

Forage Facts

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May Long Weekend in the
Peace Country!



May 20th, 2016



May 23rd, 2016

Ranching For Gold

By: Nicole Masters, Integrity Soils

"Thar's Gold in Them Thar Hills". Black gold that is. Soil carbon and humus is the stuff that underpins the wealth and health of our agricultural enterprises. Over the past few years carbon has become quite the political hot potato. With soil carbon finally on the radar at the 2015 U.N. Climate Change Conference, we will see a global shift in focusing on methods which can address the legacy load of carbon in the atmosphere; this shift starts with ranchers and other land managers.

Global losses of carbon from past land use is estimated to be between 66 to 200 billion tons; a considerable loss for a resource with such a central role in the longevity of agriculture. Losses can be attributed to soil management practices, erosion, overgrazing biocides, low biology, residue management, compaction and the inefficient use of water and nutrients. The news is not all bad however, if soil carbon can be lost on such a scale, we also have the means to rebuild it.

There are two major soil carbon cycles at work here; the one most studied, and more commonly known, is the *shorter term decomposition cycle*, whereby organic matter becomes microbe food and much of the carbon is lost as carbon

dioxide as the microbes respire. The aim of regenerative farming practices is to build more stable carbon forms. Humification is the process of changing the recognizable pieces of organic matter; roots, leaves, manure and dead critters into the fully decomposed dark uniform material known as humus.

The other important way that stable carbon is delivered from the atmosphere into the soil is through the nightly exudates from plant roots. In higher grasses, over half of the sugars gathered by plants during photosynthesis are sent out the roots as liquid carbon; these are

chemically similar to nectar and feed the organisms in the root zone. Much of this root nectar is held at deeper undisturbed levels in the soil, 18-23 inches down deposited there through the action of mycorrhizal fungi.

This sequestered carbon directly passes its rewards to ranchers,

with benefits including increased nutrient and water storage, improved soil structure and resilience to climactic extremes. Soil carbon is like a giant sponge; with a 1% increase in organic carbon (12" depth) able to increase the ability of soil to store water by 58,000 liters/acre. That's a significant increase, and a significant loss when you consider what historic carbon levels were on many ranches.

Root exudates are the cheapest, most efficient and most beneficial form of



Join us June 22nd in Rycroft as we welcome Nicole Masters to the Peace Country! Photo: Nicole Masters



Nurturing the Gold Beneath our Feet

organic carbon for soil life. Excessive applications of soluble salt fertilizers, glyphosate and overgrazing have been shown to shut-down this important soil process. Proper grazing management has been estimated to increase soil C storage on US rangelands from 0.1 to 0.6 Mg C ha(-1)year. Regenerative management practices, which foster the growth of beneficial microbes, reduce hardpans, encourage deeper rooting depths and increase plant photosynthesis, are required to build stable soil carbon. This process really is the money in your bank!

So, how can you tell if your soil is losing or gaining carbon? One way is to take a soil test

which gives you a small part of the picture, or take a deep core which will show carbon levels at depth, but this may not be helpful if you don't have data for comparison. There are also labs which can test for glomalin; the carbon by-product produced during this biological process, which gives you a really clear picture if your management practices are building your soil resource or degrading it over time. Another cheaper and quicker method is to dig a few holes and compare the color of your topsoil to a hole dug in an undisturbed area nearby which hasn't received fertilizer, been cut for hay, cultivated or been intensively grazed. If you see a visual difference and your soil is paler, this can indicate management changes are required.

The benefits of soil carbon and humus on soil properties:

Physical: improves soil structure, increases water storage and buffers soil temperatures

Chemical: increase cation exchange, complexes cations, binds toxins, reduces run-off, filters contaminants, sink for GHG gases, improves nutrient uptake, humus stores anions (N, P, S and Zn), reduces the need for nitrogen and phosphorus fertilization, and buffers pH

Biological: energy and food for microbes, reservoir for nutrients and increased resilience of the entire soil ecosystem.



Nicole's 3 pieces of advice for cow-calf producers:

- 1) Always consider your underground livestock. Soil microbes are vital for resilience, water holding, pasture performance and ultimately cattle performance. Use livestock to transport and/or stimulate soil biology.
- 2) Do no harm. Buffer, stop, or reduce any practices which negatively impact on microbial life and diversity. Instead use simple tools and practices which actively repair or regenerate soils.
- 3) Without monitoring there is no management. Pests, weeds and diseases are related to soil health conditions. Learning more about what they are indicating, gives you more power in honing your pasture management decisions.

Soil Health: The Bottom Lines

Nicole Masters

June 22, 2016

Rycroft Ag Society Hall
and Outdoor Field Site

9:30am Registration

\$25/member, \$40/non-member



Call Kaitlin for more info or to register! 780-835-6799!

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Wildlife—More than a Nuisance



By: Kaitlin McLachlan

Here in the Peace Country, we are no strangers to wildlife. From coyotes and the occasional wolf wandering across the landscape like an old west drifter to scads of elk and deer that make themselves at home in our feed yards. If one was to survey every rancher in the Peace, I'm sure that most everyone has lost an animal to a predator and feed to an ungulate. However, there is another worry that we need to keep on our radar – disease.

In recent months, cases of Leptospirosis have cropped up in the south Peace. Leptospirosis is a bacterial disease that affects not only cattle, but also pigs and dogs, as well as wildlife, rodents and humans. There are two strains of the bacteria that affect cattle: *Leptospira Hardjo* and *Leptospira Pomona*. These two bacteria infect the kidney and genital tract of cattle and can cause fever, meningitis, hemolytic anemia (breakdown of blood cells), abortions, and death.

Leptospira bacteria is transmitted by direct contact with infected urine, placenta, or milk. The most common transmission of the bacteria is through infected urine. Cases in the south Peace of this disease have been linked back to elk urine on feed or in water holes.

This is also a zoonotic disease – meaning it can be transmitted to humans. *Leptospira* bacteria can be passed to humans when handling infected animals via cuts, scratches, mouth or eyes. It is very important – as with handling all sick animals – to wear appropriate

protective clothing, cover all cuts, and wash your hands thoroughly after handling a sick animal. Early symptoms of Leptospirosis in humans include; fever and flu-like



Photo via: kootnaynaturephotos.com

symptoms, exhaustion, aches and pains, headache, and a long lasting illness. More severe cases can cause renal failure and abortions.

The good news is, Leptospirosis in livestock can be vaccinated for. Consult your local veterinarian to assess the risk of the disease in your area and if it is worth vaccinating your herd. Other preventative actions include fencing feed yards and water sources off so wildlife can't access them. This is of course cost-prohibitive in some cases, but if you are already suffering feed loss due to wildlife, it may be a consideration.

It is always important to monitor our herds, especially when we have wildlife wandering about. If you are dealing with something out of the ordinary, be sure to consult your veterinarian as soon as possible. A loss in our industry is hard. A healthy herd is money in your pocket.

Warm Welcome to our Summer Research Technician, Lekshmi Sreekumar!



Lekshmi was born and raised in Kerala, India. She holds her Ph.D in Soil Sciences and Agricultural Chemistry from Anand Agricultural University, Gujarat, India. Lekshmi has worked on many different types of soils throughout her career with her Ph.D thesis on Pesticide Residue Contamination in different textured soils. She was an assistant Residue Analyst for the Indian Council of Agricultural Research during her time at Anand Agricultural University and is very passionate about applied research and innovation in agriculture. She moved to Canada in 2014 to be with her husband and has worked for an agricultural inspection organization, SGS Canada, before joining PCBFA. Lekshmi hopes to experience and practice new research methods in forage production in the Peace region during her time with PCBFA. In her spare time she loves playing violin.

Lekshmi started with us April 25th, and has been a welcome addition to PCBFA. We are thrilled to have her as a part of our team!



Upcoming Events

Livestock Handling Systems Tour	Friday, June 3 rd 10am Registration \$25/Member	Waterhole Hall, 2 miles south of Fairview on Hwy 2
Soil Health: The Bottom Line with Nicole Masters	Wed, June 22 nd 9:30am Registration \$25/Member	Rycroft Ag Society Hall
Field Day at the Research Farm	Wed, July 20 th Details TBA	MD of Fairview Research Farm 2 miles west, 1 mile north of Fairview
Pasture Walk Series	Week of July 25 th Details TBA	Various Locations across the Peace
Whole Farm Water Planning with Jessie Lemieux	Week of August 2 nd Details TBA	Various Locations across the Peace
Soil Health Workshop with Jay Fuhrer	Thursday, August 18 th Details TBA	Location TBA
PCBFA Study Tour to Denver!	Jan 10-17, 2017 Visit our website for booking forms & itinerary!	Twin: \$2989/Person Single: \$3526/Person \$500 Deposit Due July 4

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For more information or to register for any of these great events,
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