

# Forage Facts

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## What's the Brix on that Pasture??

By: Kaitlin McLachlan

Do you have a refractometer in your toolbox in your truck? Maybe you need one! It is a neat tool that we can use to measure the sugar levels in plants and forages.

Refractometers have been used for years in the food and processing industry for quality control purposes, and now there are nice, small hand-held models that we can take to the field with us! All we need is the refractometer and a garlic press like what you'd use in your kitchen!

The sampling process is quite simple! You simply pick or trim some plants that you would like to test, roll them into a ball in your hands for a few seconds and pop it in the garlic press. These handheld models work by placing some juice from the test plant onto the glass prism at the end of the unit. Once the plastic cover is flipped over the juice and compresses the juices, you can look through the looking glass and measure the sugar content of the forage. In the picture in the middle of the page, we see a sample of a handheld refractometer as well as a sample of the reading that we can obtain from the tool. Each scale on the refractometer relates to one gram of sugar per 100 grams of liquid.

So what is a "good" Brix measurement? How can we incorporate it into our grass

and feed management?

Using Brix measurements in management decisions actually started with beef producers in the States a few years ago. Brix is the measure of the total dissolved solids in a liquid. Most of these dissolved solids extracted from growing plants is carbohydrates in the form of sucrose sugar. The rest is simple sugars such as glucose and fructose, as well as minerals.

If you were at our Grass Fed Beef Workshop with Dr. Anibal Prodomingo and Clayton Robins back in February, you would have heard about the importance of sugar content in forages and how it relates to gain. The basic principle is that plant sugars provide energy. Therefore, the higher the Brix reading, the higher the sugar content, and should indicate a higher nutritional value in the plant.

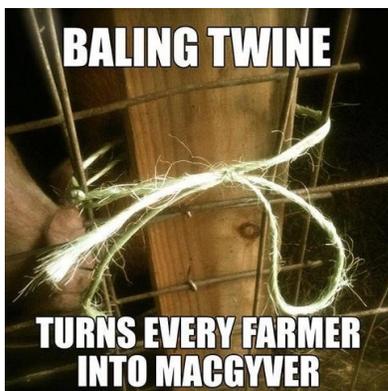
From findings in the US, Brix levels of alfalfa are typically at an average of 8, with a reading of 22 being considered excellent. In cereals, 18 is considered excellent

while 10 is a good average. Regardless of the plant species, the highest energy levels will always be in the lower stems and leaves of the plant. In alfalfa, the absolute highest brix levels come from the juice of the blossoms.

Another observation, that we learned from Nicole Masters at our workshop in June, is that plants with a Brix level of 12 or greater have improved resistance to disease and insect pressure! Nicole also related that healthy plants with high Brix measurements are a result of healthy soil.



A refractometer and the Brix reading scale. Photo via: highbrixgardens.com



The PCBFA Crew wishes you a safe and trouble-free haying season!

If you have any questions about feed quality or would like to send some hay out for feed sampling, please feel free to give us a shout in the Fairview or High Prairie Offices!

If you are interested in learning more on how soil health relates to plant health and higher Brix readings, keep your eyes open for another workshop with Nicole Masters later on this year!

Dr Anibal Pordomingo has done some work relating Brix and forage quality in his studies in Argentina. He has found that the best ration for finishing cattle on grass is when soluble carbohydrates — sugars — and crude protein are balanced with protein between 14-18% and sugars being at least 15%. He has also found that young, vegetative plants tend to be too high in protein and too low in energy to provide good gains in a grass finishing program. As plants approach the flowering stage, they are in the peak of their sugar production. So with this information, we can start to make informed management decisions based on the sugar content in our forages.

Research by the USDA Agriculture Research Service out of Idaho has found that sugar levels in growing plants are at their peak around 6pm in the evening before sunset, and at their lowest first thing in the morning. This is because the plant has been photosynthesizing all day, and has made itself a lot of sugars. Overnight, these sugars will flow down to the roots into the plant's reserves.

At Utah State University, researchers experimented with feeding two groups of dairy cows rations of 40% alfalfa hay—one cut early in the morning, and one cut in the early evening. The cows that were on the ration cut later in the day consumed 6 pounds

more per day of the ration and produced 7.5 pounds more milk than the group on the morning cut hay. This increase in animal performance can be related back to the increased sugar content in the plants at the time of day the hay was cut. These are exciting results as we can also use Brix readings for not only making pasture rotation decisions, but also harvest decisions!

I'm sold! Where do I get my refractometer?

At PCBFA, we have a hand-held refractometer in our Fairview Office if you would like to have a look at it or have one of our staff show you how it works. If you are really sold on it, you can find them online. They typically start out at \$120 and can be found at [www.reed instruments.ca/portable-refractometers](http://www.reed instruments.ca/portable-refractometers).

Digital refractometers are also on the market. They are more pricy, starting at around \$550 and can be found online at [www.coleparmer.ca/Category/Digital-Handheld-Refractometers](http://www.coleparmer.ca/Category/Digital-Handheld-Refractometers). Refractometers can also be found on Amazon.

When purchasing a refractometer, since there are many kinds of models that measure a variety of different dissolved solids, ensure that you are purchasing a Brix refractometer. For testing forages, also ensure that you are getting a refractometer that has a scale that can measure up to 30%. This is a good scale to measure a variety of forages accurately.

If you have any questions regarding refractometers or would like to try one out, please give us a call in the Fairview Office!

Happy Brix-ing!



Past Summer Student Taylor Iwasiek taking Brix Readings

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We are always looking for ideas!  
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# Erosion and the Importance of a Healthy Riparian Area



By: Jen Allen

Although a couple months ago it seemed the Peace Country was in for another dry season, Mother Nature has graced us with a lot of precipitation! With that being said, it is important to remember that during all weather conditions, whether it be dry or wet, there are precautions and proper management practices to take in order to optimize the benefits of our current abundant water supply.

When it comes to wet conditions, significant effects to keep under your radar are runoff and erosion, where both are fuelled by rainfall and snowfall. When soil erosion from water occurs, sediments and nutrients from fields, such as manure, are carried by the runoff causing pollution to water sources (streams, rivers, lakes, and dugouts), or leaching into groundwater sources. Such added nutrients from the runoff lead to the growth of undesirable aquatic plants and algae blooms in the water (such as blue-green algae), and also causes oxygen depletion. Water pollution can be harmful to livestock, fish, wildlife, as well as humans. The vegetation along the banks of streams, rivers, lakes or dugouts, known as riparian areas, are essential for filtering these unwanted nutrients and sediments before they reach a water source. Therefore, it is important to properly manage your current riparian areas, or implement one into your system.

There are many benefits to maintaining a healthy riparian area, including: they act as a buffer system for both floods and droughts (conserve water), filter nutrients and trap sediments before they reach downstream, reduce erosion and stabilize shorelines through plant root systems, and creating an abundance of vigorous forage, shelter, and water for livestock and both aquatic and terrestrial wildlife. Deep-rooted vegetation including trees (willows and poplars), shrubs and grasses make up a good riparian area. Leaving plant cover or crop residue in your field also helps securing soils from erosive power prior to reaching the riparian area.

Another significant practice to reduce erosion and runoff as a cattle producer is proper range management, such as rotational grazing, and planning for periods of rest on the landscape to assist in restoring and maintaining a healthy riparian area. According to Cows and Fish, these are the top four things to consider in proper range management: "balance animal needs with available forage supply, distribute livestock evenly, avoid or minimize grazing the area during fragile or vulnerable periods, and provide effective rest during the growing season." Runoff can also be managed by constructing pathways using the landscape's topography, such as a berm, ditch or constructed wetland, in order to control the direction and/or speed of runoff and reduce nutrient and sediment levels (see Figure 1).

If you have slumped shorelines, an absence in abundance of vegetation and wildlife, or murky looking water with sediment buildup, then the health of your riparian area is probably lacking. In order to improve or manage your riparian area, it is first ideal to observe and evaluate the current condition of it, then make improvements where needed and continue to long-term monitor. Protecting your soils with vegetation cover, such as a riparian area, assists in ensuring the sustainability of your farm, water sources, and the overall environment. (Alberta Agriculture & Forestry, Cows and Fish)

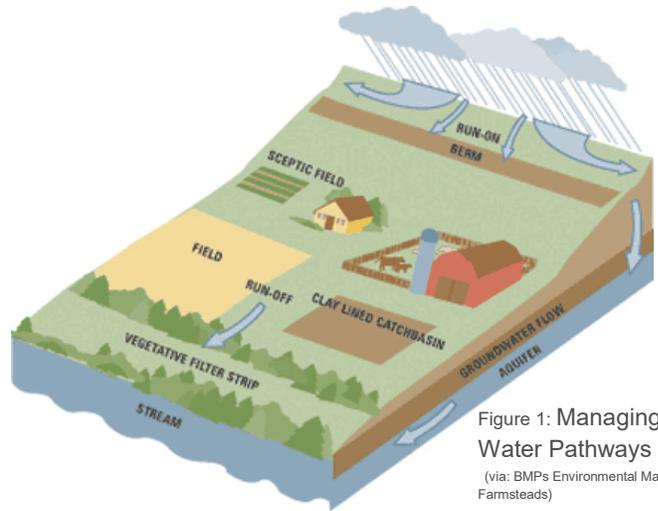


Figure 1: Managing Surface Water Pathways  
(via: BMPs Environmental Manual for Alberta Farmsteads)

Be sure to check out PCBFA's Whole Farm Water Planning events in August! If you have any other questions regarding riparian areas, feel free to give us a call at the Fairview office!

## Director's Corner with Jordan Barnfield

Hello my name is Jordan Barnfield. I run a mixed livestock farm in the Badheart north east of Teepee Creek. I am proud to say that I am a Director on the Board of the PCBFA. This is my 3rd year of being a part of this great Board and it has been a very rewarding experience for me. We are very blessed to have a great group of both Staff and Directors that are all very passionate producers from all around the Peace Country.

It has been great to see the PCBFA grow the last few years. People seem to really be getting involved and getting active in the beef and forage industry. There has been great attendance by producers at our events and field days the last while. PCBFA has brought in and hosted some great speakers the last few years that sure bring a lot of knowledge to us as producers. These events, speakers and just meeting and learning so much from all of the local producers that attend PCBFA events has really helped me grow my farm in the direction that I want to see it go. Taking the Don Campbell Holistic Management course, going to the soil conference in Edmonton last fall, and seeing speakers like Christine Jones, Nicole Masters, Gabe Brown and so many more has turned me into, as Monika our Manager would say, "a Soil Nerd".

There is so much to learn in the beef and forage industry and it has been fun doing this as a Board Member these last few years. I am looking forward to all the events that our great Staff has in store for us this next year. I have enjoyed being a part of some of the planning and I have learned a lot from our management sessions with David Irvine. Our great Staff and the great group of producers on the Board makes it very fun and easy to be a Director for the PCBFA. I hope to see and meet a lot more new and old producers at our events and field days to come this next year. I hope everyone has a great summer. Happy haying and enjoy all of this great rain and grass. It is a great year for building soil health.



# Upcoming Events

<b>Field Day of the Research Farm</b>	Wed, July 20th Registration at 10am	MD of Fairview Research Farm 2 miles west, 1 mile north of Fairview
<b>Pasture Walk Series</b>	July 26th—28th Registration at 10am each day	July 26th—Fourth Creek Hall July 27th—Grimshaw Legion July 28th—Valleyview
<b>Whole Farm Water Planning with Jessie Lemieux</b>	August 3rd & 4th	Aug 3rd— Saddle Hills County Aug 4th—Hines Creek
<b>Soil Health Workshop with Jay Fuhrer</b>	Thursday, August 18 <sup>th</sup> Details TBA	Manning
<b>Peace Beef Cattle Day</b>	December 7th	DMI in Fairview
<b>PCBFA Study Tour to Denver!</b>	Jan 10-17, 2017 Visit our website for booking forms & itinerary!	Twin: \$2989/Person Single: \$3526/Person

For more information or to register for any of these great events, please call Kaitlin or Jen at 780-835-6799.

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