell Ag Lab near Concord, NE for a day full of in-field and classroom experiences focused on forage.

Topics include:

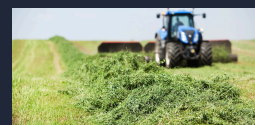
- RMA Program Input/Listening Session
- Forage Federal and Private Program Opportunities
- Cover Crop Mix Plots and Discussion
- Animal Nutrition breakouts
 - Dairy and Beef
- Silage Pile Building Demo/Discussion
- Alfalfa Diseases and Pests Talk
- Speaker Panel Discussion

A full schedule of events will be released soon on the SDSU and UNL Extension webpages.

FREE to NPFA members!

CCA credits available!

Sign up by 7/26 [here!](#)

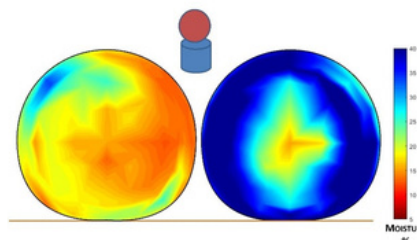


“CONSERVING ROUND BALES” CONT'D

Results lined up with the typical best management practices of hay storage, which are often overlooked. Of course, the best round bale storage comes from protecting the hay from the elements, such as storing under a tarp or roof. Wrapping bales in plastic or breathable film (B-wrap) can also help conserve value; however, bales stored outdoors, uncovered can also be well conserved if some simple practices are followed:

- Take care not to place bales where they will be shaded. This practice allows the sun to naturally dry bales after they have been exposed to rain or snow.
- Place bales in rows that are oriented north to south with about 3 to 4 feet between the rows, this helps sunlight dry bales after precipitation.
- There are pros and cons to how bale rows are made. Butting bales tightly together (face to face) helps keep rain and snow away from the bale face and takes less storage space. On the other hand, rowing the bales with a gap of 12 to 18 in. between faces allows the bale face to dry if they become wet (but more snowpack may develop). There is no consensus for a standard recommendation on the distance between bale faces within rows among researchers.
- Bales should be on a slight, south facing slope to help water drain away. Placing bales on a well-drained soil or surface (like a rock pad) helps to drain water and reduce wicking.
- Net wrapping bales helps to promote a good leaf thatch and thus shed water well and hold shape integrity better than twine wrapped bales.
- Stacking is not ideal. If bales must be stacked outdoors in a manner that reduces storage space, the best practice is to cover the pile.
 - In our study, mushroom stacking (one bale on its flat side on the bottom, and a bale sitting on top on its round side) resulted in the most waste. This practice lends to excessive spoilage in the bottom bale, as the top bale sheds water down into the thatch layers of the bottom bale. Pyramid stacking is also common, but causes unnecessary water infiltration in the bottom bales as well; water tends to shed from the upper bales into the lower layer, limiting air movement and sun exposure. Bottom bales also tend to squat, creating more contact with the ground and moisture wicking potential increases.

Dry matter loss of hay is generally a function of moisture, temperature, and time. There is great variability in losses depending upon storage methods, which can adversely affect final hay value. Much time and energy is invested in a round bale, be sure to conserve your efforts!



Moisture distribution at 8 inch depth from the vertical faces of round alfalfa bales stored outdoors with bottom bale (right) stacked on end and the top bale (left) stacked on top in its normal orientation. More than 45% of sampling area was greater than 35% moisture in bottom bale. The left bale is indicated in red, the right is blue.

NPFA BOARD MEMBERS



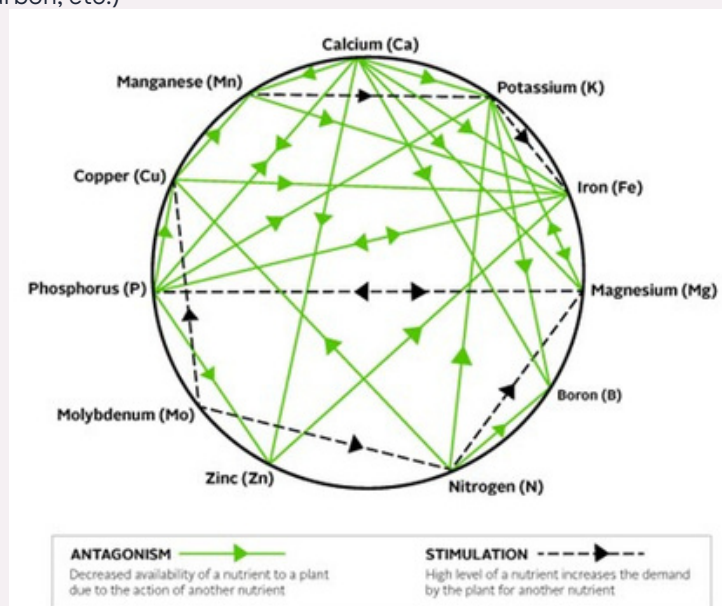
- President: David Elliot, Drumgoon Dairy, Lake Norden, SD
- Vice President: Jeff Jackson, Croplan Alfalfa and Forage Specialist/ forage producer
- Treasurer: Mark Rogen, Boadwine Farms, Baltic, SD
- Mike Bettel, Dellait Forage Consultant & Dairy Nutritionist
- Justin Fruechte, Renovo Seed, Director of Sales/ forage producer
- Paul Hahn, CHS Agronomy Sales Representative
- Eric Tieszen, producer, Canistota, SD
- Al Lenhart, KWS Cereals Regional Sales Rep/forage producer
- David Skaggs, Agrovive Biologicals, Dairy Product Manager
- Patrick Toomey, USDA NRCS MN Range Management Specialist
- Aaron Swanson, Forage Producer, Lake Norden, SD

SAP TESTING TO OPTIMIZE YOUR FERTILIZER ROL

by Mike Bettie, Dellait Forage Consultant & Dairy Nutritionist

As a dairy nutritionist, it has concerned me over the years that the nutrient density and nutrient digestibility of the forages I have been asked to incorporate into my clients diets have slowly become worse instead of improving. This is despite all the technology that has become available to us since I arrived in the United States over 30 years ago. In fact, my reasoning for volunteering for a position on the board of the NPFA was purely to be able to make inputs into the forage industry from a nutritionists point of view and inform growers what was required by their consumers, ultimately cows, in order for them to function efficiently and profitably. I am going to concentrate on alfalfa in this article but the principles are the same for all commercial production crops.

I used to regularly see alfalfa samples coming in with 22-24% protein levels and an ADF/NDF difference of around 10 percentage points but nowadays it's unusual to see a sample test of above 21% for protein and I see much closer differences between ADF and NDF, which point to lower total fiber digestibility. Mineral levels were rarely ideal, and this could well have been the "canary in the coal mine", pointing to the fact that fertilizer programs were not addressing the needs of the vegetative growth of the alfalfa plant. For me, the dairy nutritionist, the perfect mineral balance in alfalfa hay/haylage would be: calcium 2%, phosphorus 0.5%, magnesium 0.5% and potassium 2%. More often than not, I see way lower Ca, P, and Mg levels with K levels around 3-4%. This, in itself, indicates a fertilizing program that is not balanced to the plants requirements. It has been standard practice to recommend high levels of potassium for alfalfa. However, potassium interferes with calcium, phosphorus and magnesium availability which, in turn, reduces the nutrient density of the plant. Fertilizer recommendations based on soil analysis only go so far, and the different choices of soil analyses will give you a more or less accurate assessment of the soil/plant requirements (ie: acid or water extraction methods, Haney test to include organic matter, testing for active carbon, etc.)



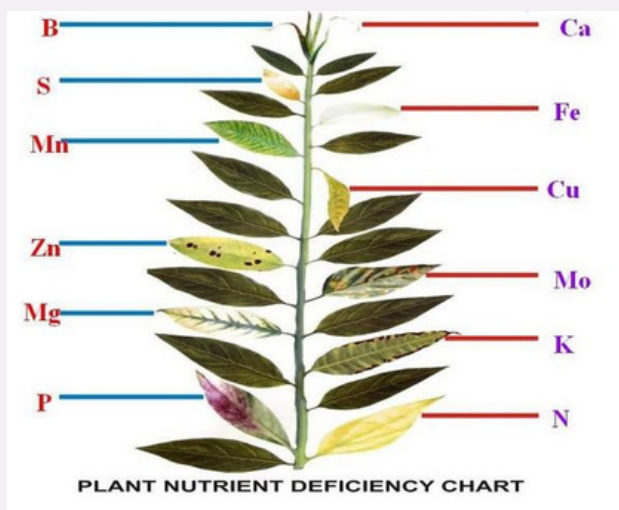
Mulders Chart – Showing the many different mineral interactions

The only true test of your fertilizer programs adequacy is what is happening inside the plants vascular system in terms of mineral deficiencies/excesses, pH, electrical conductivity, nitrate, and sugar levels. These are the parameters that are measured in a Sap test and indicates what is holding back the productivity of your crops. As you see from the Mulders chart above, potassium has antagonistic interactions with many essential elements, which means the plant cannot express it's full genetic potential and consequently will not provide the best nutrition to the cow, in terms of protein and digestible fiber, or profitability for the crop farmer in terms of yield and relative feed quality (RFQ).

We see, from the illustration on page 4, that deficiencies of the various elements can lead to all sorts of symptoms, all reducing the plant's production potential, but we have to realize that a simple soil test might indicate that there is plenty of calcium or phosphorous; however, an excess of potassium suppresses the availability of the calcium which, in turn leads to insufficient available phosphorous. The former will lead to "hollow stem" syndrome, the latter low sugar content, both leading to low RFQ. Low phosphorus levels can also indicate poor soil biology, i.e. mycorrhizal fungi, but that is a different article!

“SAP TESTING TO OPTIMIZE YOUR FERTILIZER ROI” CONT'D

Similar interactions are seen in cows. This is why dairy farmers demand low potassium forage for their dry cows because the suppression of calcium and magnesium and the alkalinity that comes along with that will precipitate milk fever in fresh cows, as they go from zero to 80 overnight (lbs of milk per day) and they are not able to mobilize their stored skeletal minerals, their blood calcium and magnesium levels plummet, immobilizing the cow. Cow/calf ranchers will provide their cows access to a ‘Hi-Mag’ mineral in the spring, because that rich, high nitrogen, high potassium fresh pasture will deplete the cows blood of magnesium and she will collapse with grass tetany. I have witnessed on several occasions, even late lactation dairy cows come down with the equivalent of grass tetany because they have been switched to a new alfalfa hay source that wasn’t checked and had over a 4% potassium level.



In plants, a high potassium level can be ameliorated with the addition of manganese to a custom foliar fertilizer blend but it is only possible to correct this with the right knowledge of what’s going on inside the plants. The Sap test gives you that knowledge. To take your samples you will need 30-40 individual plant stems, cut right at the base of the stem. Take them from random spots around the field for a good representative sample. Now comes the tedious bit! Get a comfortable chair, lay your sample stems on a bench in front of you, label one ziplock bag “New Leaves” and a second one “Old Leaves”, then strip the bottom two or three sets of leaves and put them in the “Old Leaves” bag. Do this for all the sample stems. Press the air out of the bag, seal and refrigerate. Now repeat with the top two or three sets of fully open leaves into the “New Leaves” bag.

FROM THE BOARD

I was born and raised on a farm north of Sherman, SD where we raised beef cattle, hogs (in the 60s-70s), and when I was very young, we even had some chickens. We had feedlot cattle, because our farm ground was very high producing without pasture and mainly raised corn and alfalfa for our livestock. We started raising a few soybeans about the time I went to college at SDSU in 1975. We quit the hogs when I went off to college because it was just too hard for my father alone. This was when hog confinement buildings were just starting to become popular, and we didn't want to go that direction. When I graduated with a B.S. in Animal Science, I came home to farm full time.

At that time, my father had started to become more involved with the SD Cattleman’s Association and became President. That started my interest and belief in commodity organizations and what they could do to promote agriculture. It was a way for us to give back some of our passion for farming. I also became involved in the Cattleman’s as a county board member and eventually state board member. In 1986, I was asked to help put together a new organization to help promote corn and the then fledgling ethanol industry. We formed the SD Corn Growers Association that winter, and with a lot of help from industry people and others grew it to 1000 plus members in a year or so. I was elected the first president of it and stayed involved for the next 7 or 8 years. During my time with SDCGA, I served on the National Corn Growers Board and its executive committee as Secretary, I also served on the US Feed Grains Council Board. I had always followed politics, and this peaked my other passion for being in the political world.

In 1992, I ran for the SD State Senate and won a seat in the state legislature. I was only there for 4 years, but helped pass important legislation that would help farmers, making sure that agriculture was included in permitting language to allow them to form LLC’s, (a new form of corporate entity at the time). I was the main sponsor of the bill that allowed for the ability to sue if outside people would try to disparage SD ag producers. While I was in the legislature, I was still actively farming. My farming operation had changed over the years as my dad retired, and during some of those times, corn and soybean prices weren't great, so I had turned about half of my ground into commercial alfalfa production. In 2005, after my father and mother had both passed, I decided to change my farming practices again and became involved with Lynn and Bill Boadwine

& families and we built a new dairy on my farm. We formed an LLC for the land portion of the dairy so we could produce the feed that they would use. That is where I’m still employed today.

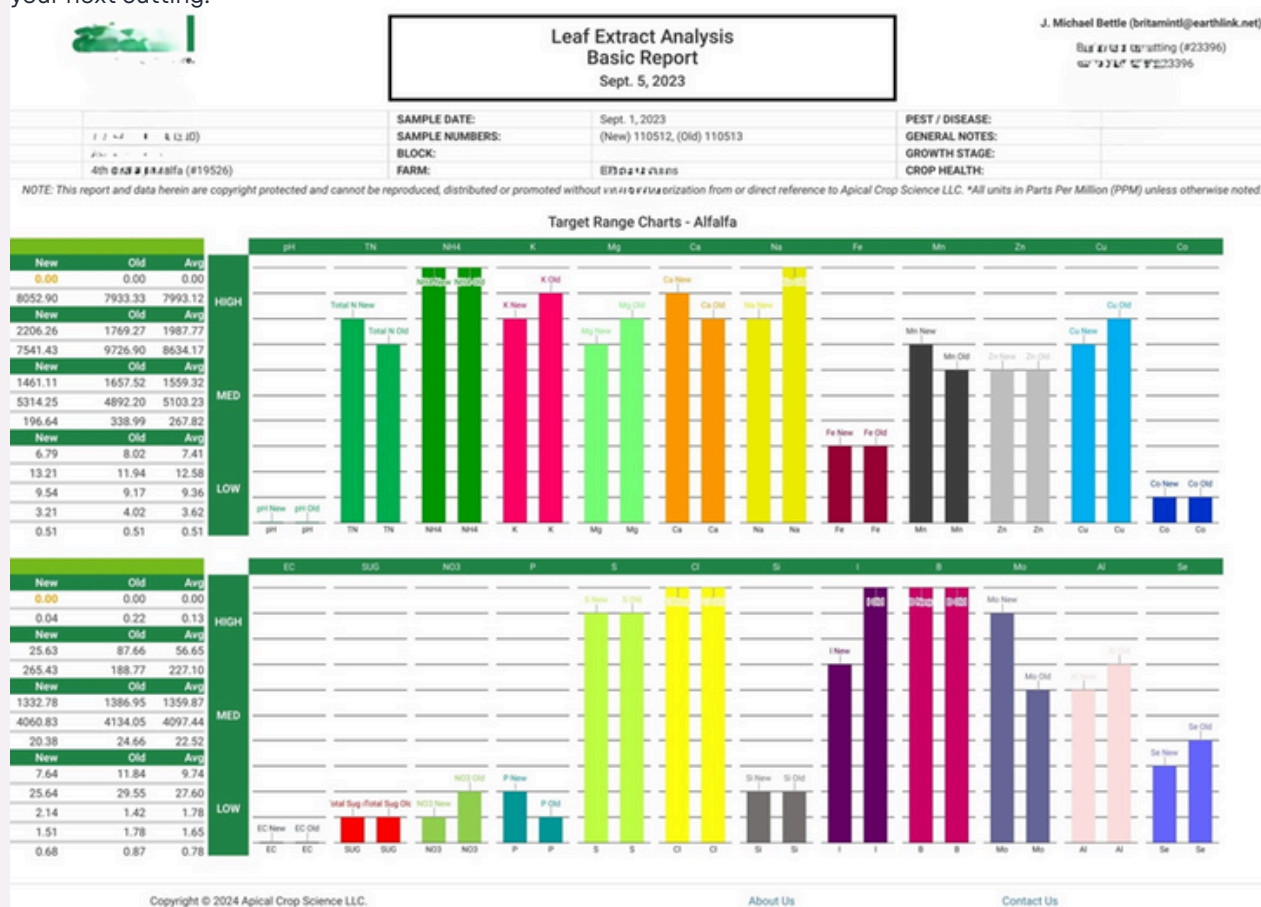
I am passionate about what commodity organizations can do for the betterment of all farmers. I became involved in the Midwest Forage Association (MFA), based out of St. Paul. It covers alfalfa and all other forages for MN, WI, IA, and the Dakotas. That organization really concentrates on the research end of forage production and promoting the need for federal research dollars since there is not a good way for forages to have a good checkoff program.

This comparison, between the old and new leaves, is done to give an indication of the movement of minerals and nutrients within the plant and can indicate deficiencies when the new leaves are demanding nutrients from the old leaves. Ideally they will be the same. More in the old leaves might indicate an excess of that nutrient. The chart below shows you a typical presentation of the results you will get back from the laboratory.

This particular sample (below) shows exceptionally high levels of sodium, potassium, sulfur and chlorides in the macro element range. This excess salinity will harm the crop and is undoubtedly brought on by too much potassium chloride. Boron and Iodine levels are high, which tells you they don't need to be in your custom foliar blend! A lot of agronomists have jumped on the boron bandwagon, which is fine because it was ignored for a long time but here, it seems that a lot of money could have been saved if the test had been done earlier and a field specific approach could have been taken on this crop. This kind of information can only be obtained with such a test.

There are several labs around the country offering Sap tests. I recommend getting online and finding one nearest to you, first to keep the sample as fresh as possible and second for as quick a turn around as possible so you, your consultant, and the company that will blend your custom foliar mix, can take action before your next cutting.

I am still a board member of the MFA, but wanted to better serve the needs of our local forage producers by concentrating more networking and research opportunities along the I-29 corridor. That is why about a year ago, we decided to form our own association that concentrates on the needs of the dairy, beef and other users and producers of quality forages in the Dakotas, western MN, NW Iowa, and NE Nebraska or anyone else in our region that wants to join. We formed a non-profit called the Northern Plains Forage Association. We are incorporated under SD law and are working at getting our 503C federal status through IRS filings. I have always been a believer in public service of one form or another, by being involved in church, civic organizations, school boards, coop boards, commodity organizations, etc. I hope I have given back some of my talents and expertise to help my friends and neighbors. I enjoy being able to serve. I hope you will become involved in our new venture and give back if you can, helping neighbors and new young farmers and entrepreneurs that are just starting out. We value your involvement or input as to what you think this organization could do better. **Come Join Us.**



THANKS TO OUR 2024 ASSOCIATE MEMBERS

Being a new, grassroots organization, we have relied heavily on event sponsorships, goodwill, volunteers, and associate members. We would like to specifically recognize our associate members who have gone above and beyond to support the Northern Plains Forage Association in its infancy! If you would like to see your business or operation listed here- contact us!



UPCOMING REGIONAL FORAGE-RELATED EVENTS

- UNL Corn Silage Conference; June 20 @ Mead, NE. Hybrid meeting style
- Summer Grazing School; June 25-27 @ Gordon, NE
- SD Grasslands Coalition Pasture Walk; June 25 @ Lowry, SD
- ISU Fencing & Grazing Clinic; June 26 @ Castana, IA
- West River Soil Health School; June 26-27 @ Caputa, SD
- Dakota Lakes Research Farm Summer Field Day; June 28 @ Pierre, SD
- Southeast Research Farm Summer Field Day; July 9; @ Beresford, SD
- Mobridge Soil Health Event; July 11 @ Mobridge
- Forage Field Day (hosted by UNL, SDSU, NPFA, and I-29 Moo-U) ; Aug. 6 @ Haskell Ag Lab in Concord, NE.
- RCAP & NCCC-31 Annual Meeting and Field Day: August 12-15 @ Fargo, ND
 - Rural Community Assistance Partnership and

*This is the best list available at time of publication- if you would like a forage-related event listed here, please contact Sara Bauder at sara.bauder@sdstate.edu.