ADVANCED AG SYSTEMS'

Crop Soil News

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"It is the crops that feed the cows that make the milk which creates the money."

Advanced Ag Systems
Research, Education, Consulting

Weather Proofing Your Forage Supply & Harvest Management of High Yield Winter Forage

The 2012 season in the Northeast has started out with a bang. From a March that brought 80+F and 23 F a week later; and April that hit 90 and 29 in three days; it has been a rollercoaster.

The above was written in April of 2012, another year with a collapsing El Nino going into a La Nina. I had a corn silage variety trial and much of the corn died on July 4 from the lack of water and heat. The forecasts are for it to be cool to cold spring and then **dry**, especially around the great lakes, and **hot** for much of the Northeast and Midwest. Ok, we can't change the weather (in spite of what some people claim for political leverage). We can help to reduce some of the impact of that weather by our management.

The first and often overlooked, is to rotate your crops. Over the years, I have seen farmers go through wild forage supply swings that they blame on the weather. Right next to them a farmer will have the same weather but because they follow a strict rotation, manage to have sufficient forage of high quality. The difference is in the rotation that many give lip service to but few follow. As the conditions go wetter or drier than normal, rotated fields will hold their yields while sequential monoculture ones have yield collapse – but it is blamed on the weather.

The most critical factor in rotation is that **THE SOILS DRIVE THE ROTATION WHICH DRIVES WHAT THE COWS ARE FED.** There are well drained and poorly drained. Some fields are flat and uniform. Most are variable in soil type with some in extreme from excessively well to poorly drained. The key issue to keep in mind is that **livestock need highly digestible fiber, sugar/ starch energy, and useable protein.** They can be fed a wide range of forages from all hay crop to all corn silage as long as it is economically high digestiblity. The question is what high quality forage will the soils on your particular field produce the best under a sustainable, economical rotation? Our research has shown over the past 8+ years that winter forages, sorghums, and red clovers; managed correctly can have high quality nutrition as economical as corn silage or alfalfa haylage. Each of these

In the 2012 drought, most of my corn died by July 4. The sorghum finally rolled but as soon as it rained it unrolled and started growing. Sorghum will produce twice the dry matter on an inch of water than corn will. Corn stops growing above 85F but sorghum will grow at over 100F.

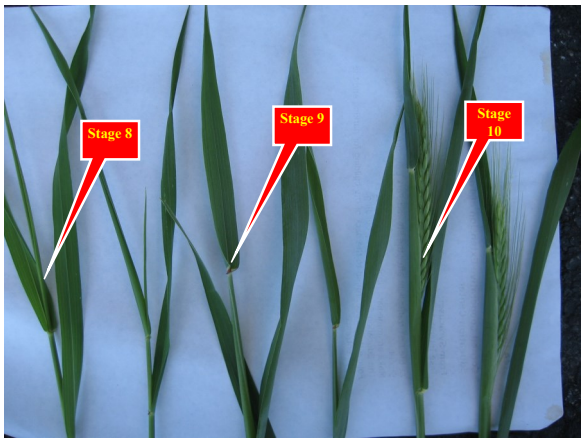
"new" crops could be the best crop depending on the field/soil type/weather condition you have to manage. The advantage of diversifying the crops, but producing quality forage, is in years such as this is predicted to turn out. The weather risk is greatly reduced if you don't have all your eggs in one basket. In the wet spring of 2009, farmers growing winter triticale found that they could get on those fields to harvest an early crop, spread manure, and plant corn because there is 60% less available water under a winter forage, compared to bare soil. It also produces the crop outside of the summer heat and drought. In the flood/drought (we had both) of last year, the new short season BMR forage sorghum demonstrated what research had known, that they can produce twice the dry matter tons/acre as corn silage on the same one inch of water. With hot dry weather forecasted for the upper Midwest and northeast, this is a crop to seriously consider this year. Yet sorghum species does not do well in cool wet conditions. By growing both corn and sorghum you reduce the weather risk and still have quality forage. On deep well drained soils, alfalfa will keep producing as it taps the deeper moisture. On poorly drained soils in a short rotation, red clover will produce as much or more than a good alfalfa yet have potentially higher forage quality. With lower cost nitrogen, highly managed grasses are an economic addition to the mix again.

The point is you need to optimize the crop choice for each field and **HAVE A WRITTEN PLAN FOR THE NEXT 5+ YEARS.** If it is not written, then you are not rotating as the years easily slip by. Yes, you can change the plan based on a number of factors (stuff happens), but with a plan you are always moving forward.

Swaths greater than 80% of the cutter bar whether sickle bar mowed on left or disk mowed on right, are critical for maximum photosynthetic drying. Mowers not able to do this should have the swaths tedded to 100% immediately after mowing.

Winter Forage Harvest Update

Caution: with the warm weather of November and December from the El Nino this past winter, winter forage, especially triticale, has had much more opportunity to tiller than normal. The more tillers produced in the fall, the more yield <u>potential</u> the following spring (as long as it rains). This creates both a benefit and a problem. The benefit is that many farms will be harvesting 3 to 5 tons of high quality winter forage dry matter/acre; 8 to 14 tons of 35% dry matter silage/acre. Yields of this are double to triple the normal silage yield from a heavy first cut alfalfa crop. The problem is that it can present a real issue drying in the field. Swaths only dry on the outer ¾ of an inch; when that dries, the next layer starts to dry. Traditional narrow swaths of winter forage, conditioned or not, will be 2 to 3 feet thick. The higher the quality forage (less lignin) the denser the windrow. **This is not drying, it is windrow <u>composting</u>.** It is 100 % humidity inside so it doesn't dry. It sits wet for multiple days, with natural plant respiration burning off the highly digestible sugar and starches – the milk producing energy. It then ensiles poorly because of the lack of substrate (sugars) for ensiling bacteria to use. The outer layer is dry as baled hay and the rest is wet slop still at mowing moisture; a perfect scenario for clostridia fermentation and high butyric acid formation. Not something with which to make milk.



Optimum stage of winter forage harvest is stage 9 where the last leaf has unfolded yet the head has not emerged yet. Preliminary data is indicating that if temperatures are cool to cold, the forage quality (milk producing ability) could hold into early head. If temperatures are warm to hot, then you need to push to harvest at stage 9-flag leaf stage.

Laying the swath out at greater than 80% of cutterbar width, will expose more of the plant tissue to sunlight. Even though the plant is cut off it is still photosynthesizing. The plant takes carbon dioxide and **<u>water</u>** to make sugars and oxygen. From cutting moisture until it gets to less than 60% moisture, there is **NO FASTER DRYING THAN PHOTOSYNTHETIC DRY-**

ING. An added bonus is that instead of respiration reducing the energy, the photosynthesis of the sun exposed forage is increasing the net energy of lactation as the crop dries.

The other caution is to not use the deflector shield on the mower to make a wider swath (photo at right). My research has found that as highly digestible, low lignin forage hits this shield it makes non-drying lumps coming out the back of the mower. Again, the better the forage quality, the more dense the lump. We suggest it flow through without hitting any shield.

The left swath with the deflector down clearly shows the non-drying lumps it makes. On the right, the flow through wide swath is uniform and less dense to speed photosynthetic drying.

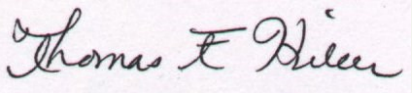
With expected yields this year, even laying full width swaths, the heavy crop will produce a mat 6 – 8 inches thick that only dries on the surface. After two hours of drying, the surface is too dry to photosynthesize and the lower layers are respiring. Tedding at this time will bring the lower wet layers into the sunlight to photosynthetic dry. Mowing at 3 inches or more allows this process to be completed without mixing dirt (ash) into your good forage. For those with mowers that only leave a swath 65% of cutterbar width (most machines), tedding as soon as you are finished mowing will allow you to have wide swath drying. In this case, 4 -5 dry matter ton yields (common south of New York latitude) might need a second tedding if originally mowed narrow (swath less than 80% of cutterbar). Wide swath will usually need just one tedding two hours after mowing. **Watch the forward speed of the tedder**. You are spreading 2 – 4 times the yield of heavy first cut alfalfa. If you go forward to fast for the volume of material, the tedder will grab and throw a compact a lump of forage that will not dry.

Based on our preliminary work on with bmr sorghum (another highly digestible, high sugar, potentially wet forage) we suggest chopping at ¾ to 1.25 inch (**longer cut does NOT mean using dull knives** – keep them sharp, set correctly **with a square, properly adjusted shear bar**). Winter forage, such as triticale at flag leaf stage, is highly digestible (like bmr corn/sorghum) and can pass out the rumen before the majority of digestion is complete. Another benefit of a longer length of cut is our research is finding significantly reduced amount of leachate from the silo even with very wet material. The longer length of cut also appears to preserve the sugars within the cells for use by the animal.

We highly suggest a homolactic bacteria (without enzymes) to make sure you are preserving the forage properly. There are some now available that are designed for high sugar wet forages that also are said to inhibit closterdia formation. With all the sugar and highly digestible fiber in winter forage, you don't want to trust fermentation to whatever is present in your field.

Finally, strive for haylage in a day, even if it is a little on the wet side, in order to preserve the sugars and greatly reduce the potential for clostridia and butyric. If the night temperatures drop below 40F, the cold temperatures greatly reduce plant respiration. We are seeing that under this weather condition, you might be able to leave it overnight and finish drying the next day.

Sincerely,



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